INFANT HEALTH, CAREGIVER BURDEN, AND SOCIAL SUPPORT
AS PERCEIVED BY MOTHERS OF LOW BIRTH WEIGHT INFANTS
AND MOTHERS OF NORMAL BIRTH WEIGHT INFANTS

by

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STATEMENT BY AUTHOR

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DEDICATION

This thesis is dedicated in loving memory of my mother whose love, understanding and care will always be with me and my father who encouraged me to continue learning, work hard, and always do my best.
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ABSTRACT

The purpose of this study was to compare the perception of infant health, caregiver burden, and social support of mothers (n = 30) of low birth weight infants and mothers (n = 30) of normal birth weight infants. A cross-sectional descriptive design was used to conduct a secondary analysis of data from a larger study which examined maternal perception of caregiving and help seeking (May, 1990). There was no statistically significant difference between mothers of LBW infants and mothers of normal birth weight infants in their perceptions of social support as related to infant health and caregiver burden. There were no statistically significant relationships between infant health and tangible support; infant health and emotional support; caregiver burden and tangible support; and caregiver burden and emotional support. There was a moderate negative correlation between maternal perception of caregiver burden and emotional support in mothers of normal birth weight infants (r=.29, p=.12). Implications and recommendations are discussed.
CHAPTER I
INTRODUCTION

For a year I lived, slept, ate and sat by the fire of the Papago while making baskets, listening to jokes, and looking for patterns in how children learn about health and healing. My original question was: What do human beings know and utilize in everyday life that relates to health and well being? A two year old told me about caretaking, felt my bare foot as I lay napping and said 'You’re cold! You need a blanket.'

Agnes M. Aamodt, 1990

The World Health Organization has established the goal of health for all by the year 2000. Health has been defined by the World Health Organization as "a state of complete physical, mental, and social well-being" (World Health Organization, 1978, p.2). Nursing's domain of practice is what happens to people before, during, and after health problems (Bevis, 1989). The central concern of nursing is to provide wholistic care for the client, and assist the client to attain and maintain a maximum level of wellness (Neuman, 1989).

The goal of health for all provides the context for the focus of this study, recognizing the importance of maternal health in the mother's role as caregiver for her infant. Maternal perceptions are the source of data for this study. Perceptually based nursing knowledge can promote sensitive
personalized health care to mothers (Youngblood & Hines, 1992). Keeping family caregivers, in this case mothers, mentally and physically healthy and helping them continue with role responsibilities is central to meeting the long-term care needs of the care recipient (Phillips, 1989).

Human problems are collective and solutions must be found through collaboration (Boyer, 1989). In the spirit of collaboration between nurse researcher and mother, and in celebration of human caring and supportive relationships, this thesis focuses on mothers as primary caregivers and describes their perceptions of infant health, caregiver burden, and social support as they provide care for their infants.

Care/caregiving refers to those assistive, supportive, and facilitative acts made toward or for another individual or group with evident or anticipated needs to ameliorate or improve a human condition (Leininger, 1983). Caregiving can be divided into five categories of activities: anticipatory, preventive, supervisory, protective, and instrumental. Only instrumental tasks involve hands-on care. The other categories involve invisible work, such as decision making, planning care, assessing the need for care, and vigilance (Brust, Leonard, & Sielaff, 1992; Bull, 1990).

Care (giving and receiving) is essential for human survival, development, and coping with critical and
recurrent life events such as birth, illness, disability, and death (Leininger, 1985). Human care is universal yet diverse, with varied cultural, subcultural, familial, and individual expressions, meanings, patterns, and actions (Leininger, 1985).

Despite the positive aspects of caring, caregivers can experience major psychosocial stressors -- loneliness, social isolation, guilt, and financial hardships (Poulshock & Deimling, 1984), which for this study will be considered some of the components of caregiver burden. Maternal caregiver burden has been described as the mother's perception of responsibility for caregiving, physical strain, emotional strain, "the extras," demands on time, demands on lifestyle, and concerns about fathering (May, 1994). Reducing caregiver burden requires understanding the full realm of personal and situational variables associated with the perception of caregiver burden (Carlson & Keller, 1992).

Phillips and Rempusheski (1986) explored caregivers' of elders perceptions of their caregiving relationships, discovering that factors influencing the quality of the family caregiver/recipient relationship included the caregiver's perception about caregiving, impression of the caregiving situation, and perception of the care recipient's past and present behaviors (Phillips & Rempusheski, 1986).
Maternal perception of the caregiving context and infant health may be a stressor for mothers of low birth weight (LBW) infants. Perceptions can influence the maternal-infant interaction, and possibly the quality of the caregiver-infant relationship (Leonard, Scott, & Erpestad, 1992).

Social support may affect the caregiver's perception of burden or well-being. Social support research has validated the importance of social support to protect health and promote individual well-being (Cassel, 1976; Clipp & George, 1990; Cobb, 1976; Cobb, 1979; Norbeck & Tilden, 1988). Social support has been described as information leading the subject to believe that she is cared for and loved, esteemed, and a member of a network of mutual obligations (Cobb, 1976).

Kahn's (1979) definition of social support was used by Norbeck, Lindsey, and Carrieri (1981) to provide a framework for the Norbeck Social Support Questionnaire (NSSQ), used in this research. Kahn defined 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; and the giving of symbolic or material aid to another (Kahn, 1979). Based on Kahn's definition, the functional components of social
support measured by the NSSQ are affect, affirmation, and aid (Norbeck, Lindsey, & Carrieri, 1981, 1983).

Caregivers with strong supportive bonds may be protected from caregiver burden through exchange of social and emotional support, assistance with caregiver tasks, and financial aid (Clipp & George, 1990). This may reinforce the caregiver's positive self-regard and belief that stressful situations are manageable (Clipp & George, 1990). Forms of support found to be positively related to maternal well-being during the postpartum period are emotional support from husband and confidants, and the husband's help with the infant and housework (Gjerdingen, Froberg, & Fontaine, 1991).

Research has largely focused on immediate postpartal stressors of mothers with normal birth weight infants. Little information about the concerns of mothers with preterm LBW infants is available (Gennaro, Zukowsky, Brooten, Lowel, & Visco, 1990). Therefore, this research will describe the perception of infant health, caregiver burden, and social support of mothers of LBW infants in comparison with mothers of normal birth weight infants.

**Statement of the Problem**

Ten percent of the world's population are disabled, totalling about 400 million people. Of these disabled people, an estimated 150 million are children (WHO, 1981).
Disability is defined as human incapacity (physical, mental, or both), which may require long periods of supervision, observation, and care (Youngblood & Hines, 1992). Many human beings in need of care require caregivers, health care systems, and public economic sectors to support the care.

There were 4,110,907 infants born in the United States in 1991. Of these, 7.1 percent were LBW infants (U.S. Department of Health and Human Services, 1994). Low birth weight (less than 2500 grams), the result of preterm birth (fewer than thirty-seven weeks gestation), intrauterine growth retardation (full-term but small for gestational age), or both, is strongly associated with neonatal morbidity and mortality and may be related to childhood developmental delays (U.S. Department of Health and Human Services, 1993). Although all infants need care, LBW infants may require more intense care for longer periods of time (Culley, Perrin, & Chaberski, 1989).

Arizona recorded 68,040 births in 1991, with 6.4 percent LBW infants (Gersten & Mrela, 1992). In Pima County 11,411 infants were born in 1990, with 6.1 percent LBW infants (Strich, 1992). In Pima County, the percentage of LBW infants for white births was 6.3, for black 10.6, for Hispanic 5.6, for Native American 5.3, and for Asian 3.9 (Strich, 1992). These figures indicate the need for care
and caregiving, and the potential for associated caregiver burden across all cultures.

In 1990, 32 percent of all Pima County births were to unwed mothers (Strich, 1992). Additional contemporary societal changes adding stress to maternal caregiver roles include: increase in divorce, frequent parental job changes causing more primary family mobility with less extended family support, and the increase in number of families living below the poverty line. Thus, even caring for healthy infants and children is often difficult to accomplish and coordinate effectively (Kelley, 1993; Velsor-Friedrich, 1992).

Little is known about how mothers perceive their social networks relating to their needs as caregivers of infants. A beginning is to study maternal perceptions of infant health, caregiver burden, and social support.

Significance of the Problem

Mothers of newborn infants experience major changes related to physical and emotional well-being and social relationships (Gjerdingen, Froberg, & Fontaine, 1991). The way the mother perceives and adapts to these changes and the types of support she receives can have a dramatic effect on her physical and emotional health (Gjerdingen et al., 1991).

Mothers, usually anticipating a full-term healthy infant, are thrust into a crisis situation when they give
birth to a premature or low birth weight infant (Gennaro et al., 1990; Leonard, Scott, & Epestad, 1992). In 1990, 44 percent of all LBW infants born in Pima County required newborn intensive care services. Forty-one percent of LBW infants had documented abnormal newborn conditions, which occur at a rate 6.5 times greater for LBW infants than for normal birth weight infants in Pima County (Strich, 1992). LBW infants are more prone to apnea, central nervous system damage, gastric problems, developmental delays, and behavioral adjustment problems than their normal birth weight counterparts (McKim, 1993; Oehler, Hannan, & Catlett, 1993; Rauh, Aurcombe, Achenbach, & Howell, 1990; Tobey & Schraeder, 1990).

For mothers of LBW infants, concerns center on infant health care issues and remain high for months following infant discharge from the hospital (Gennaro et al., 1990). Caring for disabled or chronically ill children requires more time and is more demanding than caring for healthy children. For parents of a chronically ill child, the experiences of parenting are challenged by the increased demands and restrictions imposed by chronic illness. Therefore, responsibilities of illness caregiving are added to parenting responsibilities, as implied in using the term caregiving for the maternal role (Turner-Henson, Holaday, & Swan, 1992).
Caregiving responsibilities may include administering oral/injectable medication; preparing special diets; blood, urine and stool testing; respiratory treatments; and application of braces (Turner-Henson et al., 1992). This places significant physical, emotional, and social strain on the mother and family system (Brust et al., 1992). Mothers as primary caregivers have multiple and time-consuming roles and responsibilities (Turner-Henson et al., 1992).

Parents of premature infants face major crises involving psychosocial changes brought about by having a new family member, being parents of an often ill and immaturity developed infant, and ultimately caring for the infant at home (McKim, 1993). Also, as third party payments decrease and multiple health care cost containment practices are implemented, infants are discharged from hospitals early, with a high intensity of need, to receive care at home (Bull, 1990; Malett, 1993; O’Connor, Vander Plaats, & Betz, 1992).

Beginning in the 1960s and accelerating in the 1980s, care of disabled children shifted from hospitals and institutions to home. This resulted from several factors, including cost containment policies, new medical technologies, and a humanitarian philosophy advocating home as the least restrictive environment for children (Brust et al., 1992). The primary responsibility of caring for
chronically ill and disabled children has shifted to their families. This has occurred at a time when there is an increasing number of single parent families and the majority of women with children under 17 years old work outside the home. Thus, public policies have shifted the provision of medical care to families when families appear less able to meet these demands (Brust et al., 1992).

The Arizona Health Care Cost Containment System (AHCCCS) paid for 32 percent of all Pima County births in 1990 (Strich, 1992). Nine percent of women giving birth had no health insurance (Strich, 1992). In 1990, newborn intensive care services for LBW infants born in Pima County cost an average of $13,916 per infant (Strich, 1992). This translated to a total cost of $3,339,840 in 1990. Compared with other health care payors, AHCCCS paid for the highest percentage of births requiring neonatal intensive care in Pima County. This reflects the higher case-mix severity of AHCCCS women (Strich, 1992). LBW infants, especially AHCCCS supported births, create an economic challenge to the public health care system.

Improvements in maternal and infant health require prevention of avoidable problems affecting mothers and their infants, through changes in lifestyle, personal behavior, and improved access to services (Brust et al., 1992; Strich, 1992). Describing the perceptions of maternal caregivers...
related to infant health and caregiver burden will contribute to nursing knowledge by providing a perspective for professional nurses to plan more effective interventions in response to caregivers' perceived stressors and burden. Identifying differences and similarities in maternal perception of social support will expand nursing knowledge related to the contextual functioning of clients. This knowledge can encourage nurses to assess and plan interventions which include the involvement of natural helping networks and use of community services.

Statement of Purpose

The purpose of this study was to compare the perception of infant health, caregiver burden, and social support of mothers of LBW infants and mothers of normal birth weight infants.

Research Questions

1. What is the difference in perception of emotional support between mothers of LBW infants and mothers of normal birth weight infants?

2. What is the difference in perception of tangible support between mothers of LBW infants and mothers of normal birth weight infants?

3. What is the difference in perception of percentage of total functional support from support sources between
mothers of LBW infants and mothers of normal birth weight infants?

4. What is the difference in perception of situation specific maternal support between mothers of LBW infants and mothers of normal birth weight infants?

5. What is the difference in perception of recent loss of important relationships between mothers of LBW infants and mothers of normal birth weight infants?

6. What is the relationship between maternal perception of infant health and maternal perception of tangible support in mothers of LBW infants and mothers of normal birth weight infants?

7. What is the relationship between maternal perception of infant health and maternal perception of emotional support in mothers of LBW infants and mothers of normal birth weight infants?

8. What is the relationship between maternal perception of caregiver burden and maternal perception of tangible support in mothers of LBW infants and mothers of normal birth weight infants?

9. What is the relationship between maternal perception of caregiver burden and maternal perception of emotional support in mothers of LBW infants and mothers of normal birth weight infants?
Definition of Terms


Normal birth weight: Infants weighing 2500 grams or more at birth (U.S. Department of Health and Human Services, 1994).

Emotional support: Perception of affect and affirmation as reflected in the emotional support score of the NSSQ (Norbeck et al., 1981, 1983).

Tangible support: Perception of aid, assistance and material or money, as reflected in the aid score of the NSSQ (Norbeck et al., 1981, 1983; Norbeck & Tilden, 1988).

Total functional support: Perception of emotional support and tangible support as reflected in the total functional support score of the NSSQ (Norbeck et al., 1981, 1983).

Support Sources: Each of nine support source categories providing a percentage of perceived total functional support. Categories include: spouse or partner; family or relative; friends; work or school associates; neighbors; health care providers; counselor or therapist; priest/minister/rabbi; and other (Norbeck et al., 1981).

Situation Specific Maternal Support: Perception of support from the nine support source categories a mother
uses for infant health care decisions and information (May, 1994).

**Recent loss:** Perception of loss of important relationships within the past year (Norbeck et al., 1981).

**Infant health:** Maternal perception of an infant’s physical, emotional, and developmental well-being (May, 1994).

**Caregiver burden:** Maternal perception of responsibility for caregiving, physical strain, emotional strain, "the extras," demands on time, demands on lifestyle, and concerns about fathering (May, 1994).

**Summary**

Care required for the world’s population of infants requires support from family, health care systems, and public economic sectors. The mother is the primary caregiver of LBW infants and normal birth weight infants, and experiences major changes related to childbirth, including physical, emotional, and social changes. These changes may be even greater for mothers experiencing the birth of a LBW infant, who has increased potential for infant morbidity and mortality.

Research on maternal perception of infant health and caregiver burden can provide a perspective for nurses to plan more effective interventions in response to maternal caregivers’ perceived stressors, including burden.
Identifying differences and similarities in maternal perception of social support will expand nursing knowledge related to the contextual functioning of clients and facilitate more effective interventions. Therefore, this research will address the perception of infant health, caregiver burden, and social support of mothers of LBW infants and mothers of normal birth weight infants.
CHAPTER II

CONCEPTUAL FRAMEWORK AND REVIEW OF LITERATURE

The conceptual framework and review of literature are presented in this chapter. Neuman's Systems Model is used to provide a guiding conceptual framework because it reflects a holistic dynamic view of the client as a unique open system interacting with the environment (Neuman, 1989). The Neuman Model emphasizes nurse/client collaboration and focuses on the client's perception or view of the situation when goal setting with the nurse (Fawcett, 1987). Focusing on the client's view is relevant for this study on maternal caregivers' perceptions of infant health, caregiver burden, and social support.

The review of literature examines relevant studies across the life span and includes four sections: (a) Maternal Perception of Infant Health, (b) Caregiver Burden, (c) Social Support, and (d) Relationship between Caregiver Burden and Social Support.

Conceptual Framework

The Neuman Systems Model is a figurative representation which reflects nursing's interest in people as holistic open systems, whether well or ill, and environmental influences on health (Neuman, 1989).
Description of the Neuman Systems Model

The model's focus on the client's perception of environmental stressors, for this study reflected in maternal perception of infant health and caregiver burden, provided a conceptual framework for this research on maternal perception. The focus emphasizes the client's view and nurse-client collaboration when planning care (Neuman, 1989).

The Neuman Systems Model presents a holistic open system concept of a dynamic, yet stable, interrelationship among the mind, body, and spirit of the client system in a constantly changing environment (Neuman, 1989). The client (mother) is represented by a series of concentric circles surrounding a core structure (Figure 1). The concentric circles function as protective mechanisms for integrity of the basic core structure (Neuman, 1989).

The core structure consists of basic survival factors common to the species, such as maintenance of normal temperature range, genetic response patterns, and strengths or weaknesses of body parts. In addition to basic factors, certain unique features or baseline characteristics also exist for each client system (Neuman, 1989). An example is maternal cognitive ability.
Figure 1. Neuman Model as applied to this research.
The flexible line of defense (the outer, broken circle surrounding the normal, solid, line of defense) acts as a protective buffer system for the mother's normal or stable state. Ideally, the flexible line of defense prevents stressor invasions of the client system. The flexible line of defense has an accordion-like function. As it expands away from the normal line of defense, greater protection is provided; as it draws closer, less protection is available (Neuman, 1989).

For example, the flexible line of defense can be rapidly altered over a relatively short time, such as in a maternal crisis situation of giving birth to an ill, LBW infant. This may result in loss of sleep, concerns over infant health, and emotional strain, which may deplete maternal energy, causing the flexible line of defense to draw closer to the normal line of defense. Single or multiple stressor impact has the potential for reducing the effectiveness of the buffer system (flexible line of defense) and penetrating the normal line of defense (Neuman, 1989).

The normal line of defense is the solid boundary line that encircles the broken internal lines of resistance. The normal line of defense represents the client's wellness state. It is dynamic and can expand and contract over time to protect the system's integrity (health). Any stressor,
such as maternal loss of sleep, can create a response within the client by invading the normal line of defense. A client reaction (maternal upper respiratory infection) may reduce the ability of the system to withstand additional stressor impact, especially if the effectiveness of the internal lines of resistance is reduced (Neuman, 1989).

The lines of resistance within the client system are represented by the concentric broken circles surrounding the basic core structure; these are activated by environmental stressors following invasion of the normal line of defense. An example is activation of the immune system mechanisms. Effectiveness of this line of resistance in reversing reaction to stressors allows the client system to reconstitute. Ineffectiveness leads to energy depletion and death (Neuman, 1989).

Neuman describes environment as all internal and external factors or influences surrounding the client system. At any given point, the client system may influence or be influenced by environmental stressors, either positively or negatively (Neuman, 1989). The environment for the Neuman Systems Model (Neuman, 1989) consists of:

**Internal environment**: Intrapersonal -- the interaction of one body subsystem with another -- physiological and psychological;
External environment: Interpersonal -- the interaction of the mother with another person, such as a friend or family member; extrapersonal -- forces occurring outside the mother, such as financial circumstances; and

Created environment: Intrapersonal, interpersonal, and extrapersonal -- the protective, unconsciously derived environment (Neuman, 1990).

The created environment is a dynamic concept of perpetual adjustment within which a mother may increase or decrease the wellness state (Neuman, 1989). For example, adjusting to having a new infant at home, the mother may unconsciously attempt to maintain her time schedule according to preconceived beliefs of time needed for infant care.

Environmental stressors are tension-producing stimuli or forces occurring within both the internal and external boundaries of the client. More than one stressor may be imposed upon the client at any given time. Any stressor, to some degree, influences the client’s reaction to all other stresses (Neuman, 1989). For example, perceived lack of emotional support may increase maternal perception of caregiver burden, which may ultimately have an impact on daily coping skills.

There are two classes of environmental stressors. Intrapersonal stressors are internal environmental interaction forces occurring within the boundary of the
client, for example, autoimmune responses, self esteem, and self perception of maternal role. Extrapersonal stressors are external environmental interaction forces occurring outside the boundary of the client. These are interpersonal, interaction with another person, and extrapersonal, forces at distal range (Neuman, 1989).

For this research, maternal perception of infant health and maternal perception of caregiver burden are considered intrapersonal environmental stressors as defined by the Neuman Systems Model. Maternal perception of infant health may affect the mother's stability by taking energy or giving energy (Neuman, 1989). For example, the mother of a LBW infant, while caring for the infant at home, may perceive the infant's health as compromised. This perception may cause her to be anxious and have sleepless nights resulting in loss of energy and decreased system stability. A positive perception of infant health may give energy to the mother's system through feelings of joy and satisfaction that her infant is in a state of well-being.

In the Neuman Systems Model, health is a continuum. It is the degree of client wellness that exists at any point, ranging from, at its maximum, an optimal wellness condition with available energy, to death, which represents total energy depletion (Neuman, 1990). Health is considered a process-based system in accommodation to constant change
caused by stressors, in an attempt to reconcile and harmonize the needs of the body, mind, spirit, and environment (Neuman, 1990). Wellness, as energy, is a manifestation of the highest possible level of system stability. Therefore, energy conservation is critical to client system stability (Reed, 1993). For this research social support was considered energy conservation.

The Neuman Systems Model goal for the client (mother) is system stability -- to retain, attain, or maintain optimal wellness through energy conservation (Neuman, 1990). This includes collaboration of the nurse and mother in recognizing the mother's view of environmental stressors (infant health and caregiver burden) and energy conservation (social support). It also includes exploration of maternal goals for, or perception of, system stability (Neuman, 1990).

**Application of the Neuman Systems Model**

This research on maternal perception of infant health, caregiver burden, and social support of mothers of low birth weight infants and mothers of normal birth weight infants will add to nursing knowledge from the perspective of the Neuman System Model by describing (Figure 2):

1. Maternal perception of environmental stressors (infant health and caregiver burden);
Figure 2. Conceptual framework.
2. Maternal perception of energy conservation (social support); and

3. Relationships among the above.

The Neuman Systems Model represents the goal of system stability within the conceptual framework presented in Figure 2. At the construct level, the major constructs addressed in this research are environmental stressors and energy conservation. At the concept level, the major concepts are: maternal perception of infant health; maternal perception of caregiver burden; and maternal perception of social support. The empirical indicators are the Infant Health Questionnaire score; Caregiver Burden Subscale (Caregiving Questionnaire) score; the Norbeck Social Support Questionnaire score; and Situation Specific Maternal Support Questions score.

Review of the Literature

The review of literature includes four sections: (a) Maternal Perception of Infant Health, (b) Caregiver Burden, (c) Social Support, and (d) Relationship between Caregiver Burden and Social Support.

Maternal Perception of Infant Health

Maternal perception of infant health is defined as a mother's impression of her infant's physical, emotional, and developmental well-being (May, 1994). This literature review examines these maternal impressions.
Leonard, Scott, and Erpestad (1992) explored the question of maternal perception of infants (N = 46) by comparing perceptions of mothers of premature infants (n = 32) with perceptions of mothers of full-term infants (n = 14). The premature infants included both home monitored for apnea and bradycardia (n = 19) and nonmonitored infants (n = 13), all with good prognoses (Leonard et al., 1992).

Mothers of monitored premature infants had significantly more positive perceptions of their infants than mothers of nonmonitored premature infants. Findings suggested that maternal perception is not simply a function of infant status. Intervention programs provided to mothers of monitored infants may explain the difference between the two groups of mothers of preterm infants (Leonard et al., 1992).

In other research, a sample of eighty healthy and normally developing three year olds (39 neonatal intensive care infants and 41 full-term infants with no history of neonatal problems) was studied (Culley et al., 1989). Researchers observed that even when children with histories of neonatal intensive care were healthy and developing well, parents expressed concerns about their children's well-being and evidenced anxiety about their development. Results demonstrated that health problems in infancy may have
long-term effects on parental perceptions of a child's well-being. Mothers of former premature infants perceived their children as significantly more vulnerable than did mothers of full-term infants.

The researchers also hypothesized that children viewed as vulnerable by their parents would be seen as having a greater frequency of behavior problems. Data suggested that these mothers had some difficulty with setting appropriate limits and encouraging their children's increasing independence. This resulted in maternal perception that their children lacked self-control and were insecure (Culley et al., 1989).

A descriptive longitudinal study examined concerns that mothers of LBW infants (N = 65) experienced over time (Gennaro, Zukowsky, Brooten, Lowell, and Visco, 1990). Results showed that most concerns were evidenced following birth (109 concerns) and the week after infant discharge home (72 concerns), and were related to infant health (253 concerns). Health concerns included prognosis at birth; respiratory problems and medications at discharge; inoculations and bowel problems at one month; and colds and anemia at forty weeks. Forty-six percent of the infants (n = 30) were discharged home on apnea monitors, with a number of reported maternal concerns related to use of home apnea monitors (Gennaro et al., 1990).
The authors suggested that the strong maternal focus on infant health concerns as compared with concern about infant development may reflect a health care system in which developmental issues are secondary to issues of physical health. They also suggested that, for optimal infant health, care must focus on developmental as well as physical health (Gennaro et al., 1990).

Oehler, Hannan, and Catlett (1993) conducted an exploratory descriptive study to describe maternal perceptions of very low birth weight infants' ability to respond to their mothers soon after birth and three to five weeks later. Eighty percent of the mothers felt their infants responded to them, even in the immediate postpartum period, and ninety-six percent believed their infants responded at the second interview.

The researchers found that, over the first month, mothers experienced a significant increase in their pleasure in interacting with their infants, knowledge of infant cues, and perception that their infants were responding. These findings supported early development of the maternal/infant social relationship (Oehler et al., 1993). Most mothers attributed meaning to their infant's behaviors, and many attributed to their infant considerable ability to process information. Surprisingly, neither risk status of infant, nor affective status of the mother, significantly affected
maternal responses. In regard to affect, this may be because the majority of mothers reported anxiety and sadness even though they did not reach the SCL-90-R criterion for depression (Oehler et al., 1993).

Another study examined the psychologic reactions of anxiety, depression, and hostility in mothers who delivered a preterm infant (Brooten et al., 1988). Mothers whose infants were hospitalized longest seemed to feel greater relief at discharge as reflected by little depression when the infant was discharged. Mothers whose infants were hospitalized longest had a longer period in which to gain their equilibrium, physically and emotionally, from the birth. Multiparas had significantly more depression at the time of infant discharge than primiparas, which may indicate that prior experience with child care demands could cause multiparas to feel overwhelmed with the demands of an additional child and the added responsibilities of caring for a potentially vulnerable infant (Brooten et al., 1988).

In summary, the review of literature on maternal perception of infant health indicated that the major concern of mothers of LBW infants is health status (Gennaro et al., 1990). Early infant health problems may have long-term effects on maternal perceptions of the child's well-being, with mothers having difficulty setting appropriate behavioral limits and encouraging independence (Culley et
Maternal perception of infant health of LBW/premature monitored infants may be influenced positively by professional support prior to infant discharge (Leonard et al., 1990).

Maternal depression in mothers of LBW infants was found greatest at discharge for mothers whose infants had shorter hospital stays, with multiparas expressing the highest levels of depression (Brooten et al., 1988). Maternal depression was not linked with a delayed mother/infant social relationship, although most mothers reported anxiety and sadness (Oehler et al., 1993).

**Caregiver Burden**

For this research, caregiver burden is considered an environmental stressor as defined by the Neuman Systems Model. The review of literature begins with perceptions of caregivers for adults, followed by perceptions of primary caregivers (mothers) for infants and a sociodemographic study of families with very low birth weight infants.

Burden refers to the subjective perceptions of caregivers related to the degree of problems experienced in relation to care recipients’ specific impairments (Poulshock & Deimling, 1984). One study to clarify the concept of caregiver burden emphasized the importance of caregivers’ subjective perceptions and the interpretations of burdens they experience (Poulshock & Deimling, 1984). This is
relevant for research on maternal perceptions of caregiver burden.

Elder mental impairment and corresponding burden were substantially correlated with the negative impact on the caregiving family's relationships. The elder's activity of daily living impairments and the caregiver's perceived burdens were highly correlated with restrictions in the caregiver's activities (Poulshock & Deimling, 1984).

Another study described the effects of caregiving on family members who assumed primary responsibility for managing care of ventilator-assisted individuals, older than 18 years, in the home (Findeis, Larson, Gallo, & Shekleton, 1994). This exploratory, descriptive study used an interviewer-administered questionnaire and semi-structured interview guide. The questionnaire included the Caregiving Appraisal Scale (CAS), a list of caregiving tasks and demographic data. Interviews and CAS results indicated that most caregivers experienced a positive sense of mastery and satisfaction, but the range of CAS scores indicated that some felt a moderate degree of burden and the negative impact of caregiving (Findeis et al., 1994).

Kelley (1993) studied caregiver stress in grandparents raising grandchildren. This descriptive research examined stress in grandparents who were the primary caregivers of grandchildren and antecedents to the child's placement.
Findings indicated that financial stress and social isolation from peers were the major stressors of grandparents caring for grandchildren (Kelley, 1993).

Hall (1992) used grounded theory to compare the experience of women and men in dual-earner families following the birth of their first infant, and found major differences between men and women. The women felt overwhelmed by their caregiving responsibilities, which required much time and energy. The men described their lives as chaotic at times, but they never felt overwhelmed.

Women described a very different awareness of family work, as compared with men. The author found women had their "radar" on all the time thinking, for example, "Is there enough bread?" "Should I buy milk?" "Did I buy the part for the thing that is broken?" The author commented that men didn't appear to have "radar," as they never developed it (Hall, 1992, p. 36). The men responded to spousal pressure to participate in household work, but did not share their spouses' views of the importance of such work. The men felt no guilt, as women did, about having an alternate caregiver for their infants (Hall, 1992).

In secondary analysis of data on caregiver burden (May, 1990), Hu (1994) examined maternal perception of infant health and caregiver burden of mothers of LBW infants (n=30) and mothers of normal birth weight infants (n=30). Findings
showed that mothers of LBW infants perceived more caregiver burden than mothers of normal birth weight infants. This research also found a moderate positive correlation between maternal perception of poor infant health and maternal perception of caregiver burden (r = .29, p = .001). The correlation between maternal perception of infant health and maternal perception of caregiver burden suggested that the higher the mother’s perception of infant health, the lower her perception of caregiver burden (Hu, 1994).

In other research, maternal primary caregivers (N = 39) and their very low birth weight preschool children were studied to investigate the impact of caregiver daily stress and life strain (ongoing stress and decreased social support) on the behavioral adjustment of very low birth weight (< 1500 grams) preschool children (Tobey & Schraeder, 1990). Mild correlations were statistically significant, showing caregivers who experienced higher levels of daily stress and life strain had children with more immature and hyperactive behaviors.

The levels of immaturity, hyperactivity, and behavioral problems reported may have placed these very low birth weight infants at risk for school adjustment problems. Most commonly reported hassles were related to the health of a family member, lack of money, and the pressures of too little time with too much responsibility. These reflected
both decreased financial resources and lack of social supports rather than problems with children (Tobey & Schraeder, 1990).

Turner-Henson, Holaday, and Swan (1992) examined parents' caring responsibilities for their chronically ill children and included parenting and caregiving behaviors. Mothers (N = 367) remained the primary caregiver with multiple and time consuming roles and responsibilities. Mothers received minimal assistance from other immediate family members, fathers, or siblings. Time constraints reduced family interactions. Employed mothers still maintained primary caregiver responsibilities for the chronically ill child in addition to fulfilling employer expectations (Turner-Henson et al., 1992).

Brust, Leonard, and Sielaff (1992) studied mothers' of disabled children (N = 133) perception of maternal time and care of the disabled child. Their study quantified the concept of vigilance, defined caregiving categories, and provided a baseline measure of time spent by mothers with disabled children. Their study provided evidence that care and the burden of caregiving was family responsibility, rather than community based responsibility.

Results showed that mothers averaged 12 hours and six minutes a day caring for their disabled child. Tasks that required the most time were providing personal care,
providing medical care, and doing extra chores. When respondents listed all those who helped them, 88.7 percent named fathers and other family members almost exclusively (Brust et al., 1992). The type of disability appeared to have an impact on the time spent caregiving, the type of tasks required, and the perception of burden. Fifty-four percent of mothers' daily care hours were spent on vigilant tasks (waiting and providing emotional support). Hours spent in vigilance increased with the child's physical and mental impairment (Brust et al., 1992).

In another study, a grounded theory approach was used to describe the stressful process of parenting a child with repeated hospitalization (Burke, Kauffmann, Costello, & Dillon, 1991). The grounded theory did not represent the entire experience of the parents, but rather the dominant pattern for stressful aspects only. Hazardous secrets emerged as the basic psychosocial problem. The basic psychosocial process for the parents was reluctantly taking charge of the situation (Burke et al., 1991).

Hazardous secrets included negative information regarding diagnosis, medications, and treatments; variations in management based on parental experience with similar situations; and inexperienced health care workers. Reluctantly taking charge was the eventual response to hazardous secrets and involved several actions. These
included vigilance, taking over the task, reluctantly taking charge, and calling a halt when the parent felt the child had had enough. Through taking charge activities, there was a risk of mounting exhaustion, followed by taking a break and repeating the cycle of reluctantly taking charge (Burke et al., 1991).

Brown et al. (1989) studied sociodemographic characteristics and resources of families (N=72), with very low birth weight infants over the first eighteen months of the infants' lives. The researchers found, compared with national norms for all families in the U.S., that the sample of families with very low birth weight infants (≤ 1500 grams) was less educated, more likely to be unmarried, had poorer living conditions, and had more family members living in the household. Thirty-eight percent of the mothers were nineteen years of age or younger, compared with fourteen percent nationally. Sixty-five percent of the study families were Medicaid recipients.

Brown et al. (1989) concluded that segments of the population, giving birth to a larger proportion of very low birth weight infants, may have the fewest resources to care for these infants following hospital discharge. Optimal use of resources requires that health care providers understand the sociodemographic characteristics of families of very low birth weight infants (Brown et al., 1989).
In summary, the review of literature on caregiver burden examined burden of care variables related to caring for disabled adults. These included concerns about finances, lack of social support, lack of caregiver preparation to coordinate services and insurance benefits, and problems related to nursing care (Bull, 1990; Findeis et al., 1994; Poulshock & Deimling, 1984). Grandparents caring for grandchildren also reported stress related to lack of income and peer support (Kelley, 1993).

Hu (1994) found that mothers of LBW infants perceived more caregiver burden than mothers of normal birth weight infants. In two other studies, maternal primary caregivers made large investments in time and energy, with many constraints and minimal help from sources of social support such as husband and family (Brust et al., 1992; Turner-Henson et al., 1992). Employed mothers of normal birth weight children experienced feelings of being overwhelmed by the time and energy required for caregiving (Hall, 1992). Families of very low birth weight infants had less education, fewer economic resources than the general public, and were more likely to be young and unmarried (Brown et al., 1989).

Social Support

This section will investigate the multiple dimensions of social support as these relate to client
system stability. Cassel (1976) found, in a comprehensive study, that the protective factors buffering the individual from consequences of exposure to stressor situations were strengths from social support provided by primary groups most important to the individual.

Norbeck, Lindsey, & Carrier (1981) developed The Norbeck Social Support Questionnaire to measure the multiple dimensions of social support with three main variables -- total functional, total network, and total loss -- each with three subscales. The instrument was first tested on undergraduate senior nursing students (n = 60) and first-year graduate students (n = 75). The two groups were similar in age, educational level, and ethnic background, but academic situations were different. Although findings demonstrated that the two groups had similar mean scores for most of the subscales and variables, the instrument was sensitive to differences in the experience of changes in convoy through losses. Findings from the testing demonstrated both high test-retest reliability and internal consistency. Kendall Tau B correlation coefficients for test-retest scores on the number of categories of persons lost was .83 (p<.0001) and for the amount of support lost .71 (p<.0001).

The results of the second phase of testing the NSSQ (Norbeck et al., 1983) provided support for continued use of
the instrument to determine specific parameters of social support with clinical relevance. One sample of employed adults (N=136) was tested to provide a normative data base and further test validity. From the female subsample (n=89), normative scores were obtained on aid or tangible support (M=87.18, SD=39.93); total functional (M=281.18, SD=121.53); and total loss (M=2.69, SD=3.38) (Norbeck et al., 1983).

In the second phase of testing, the first four categories of sources of support accounted for 86.4 percent of the number in the network. Scores for proportion of total functional support were for spouse or partner (M=8.2), family or relative (M=35.3), friends (M=44.3), work or school associates (M=6.8), neighbors (M=1.7), health care providers (M=0.8), counselors or therapist (M=0.7), minister/priest/rabbi (M=0.9), and others (M=1.3). The low influence accorded to professional sources of support (health care providers, counselor or therapist, or clergy) may reflect that the sample was from a nonclinical population of working adults (Norbeck et al., 1983).

Norbeck and Anderson (1989) studied a population (N=208) of lower socioeconomic women from three ethnic groups to determine if high stress, low social support, or high state anxiety are predictive of pregnancy outcome and if ethnic differences exist in these relationships.
sources--spouse or partner (M=16.8), mother (M=15.6), other relatives (M=59.7), and friend (M=21.6)--comprised 96.6 percent of total support from network (Norbeck & Anderson, 1989).

The lack of significant stress-support interactions suggests that the theoretical model used may not be valid for use with lower socioeconomic pregnant women. The positive effects of social support in predicting pregnancy outcomes were significant for the group with the highest educational level and more comparable with the middle-class subjects from other studies (Norbeck & Anderson, 1989). The findings for the black group supported the value of identifying specific sources of support for interventions with black women who lacked partner or maternal support. Specific sources of support were related to pregnancy outcomes for low-income black women (Norbeck & Anderson, 1989).

Research on caregiver needs and patterns of social support were investigated over a one year period among adults (N=510) caring for a family member with Alzheimer's disease or a related disorder (Clipp & George, 1990). Two dimensions of social support were selected for analysis: instrumental assistance or tangible support, and the caregiver’s perception of adequacy of social support received from family and friends. Caregivers who reported
low levels of instrumental support had greater financial needs, possibly because they could not afford to purchase direct aid and services. In contrast, caregivers who perceived a need for more help had more mental health needs (Clipp & George, 1990).

Caregivers with the greatest burden in terms of stress symptoms, poor health, and high caregiving demands were more likely to perceive their levels of support inadequate. In terms of instrumental support, results showed the neediest caregivers were those receiving the least tangible assistance, suggesting that something other than need operates to elicit social support from family and friends (Clipp & George, 1990).

A methodological study was done to investigate the usefulness of The Interview Schedule of Social Integration (ISSI), an instrument to measure social support. Thernland and Samuelson (1993) used the ISSI to investigate the association between parental social support and child behavior problems in different populations and socioeconomic groups ($N = 48$).

Expected associations of positive parental social support with positive child behavior were found in the higher socioeconomic group, but not in the underprivileged group. The data from the underprivileged group may have been influenced by the sample’s situation of living under
great social strain. The authors suggested that a qualitative assessment tool should have been used for the underprivileged group (Thernlund & Samuelsson, 1993).

The role of maternal perceptions and maternal attributes as mediators of relationships between social network characteristics and children's development was addressed in a study by Melson, Ladd, and Hsu (1993). Mothers (N=69) and their preschool children participated in the study, which supported both direct and indirect links among variables. Parental social network size and quality were directly predictive of child cognitive performances, but not peer acceptance. Results indicated that larger and better quality parental social networks were predictive of child cognitive performance, independent of maternal cognitions (Melson et al., 1993).

An intervention study and a grounded theory study were used to explore family-based intervention related to maternal psychological well-being and feeding interaction of preterm infants (Meyer et al., 1994). Families (N=34) of preterm infants were randomly assigned to intervention (n=18) or control (n=16) groups. Intervention families received standard care plus individualized, family-based intervention. The control group received standard care (Meyer et al., 1994).
Mothers in the intervention group reported less overall stress and less stress regarding the nursing environment and characteristics of their infants than mothers in the control group. At discharge, there were significantly fewer intervention mothers (eleven percent) than control mothers (forty-four percent) who scored in the depressed range of the BDI (Meyer et al., 1994). The intervention group infants had fewer feeding problems, and intervention mothers had fewer problems with feeding. Maternal-infant interactive behaviors were also significantly more positive in the intervention group, (Meyer et al., 1994).

May (1992) studied low-income pregnant teens’ perceptions of their social network characteristics and their prenatal help seeking experiences (N=31). Types of help most often needed were emotional and financial. The support source most used was the teen’s mother, followed by the father of the unborn child. As compared to older teens (18-19 years old), younger teens (16-17 years old) perceived their families, relatives, or both as providing a larger proportion of total support and prenatal support and friends providing a smaller proportion of their total support (May, 1992).

Other research compared the descriptions and evaluations of important social relationships of women who experienced premature labor with women who experienced
normal pregnancies (Richardson, 1987). Premature-labor subjects reported significantly more unsatisfactory social relationships with important persons (husbands, and parental figures) than full-term pregnancy subjects. Premature-labor subjects described having more problems with and receiving less help and affection from people upon whom they depended (Richardson, 1987).

In summary, the review of literature on social support indicated that social support may be beneficial to client system stability -- health, and may buffer the effect of stress on health (Cassel, 1976; Norbeck & Anderson, 1989). Three studies discussed the development and testing of an instrument to measure the multidimensions of social support (Norbeck & Anderson, 1989; Norbeck et al., 1981; 1983).

May (1992) found in a study of perception of low-income pregnant teens that mothers, fathers of the child, and families provided the largest proportion of their total support. In two studies there was a positive relationship between parental social support and social/cognitive development of children (Melson et al., 1993; Thernlund & Samuelsson, 1993). In research comparing the social relationships of pregnant women who had premature labor with pregnant women who experienced full-term pregnancies, premature labor pregnant women perceived more unsatisfactory
social relationships, with less help and affection from people upon whom they depended (Richardson, 1987).

**Relationship between Caregiver Burden and Social Support**

This review of literature describes studies on the relationship between caregiver burden and social support. Research investigated the bicultural perspective of family caregiving burden of Anglo and Mexican American caregivers (N = 98). The team (Phillips et al., 1983-1994) has found that the extent to which burden has an adverse effect on the family caregiver depends on cultural factors and perceptions driven by the social environment, which mediate their impact. For example, in the Mexican American culture, the outward expression of burden is not a culturally accepted value but the lack of its social acceptance does not mean it is not experienced. The expression of a concept such as burden, may be limited by the subjects' beliefs about what they are expected to say, or by what they perceive the researcher wishes to hear.

DesRosier, Catanzaro, and Piller (1992) studied the role of social support in helping wives (N=9) cope with the caregiving demands of caring for a disabled husband with multiple sclerosis. Findings showed that the more debilitated the man, the more restricted to the home the woman was because of caregiving demands. Women described
the effects of multiple sclerosis as a significant personal hardship involving a persistent struggle that resulted in feelings of anger and frustration. Social support from the community and social networks helped the women cope. Both tangible and emotional forms of support were beneficial (DesRosier et al., 1992).

Women who reported the lowest level of perceived support had the highest scores in perceived stress. The small number of women in the sample precluded statistical analysis of the correlation between perceived stress and perceived support. However, the women with the lowest perceived stress score reported the highest perceived social support, and women with the highest perceived stress score reported the lowest perceived social support (DesRosier et al., 1992).

In a study of influences on family caregiver burden of adults (N=60) and health outcomes during transition from hospital to home, social support, income, and the caregiver’s and the recipient’s functional abilities influenced caregiver burden (Bull, 1990). Findings indicated that income, social support, and the caregiver’s and recipient’s functional ability were inversely related to caregiver burden and are important to include in planning interventions that influence burden during transition from hospital to home (Bull, 1990).
McKim (1993) conducted a descriptive study on mothers \( (N = 56) \) of high-risk premature infants. Data analysis indicated that the more premature the infant, and the greater the severity of illness as determined by length of hospital stay, the more likely the mother was to have a difficult first week after the discharge. A visit by the community health nurse during the first week following discharge significantly altered the maternal perception of having had a difficult week. However, community health nurses were unlikely to visit mothers of very low birth weight infants during the first week post discharge, which meant that an important source of support was denied. Other variables related to a difficult first week were whether the infants had apnea while hospitalized, the mothers’ need for specific kinds of information (colic), and the need for an earlier scheduled visit to the physician (McKim, 1993).

McHaffie (1990) found, in her prospective study of maternal adjustment of mothers \( (N = 21) \) of infants weighing 1500 grams or less, that extra support from other adults was of value in coping with caretaking demands. Supporting adults, providing maternal relief from constant caretaking, helped mothers of very low birth weight infants keep a positive perspective (McHaffie, 1990).

Crnic, Greenberg, Ragozin, Robinson, and Basham (1983) studied the effects of stress and social support on maternal
attitudes and early mother-infant interactive behaviors. Their sample included 52 mother-premature infant pairs and 53 mother-full-term infant pairs. Mothers were seen for structured home interviews at one month. Mother-infant pairs were seen for behavioral interactions at four months. Results indicated that stress had a major negative impact on maternal intrapersonal feelings and satisfaction, attitude toward parenting, and ability to respond to infants' subtle behavioral cues (Crnic et al., 1983).

Intimate support from husband/partner buffered the effects of stress, and community and friendship support promoted positive maternal attitudes. Maternal perception of social support also appeared to enhance reciprocity and maternal gratification within the mother-infant relationship. No differences were found between groups in maternal perception of stress or maternal attitudes and behaviors (Crnic et al., 1983).

In summary, this review of literature on the relationship between caregiver burden and social support indicated that caregiver perception of positive social support had beneficial effects on perception of caregiver burden or stress (Bull, 1990; Crnic et al., 1983; DesRosier et al., 1992; McHaffie, 1990; McKim, 1993). Cultural factors and perceptions driven by the social environment may mediate the impact of caregiver burden (Phillips et al.,
Professional support, a visit by a community health nurse, significantly altered maternal perception of having a difficult first week at home following discharge of the very low birth weight infant (McKim, 1993). Intimate support from spouse/partner was especially effective in buffering the effects of maternal stress (Crnic et al., 1983) and supportive aid (relief from caregiving) helped mothers of very low birth weight infants maintain a positive perspective (McHaffie, 1990).

Summary

The Neuman Systems Model was defined and applied as the guiding framework for this study because of its holistic dynamic view of the client as an open system interacting with the environment. The Neuman Model focuses on the client's view of the situation, which is relevant for this study on maternal perception of environmental intrapersonal stressors -- infant health and caregiver burden, and maternal perception of energy conservation -- social support.

The review of literature indicated that caregiver burden is synonymous with the potential for stress, whether in caring for adults or infants. The impact of caregiver burden may be mediated by cultural factors and perceptions driven by the social environment. Environmental intrapersonal stressors -- perceptions of health and
caregiver burden -- may be relieved by social support, which includes emotional and tangible support. Mothers are primary caregivers who experience caregiver burden, especially if the child is chronically ill and/or the mother is employed.

Mothers of LBW infants may be at risk for increased stress and depression related to the crisis of birthing a LBW infant, concerns about the infant's health, major responsibility for infant care, and a higher perception of caregiver burden than in mothers of normal birth weight infants. Caregiver perception of positive social support, energy conservation, was associated with less perception of caregiver burden. Intimate support was found to be especially effective in buffering maternal stress. Supportive aid relieved constant caregiving tasks and helped mothers maintain a positive perspective.
CHAPTER III

METHOD

This chapter describes the research design, setting, sample, protection of human subjects, data collection methods, instruments, and secondary data analysis.

Research Design

A cross-sectional descriptive design was used in this study to conduct a secondary analysis of data from a larger study which examined maternal perception of infant health, caregiving, help seeking, resource use, and social support (May, 1990). This study is a comparison of perceptions of infant health, caregiver burden, and social support by mothers of low birth weight infants (<2500 grams) and mothers of normal birth weight infants (≥2500 grams).

Setting

The postpartum and neonatal intensive care units of an urban medical center were the sites for collection was the choice of participants. Of 60 mothers, 59 chose data collection in their homes and one chose data collection at a restaurant near her home.

Sample

The sample included 30 mothers of LBW infants and 30 mothers of normal birth weight infants who met the following sample selection criteria. Mothers were:

a. the natural (birth) mother;
b. able to speak and read English; and

c. living in the county in which the hospital was located.

LBW infants:

a. had received care from the Neonatal Intensive Care Unit of the Medical Center used as the site for recruitment;

b. were discharged to live with the natural mother;

c. were singleton births (not a twin or other multiple birth infant); and

d. had birth weight of < 2500 grams.

Normal birth weight infants:

a. were discharged to home from the Newborn Nursery, not receiving care from the Neonatal Intensive Care Unit of the Medical Center used as the site for recruitment of mothers of LBW infants;

b. were discharged to live with the natural mother;

c. were singleton births (not a twin or other multiple birth infant); and

d. had a birth weight of ≥ 2500 grams or more.

Protection of Human Subjects

Permission to conduct this study was obtained from the Human Subjects Committee of The University of Arizona (Appendix A). Permission for secondary the data analysis
was obtained from the Research Committee of the College of Nursing of The University of Arizona (Appendix A).

Before data collection, a verbal explanation and a written Disclaimer (Appendix B) provided an explanation of the study, assurance of confidentiality and the protection of rights of the participant. Participants gave their verbal consent to participate and also implied consent by completion of the questionnaires and the interview. There were no known risks or costs to participants except the time to answer the questions. Each participant was given five dollars as token compensation for participation in the study. One mother refused the partial compensation, saying that she did not need it.

Data Collection Methods

After approval by the Human Subjects Committee, administrative support for the research was obtained from Nursing Administration of the hospital. Nurse Managers for the postpartum unit and the Neonatal Intensive Care Units consented to have the research conducted on their units and informed medical staff of the research. The researcher also consulted with the Medical Director of the Neonatal Intensive Care Unit about recruitment protocols.

The procedure for recruitment differed according to whether the infant was LBW or normal birth weight. Mothers of normal birth weight infants were recruited through the
postpartum unit. The researcher went to the unit and met with each mother who met the sample selection criteria and was being discharged from the hospital that morning. If, after receiving a verbal explanation of the study, the mother agreed to participate, the researcher asked for her telephone number and called the mother within a week after hospital discharge.

Recruitment of mothers of LBW infants occurred in the Neonatal Intensive Care Unit. After a family had been notified by the hospital personnel that an infant was within a few days to a week of discharge, the mother was contacted by the researcher through a note left at the infant’s bedside. If the mother returned the note saying the researcher could call to explain the research, the researcher called the mother, usually within a week or two after the infant’s hospital discharge. Appointments for data collection were made at the mothers’ convenience. Data collection occurred from August 24, 1992, to April 13, 1993. Prior to data collection, informed consent was obtained. During data collection, the instruments were completed in random order.

**Instruments**

The Instruments used in this research were: Demographic Questions (Appendix C), Infant Health Questionnaire (Appendix C), Caregiving Questionnaire
(Appendix C), Norbeck Social Support Questionnaire (NSSQ) (Appendix C), and supplementary Situation Specific Maternal Support Questions (Appendix C). The items for the Infant Health Questionnaire and Caregiving Questionnaire were derived from qualitative data in a preliminary study (May, 1994) and were pilot tested in the larger study from which data for the secondary analysis for this study were obtained (May, 1990).

Demographic Questions

The Demographic Questions consisted of 33 items addressing maternal health history (Items 5, 32), infant health history (Items 1, 2, 3, 4, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 31), family living arrangement (6), employment (7, 8), financial support (9), health insurance (10), source of infant health care (11), maternal health care activities (24, 25, 62, 26), maternal perception of infant health (27, 28, 29, 30), and maternal perception of ability to handle infant health needs (33) (Appendix C).

Infant Health Questionnaire

The Infant Health Questionnaire is an 18 item, unidimensional scale designed to measure maternal perception of infant health (Appendix C). The response format is a four point Likert scale with strongly agree and strongly disagree as anchors. The items were derived from qualitative data from a preliminary study (May, 1994).
Eight positively-worded items indicate positive health status and ten negatively-worded items indicate negative health status. Reverse scoring is used on negatively-worded items to attain a summated score for the scale. The eight positively worded items are: 3, 5, 8, 9, 11, 14, 15, 16. The ten negatively worded items are: 1, 2, 4, 6, 7, 10, 12, 13, 17, 18. A total score is obtained by dividing the total score by the number of items to obtain the mean.

Content validity was supported by the qualitative data from which the 18 items were derived. Internal consistency reliability is indicated by an alpha of at least .70 (Nunnally, 1978). Using Chronbach’s alpha, reliability of the Infant Health Questionnaire for this research was a standardized item alpha of .87.

**Caregiving Questionnaire**

The Caregiving Questionnaire is a 37 item multidimensional scale with three subscales measuring maternal perception of: Preparation for Caregiving, Caregiver Burden, and Confidence in Caregiving (Appendix C). The response format is a five point Likert scale with always and never as the anchors. For each subscale, a total score is obtained by dividing the total score by the number of items, to obtain the mean for the subscale. The negatively worded items are reverse scored. For this secondary
analysis only the Caregiver Burden Subscale of the Caregiving Questionnaire was analyzed.

The Caregiver Burden subscale has 30 items reflecting seven dimensions of caregiver burden:

1. responsibility for caregiving: (four negatively worded items: 10, 26, 32, 33);
2. physical strain (five items: (two negatively worded: 16, 18; three positively worded: 19, 24, 31));
3. emotional strain (six items: five negatively worded: 5, 11, 20, 22, 23; one positively worded: 28);
4. doing the extras (three negatively worded items: 12, 17, 34);
5. demands on time (three negatively worded items: 21, 30, 36);
6. demands on lifestyle (six negatively worded items: 9, 13, 14, 15, 27, 29);
7. concerns about fathering (three items: two positively worded: 4, 6; one negatively worded: 8).

Reverse scoring is used on the 24 negatively worded items (5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 26, 27, 29, 30, 32, 33, 34, 36) to attain a summated score for the subscale, which is then divided by the number of items (30) to obtain a mean subscale score.

Content validity is supported by the qualitative data from which the 30 items were derived (May, 1994). Using
Chronbach’s alpha, the reliability for the Caregiver Burden Subscale for this research was a standardized item alpha of .83.

**Norbeck Social Support Questionnaire**

The Norbeck Social Support Questionnaire (NSSQ) measures multiple dimensions of social support and is based on the conceptual definition of social support proposed by Kahn (1979) (Norbeck et al., 1981, 1983). Kahn defined social support as interpersonal transactions which include one or more of three components -- affect, affirmation, and aid (Kahn, 1979).

Kahn’s concept of convoy -- the vehicle through which social support is provided -- is measured through three network properties: number in the network, duration of relationship, and frequency of contact with network members. Because an individual’s convoy can change over time, questions regarding recent losses of network members are included in the NSSQ (Norbeck et al., 1981, 1983).

The NSSQ measures (a) total functional support, which includes emotional support and tangible support; (b) total network, which includes number of persons in the social network, duration of relationship, and frequency of contact; and (c) sources of support and recent loss (Norbeck et al., 1983). The NSSQ was designed to present a complex task in a simplified form to participants for self-administration.
(Norbeck et al., 1983). Participants are asked to list up to 20 significant persons (network members) in their lives who provide personal support. In scoring, the source category of relationship for each network member is specified, using a list of nine categories. Categories include spouse/partner; family/relatives; friends; work/school associates; neighbors; health care providers; counselor/therapist; minister/priest/rabbi; and other. The participant rates each network member on a Likert Scale to answer questions on the NSSQ.

Questions one through six of the NSSQ measure each of the functional properties of social support: affect (questions 1 and 2), affirmation (questions 3 and 4), and aid (questions 5 and 6). Three network properties reflect the size, stability, and availability of the network: number in the network; duration of the relationship (question 7); and frequency of contact (question 8). Because the network structure may change overtime, a measure of recent losses of important relationships is obtained (questions 9, 9a and 9b) (Norbeck et al., 1983). This research analyzed scores on emotional support (affect and affirmation), tangible support (aid), sources of support (from the nine categories), and recent loss of important relationships.
NSSQ construct validity, content validity, predictive validity, test-retest validity, internal consistency reliability, and freedom from social desirability bias have been described in the literature (Norbeck et al., 1983). Using Chronbach's alpha, reliabilities of the NSSQ for this research were standardized item alphas of .92 for tangible support, .97 for emotional support, and .97 for total functional support.

**Situation Specific Maternal Support Questions**

Two questions specific to the situation of mothers of infants comprised the supplementary Maternal Support Questions. The questions were designed and administered to correspond with the NSSQ format. The first question asked: If you needed help deciding something about your infant's health how much could this person help you? The second question asked: If you needed information about care and health of an infant how much could this person help you? Using Chronbach's alpha, the reliability for the questions for this research was a standardized item alpha of .98.

**Data Analysis**

Secondary data analysis was used for this descriptive study. Standards for quality research are becoming more stringent while competition for funding is increasing. Secondary data analysis is a cost effective way to conduct research and maintain or enhance its quality (Jacobson,
Hamilton, & Galloway, 1993). Secondary data analysis is cost effective in time and money since three initial stages of the research process are removed -- instrument development, sample selection, and data collection (Gleit & Graham, 1989; McArt & McDougal, 1985). The investigator must, however, still determine the research questions and method for data analysis (McArt & McDougal, 1985).

Other advantages of secondary data analysis include the opportunity for colleague collaboration and mentor-student interaction on topics of mutual interest (McArt & McDougal, 1985). Secondary analysis also may provide a large sample which offers the opportunity for analysis with a variety of statistical methods adding to the study’s empirical quality (McArt & McDougal, 1985). Concerns related to secondary data analysis are its reliability and validity. However, these problems are common to all existing data sets because errors may occur during the stages of design and conceptualization, sample selection, data collection, recording, filing, analysis, and publication (Brown & Semradek, 1992).

Secondary analysis uses data gathered for the purposes of primary analysis (original research) but gives new insight about the research questions, which adds new knowledge about the area under investigation (McArt & McDougal, 1985). This research involved further analysis of
the conceptual areas of the original research and answered new research questions by examining maternal perception of infant health, caregiver burden, and social support.

Secondary data analysis may also be used to address the original questions using different analytic methods and to look at the research questions from a different theoretical perspective (McArt & McDougal, 1985). The Neuman Systems Model was the guiding conceptual framework for this study. Data analytic methods included: descriptive statistics, t-tests for independent samples, and correlations.

**Research Questions**

Descriptive statistics were used to describe the sample. Independent t-tests were used to analyze the following questions:

1. What is the difference in perception of emotional support between mothers of LBW infants and mothers of normal birth weight infants?

2. What is the difference in perception of tangible support between mothers of LBW infants and mothers of normal birth weight infants?

3. What is the difference in perception of percentage of total functional support from support sources between mothers of LBW infants and mothers of normal birth weight infants?
4. What is the difference in perception of situation specific maternal support between mothers of LBW infants and mothers of normal birth weight infants?

5. What is the difference in perception of recent loss of important relationships between mothers of LBW infants and mothers of normal birth weight infants?

Correlations were used for analysis of:

6. What is the relationship between maternal perception of infant health and maternal perception of tangible support in mothers of LBW infants and mothers of normal birth weight infants?

7. What is the relationship between maternal perception of infant health and maternal perception of emotional support in mothers of LBW infants and mothers of normal birth weight infants?

8. What is the relationship between maternal perception of caregiver burden and maternal perception of tangible support in mothers of LBW infants and mothers of normal birth weight infants?

9. What is the relationship between maternal perception of caregiver burden and maternal perception of emotional support in mothers of LBW infants and mothers of normal birth weight infants?
Summary

A cross-sectional descriptive design was used in this secondary analysis of data from a larger study (May, 1990), which examined maternal perception of infant health, caregiving, help seeking, resource use, and social support. Secondary analysis was used to compare perceptions of infant health, caregiver burden, and social support by mothers of low birth weight infants (< 2500 grams) with perceptions of mothers of normal birth weight infants (≥ 2500 grams).

Thirty mothers of low birth weight infants and thirty mothers of normal birth weight infants were participants in this study. Approval for this research was obtained from the Human Subjects Committee of The University of Arizona, and the Research Committee of the College of Nursing, The University of Arizona.

Instruments used for data collection were: Demographic Questions, Infant Health Questionnaire, Caregiver Burden subscale from the Caregiving Questionnaire, Norbeck Social Support Questionnaire, and Situation-Specific Maternal Support Questions. Secondary data analysis was used to further analyze conceptual areas of the original research, ask new research questions, and look at the research questions from a different theoretical perspective -- The Neuman Systems Model. Data analytic methods included:
descriptive statistics, t-tests for independent samples, and correlations.
CHAPTER IV

RESULTS OF ANALYSIS OF DATA

The results of the secondary data analysis are presented in this chapter. Descriptive statistics were used to describe the sample. Independent t-tests and correlations were used for data analysis to answer the research questions. The level of significance in this research was set at $p \leq .05$.

Description of Sample

The description of the sample was obtained from the demographic questionnaire and the demographic section of the NSSQ. The four sections of the sample description include: (a) mothers of LBW infants, (b) LBW infants, (c) mothers of normal birth weight infants, and (d) normal birth weight infants.

Mothers of LBW Infants

The age of the mothers of LBW infants at the time of data collection ranged from sixteen years to forty years ($M = 27.50$, $SD = 6.28$). Twenty (66.7%) mothers were married, eight (26.7%) were single, never married, and two (6.7%) were divorced/separated. There were more Mexican Americans in the LBW subsample. Ethnicity of the sample is presented in Table 1. Eighteen (60%) mothers identified Catholic as their religious preference, four (13.3%) protestant,
### Table 1
Ethnicity of Mothers of LBW Infants and Mothers of Normal Birth Weight Infants (N = 60)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LBW</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexican American</td>
<td>19</td>
<td>63.3</td>
</tr>
<tr>
<td>Caucasian</td>
<td>8</td>
<td>26.7</td>
</tr>
<tr>
<td>African American</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>Native American</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Normal Birth Weight</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexican American</td>
<td>12</td>
<td>40.0</td>
</tr>
<tr>
<td>Caucasian</td>
<td>15</td>
<td>50.0</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>6.7</td>
</tr>
<tr>
<td>African-American</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
<td>100.0</td>
</tr>
</tbody>
</table>
five (16.7%) other, two (6.7%) none, and one (3.3%) did not select a religious preference.

The years of education for the mothers ranged from nine to eighteen years (M = 12.93, SD = 2.07). Nine (30%) mothers stated they were homemakers, six (20%) unskilled workers, five (16.7%) professionals, four (13.3%) clerical workers, two (6.7%) other, two (6.7%) business workers, and one (3.3%) did not respond to the question. The heads of the household’s occupation (if not the mother) were eight (26.7%) skilled workers, eight (26.7%) unskilled workers, five (16.7%) listed as not applicable, four (13.3%) professionals, three (10%) other, and one (3.3%) was a business worker. One (3.3%) did not respond to the question. Most mothers (n=22) in the LBW subsample lived with their partner/husband, as presented in Table 2.

Most mothers perceived their health as excellent (n=7) or very good (n=14), as presented in Table 3. Most mothers perceived their ability to handle their infant’s health needs as excellent (n=10) or very good (n=17), as presented in Table 4.

**LBW Infants**

The LBW infant sample contained fourteen (46.7%) males and fifteen (50%) females, with one missing response to the gender question. Fourteen (46.7%) LBW infants were the first child of the mother; eight (26.7%) were the second
Table 2
People with Whom Mother and Infant Reside (N = 60)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner/husband</td>
<td>22</td>
<td>73.3</td>
</tr>
<tr>
<td>Family/relative</td>
<td>6</td>
<td>20.0</td>
</tr>
<tr>
<td>By themselves</td>
<td>2</td>
<td>6.7</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100.0</td>
</tr>
<tr>
<td>Normal Birth Weight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner/husband</td>
<td>23</td>
<td>76.6</td>
</tr>
<tr>
<td>Family/relative</td>
<td>5</td>
<td>16.7</td>
</tr>
<tr>
<td>By themselves</td>
<td>2</td>
<td>6.7</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100.0</td>
</tr>
</tbody>
</table>
## Table 3
Mothers' Perception of Their Own Health \((N = 60)\)

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LBW Infant Mothers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>7</td>
<td>23.3</td>
</tr>
<tr>
<td>Very Good</td>
<td>14</td>
<td>46.7</td>
</tr>
<tr>
<td>Good</td>
<td>6</td>
<td>20.0</td>
</tr>
<tr>
<td>Fair</td>
<td>3</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Normal Birth Weight</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant Mothers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>12</td>
<td>40.0</td>
</tr>
<tr>
<td>Very Good</td>
<td>6</td>
<td>20.0</td>
</tr>
<tr>
<td>Good</td>
<td>10</td>
<td>33.3</td>
</tr>
<tr>
<td>Fair</td>
<td>2</td>
<td>6.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
<td>100.0</td>
</tr>
<tr>
<td>Variable</td>
<td>N</td>
<td>Percent</td>
</tr>
<tr>
<td>------------------------</td>
<td>----</td>
<td>---------</td>
</tr>
<tr>
<td><strong>LBW Infant Mothers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>10</td>
<td>33.3</td>
</tr>
<tr>
<td>Very Good</td>
<td>17</td>
<td>56.7</td>
</tr>
<tr>
<td>Good</td>
<td>2</td>
<td>6.7</td>
</tr>
<tr>
<td>Fair</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Normal Birth Weight</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant Mothers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>16</td>
<td>53.3</td>
</tr>
<tr>
<td>Very Good</td>
<td>10</td>
<td>33.3</td>
</tr>
<tr>
<td>Good</td>
<td>4</td>
<td>13.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
<td>100.0</td>
</tr>
</tbody>
</table>
child; five (16.7%) were the third child; two (6.7%) were the fourth child; and one (3.3%) was the fifth child. Age of gestation at birth for the LBW infants ranged from twenty-six to thirty-seven weeks (M = 32.37, SD = 2.95). The weight of the LBW infants at birth ranged from 620 to 2465 grams (M = 1712, SD = 519).

The age of LBW infants when they were discharged to home ranged from one to twenty-one weeks (M = 5.13, SD = 4.70). The LBW infant age at the time of data collection ranged from one to twenty-one weeks (M = 6.83, SD = 4.52). Most infants received financial support from the mother’s partner/husband, as presented in Table 5. AHCCCS/public support was the major payor for health care for the infants, as presented in Table 6.

Twelve (40%) LBW infants were using a monitor, and two (6.7%) were using oxygen. One (3.3%) was using a gastric tube, one (3.3%) was using a harness for hips, and nine (20%) LBW infants were on medication. At the time of data collection, none of the infants had been hospitalized since discharge. Six (20%) infants had been seen once by a health professional, three (10%) had been seen twice, one (3.3%) had been seen three times, and one (3.3%) had been seen four times. No mother of a LBW infant reported an infant accident or safety problem. Regarding extra health care beyond what most infants need, only three (10%) mothers
Table 5

Financial Support for LBW Infants and Normal Birth Weight Infants (N = 60)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LBW</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner/husband</td>
<td>15</td>
<td>50.0</td>
</tr>
<tr>
<td>Mother and partner</td>
<td>6</td>
<td>20.0</td>
</tr>
<tr>
<td>AFDC/public</td>
<td>5</td>
<td>16.7</td>
</tr>
<tr>
<td>Mother's money</td>
<td>4</td>
<td>13.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
<td>100.0</td>
</tr>
</tbody>
</table>

| Normal Birth Weight           |    |         |
|Partner/husband                |  9 | 30.0    |
|Mother and partner             | 11 | 36.7    |
|AFDC/public                    |  5 | 16.7    |
|Mother’s money                 |  1 |  3.3    |
|Family/relatives               |  2 |  6.7    |
|Combination                    |  2 |  6.7    |
|**Total**                      | 30 | 100.0   |
Table 6

Payors for Health Care for LBW Infants and Normal Birth Weight Infants (N = 60)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LBW</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AHCCCS/public</td>
<td>11</td>
<td>36.7</td>
</tr>
<tr>
<td>Mother’s money/insurance</td>
<td>10</td>
<td>33.3</td>
</tr>
<tr>
<td>Partner/husband</td>
<td>6</td>
<td>20.0</td>
</tr>
<tr>
<td>Joint insurance</td>
<td>3</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Normal Birth Weight</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AHCCCS/public</td>
<td>15</td>
<td>50.0</td>
</tr>
<tr>
<td>Mother’s money/insurance</td>
<td>8</td>
<td>26.7</td>
</tr>
<tr>
<td>Partner/husband</td>
<td>5</td>
<td>16.7</td>
</tr>
<tr>
<td>Joint insurance</td>
<td>2</td>
<td>6.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
<td>100.0</td>
</tr>
</tbody>
</table>
identified monitor care, two (6.7%) identified extra feeding/nutritional care, and one (3.3%) identified more than usual exercise.

Major infant health problems, as perceived by mothers were: apnea/respiratory problems (26%, n=8); small size/low weight (16.7%, n=5); bradycardia (6.7%, n=2); eating/nutrition (3.3%, n=1); anemia (3.3%, n=1); and being a preemie (3.3%, n=1); Twelve (40%) mothers reported no infant problems. Seven mothers (23.3%) had no major concern about their LBW infants, seven (23.3%) were concerned about heart/breathing, six (20%) were concerned about development, four (13.3%) were concerned that their infant was happy/healthy/okay, two (6.7%) were concerned about growth/small size, two (6.7%) had other concerns, one (3.3%) was concerned about hearing, and one (3.3%) was concerned about death/SIDS. Most mothers perceived their infant's health as excellent (n=14) or very good (n=12), as presented in Table 7.

Mothers of Normal Birth Weight Infants

The age of the mothers at time of data collection ranged from fifteen years to thirty-four years (M = 25.45, SD = 5.69). Seventeen (56.7%) of the mothers were married, twelve (40%) were single, never married, and one (3.3%) was divorced or separated. There were more Caucasian mothers in the normal birth weight subsample. Ethnicity of the
Table 7
Mothers' Perception of Infant Health (N = 60)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>14</td>
<td>46.7</td>
</tr>
<tr>
<td>Very Good</td>
<td>12</td>
<td>40.0</td>
</tr>
<tr>
<td>Good</td>
<td>3</td>
<td>10.0</td>
</tr>
<tr>
<td>Fair</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100.0</td>
</tr>
<tr>
<td>Normal Birth Weight Infants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>21</td>
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<tr>
<td>Very Good</td>
<td>5</td>
<td>16.7</td>
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<tr>
<td>Good</td>
<td>4</td>
<td>13.3</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100.0</td>
</tr>
</tbody>
</table>
subsample of mothers is presented in Table 1. Thirteen (43.3%) mothers identified Catholic as their religious preference, seven (23.3%) had no affiliation, six (20%) had another, and four (13.3%) were protestant.

Mothers reported seven to eighteen years of education ($M = 13.20$, $SD = 2.61$). Nine (30%) of the mothers listed their occupation as unskilled workers, five (16.7%) clerical workers, four (13.3%) professionals, three (10%) skilled workers, and two (6.7%) other. For one (3.3%) subject data were missing. The heads of the household's occupation (if not the mother) were eight (26.7%) professionals, six (20%) unskilled workers, five (16.7%) not applicable, four (13.3%) skilled workers, three (10%) business workers, two (6.7%) homemakers, and one (3.3%) other. For one (3.3%) subject data were missing. Most mothers ($n=23$) in the normal birth weight subsample lived with their partner/husband, as presented in Table 2.

Most mothers perceived their health as excellent ($n=12$) or very good ($n=10$), as presented in Table 3. Mothers perceived their ability to handle their infant's health needs as excellent ($n=16$) or very good ($n=10$), as presented in Table 4.

Normal Birth Weight Infants

The normal birth weight infant sample contained twenty-one (70%) males and nine (30%) females. Twelve (40%)
infants were the second child of the mother, eight (26.7%) the first child, eight (26.7%) the third child, and two (6.7%) the fourth child. Age of gestation for the normal birth weight infants ranged from thirty-six to forty-nine weeks \((M = 39.77, \ SD = 2.24)\). All infants were one week old or less at discharge \((M = 0.03, \ SD = 0.03\%\) . They weighed 2520 grams to 4004 grams \((M = 3389, \ SD = 349)\) at birth. Their age at the time of data collection was one week to six weeks \((M = 1.83, \ SD = 1.02)\).

Most infants received financial support from the mother and partner, as presented in Table 5. AHCCCS/public support was the major payor for health care for infants, as presented in Table 6.

Only one (3.3%) of the normal birth weight infant used special equipment and one (3.3%) was on medication. Six (20%) had been seen once by a health care professional, four (13.3%) twice, and one (3.3%) three times. One (3.3%) had been hospitalized and one (3.3%) had had an accident/safety problem.

Two mothers said their infant required extra health care beyond what most infants need, one needing more talk and play, and one with an unspecified need. Twenty-five mothers (83.3%) perceived their infants as having no major health problem.
Thirteen (43.3%) mothers had no major concern about their infant. Major concerns of other mothers were:
eating/nutrition (20%, n=6); other (16.7%, n=5); hoping infant would be happy/healthy/okay (13.3%, n=4);
heart/breathing (3.3%, n=1); and death/SIDS (3.3%, n=1). Most mothers perceived their infant's health as excellent (n=21) as presented in Table 7.

**Results Related to the Research Questions**

Independent t-tests and correlations were used for data analysis to answer the research questions.

**Research Question One**

The first research question investigated the difference in perception of emotional support between mothers of LBW infants and mothers of normal birth weight infants. An independent t test compared the mean emotional support score of mothers of LBW infants (M = 100.90, SD = 50.67) with the mean emotional support score of mothers of normal birth weight infants (M = 120.67, SD = 66.03). The difference was not statistically significant, as shown in Table 8.

**Research Question Two**

The second research question investigated the difference in perception of tangible support between mothers of LBW infants and mothers of normal birth weight infants. An independent t test compared the mean tangible support score of mothers of LBW infants (M = 46.27,
Table 8

Independent t-Test of Group Difference between Mothers of LBW Infants (n = 30) and Mothers of Normal Birth Weight Infants (n = 30) in Perception of Emotional Support

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBW</td>
<td>100.90</td>
<td>50.67</td>
<td>37-230</td>
<td>-1.30</td>
<td>≤.198</td>
</tr>
<tr>
<td>Normal Birth Weight</td>
<td>120.67</td>
<td>66.03</td>
<td>42-313</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
with the mean tangible support score of mothers of normal birth weight infants ($M = 54.79$, $SD = 30.59$). The difference was not statistically significant, as shown in Table 9.

Research Question Three

The third research question investigated the difference in perception of percentage of total functional support from support sources between mothers of LBW infants and mothers of normal birth weight infants. An independent $t$ test compared the mean total functional support score of mothers of LBW infants with the mean total functional support score of mothers of normal birth weight infants for each of the nine source categories. The difference was not statistically significant. The highest percentage of perceived total functional support was from family, as presented in Table 10.

Research Question Four

The fourth research question investigated the difference in perception of situation specific maternal support between mothers of LBW infants and mothers of normal birth weight infants. An independent $t$ test compared the mean maternal support score of mothers of LBW infants ($M = 55.86$, $SD = 31.74$) with the mean maternal support score of mothers of normal birth weight infants ($M = 64.53$, $SD = 23.32$) with the mean tangible support score of mothers of normal birth weight infants ($M = 54.79$, $SD = 30.59$). The difference was not statistically significant, as shown in Table 9.
Table 9

Independent t-Test of Group Difference between Mothers of LBW Infants (n = 30) and Mothers of Normal Birth Weight Infants (n = 29)* in Perception of Tangible Support

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBW</td>
<td>46.27</td>
<td>23.32</td>
<td>17-109</td>
<td>-1.21</td>
<td>(&lt;.233)</td>
</tr>
<tr>
<td>Normal Birth Weight</td>
<td>54.79</td>
<td>30.59</td>
<td>17-138</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* missing data = 1
Table 10

Percentage of Perceived Total Functional Support from Source Categories of NSSO

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spouse/Partner</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBW</td>
<td>30</td>
<td>14.79</td>
<td>10.44</td>
</tr>
<tr>
<td>Normal Birth Weight</td>
<td>30</td>
<td>10.93</td>
<td>8.31</td>
</tr>
<tr>
<td>Family</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBW</td>
<td>30</td>
<td>55.30</td>
<td>25.56</td>
</tr>
<tr>
<td>Normal Birth Weight</td>
<td>30</td>
<td>59.83</td>
<td>24.23</td>
</tr>
<tr>
<td>Friends</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBW</td>
<td>30</td>
<td>23.25</td>
<td>22.68</td>
</tr>
<tr>
<td>Normal Birth Weight</td>
<td>29*</td>
<td>26.79</td>
<td>19.44</td>
</tr>
<tr>
<td>Work/School Associates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBW</td>
<td>29*</td>
<td>.69</td>
<td>3.69</td>
</tr>
<tr>
<td>Normal Birth Weight</td>
<td>30</td>
<td>.34</td>
<td>1.84</td>
</tr>
<tr>
<td>Neighbors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBW</td>
<td>30</td>
<td>3.14</td>
<td>13.41</td>
</tr>
<tr>
<td>Normal Birth Weight</td>
<td>30</td>
<td>1.11</td>
<td>2.94</td>
</tr>
</tbody>
</table>

continued...
Table 10, Continued

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health Care Provider</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBW</td>
<td>30</td>
<td>1.11</td>
<td>4.13</td>
</tr>
<tr>
<td>Normal Birth Weight</td>
<td>30</td>
<td>.99</td>
<td>2.98</td>
</tr>
<tr>
<td><strong>Counselor/Therapist</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBW</td>
<td>30</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Normal Birth Weight</td>
<td>30</td>
<td>.09</td>
<td>.51</td>
</tr>
<tr>
<td><strong>Minister/Priest/Rabbi</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBW</td>
<td>30</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Normal Birth Weight</td>
<td>30</td>
<td>.22</td>
<td>1.18</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBW</td>
<td>30</td>
<td>1.75</td>
<td>5.55</td>
</tr>
<tr>
<td>Normal Birth Weight</td>
<td>30</td>
<td>.60</td>
<td>3.29</td>
</tr>
</tbody>
</table>

Total: mothers of LBW Infants 100
Total: mothers of normal birth weight infants 100.9
* missing data = 1
The difference was not statistically significant, as shown in Table 11.

Research Question Five

The fifth research question investigated the difference in perception of recent loss of important relationships between mothers of LBW infants and mothers of normal birth weight infants. An independent t test compared the mean loss score of mothers of LBW infants (M = 6.0, SD = 3.77) with the mean loss score of mothers of normal birth weight infants (M = 5.63, SD = 2.0). Most mothers in each subsample had not experienced loss of an important relationship within the previous year. The difference was not statistically significant, as shown in Table 12. Table 13 represents those who responded yes (n = 18) to perceived loss in the past year and their perception of amount of support lost.

Research Question Six

The sixth research question investigated the relationship between maternal perception of infant health and maternal perception of tangible support in mothers of LBW infants and mothers of normal birth weight infants. For mothers of LBW infants, there was a little correlation between the two variables and the relationship was not statistically significant (r = .06, p = .76). For mothers of normal birth weight infants, there was little
Table 11

Independent t-Test of Group Difference between Mothers of LBW Infants (n = 29) and Mothers of Normal Birth Weight Infants (n = 30) in Perception of Situation Specific Maternal Support

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBW</td>
<td>55.86</td>
<td>31.74</td>
<td>18-152</td>
<td>-1.12</td>
<td>&lt;.268</td>
</tr>
<tr>
<td>Normal Birth Weight</td>
<td>64.53</td>
<td>27.76</td>
<td>26-143</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 12

Independent t-test of Group Difference between Mothers of LBW Infants (n = 10) and Mothers of Normal Birth Weight Infants (n = 8) in Perception of Recent Loss of Important Relationships

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBW</td>
<td>6.0</td>
<td>3.77</td>
<td>2.14</td>
<td>.25</td>
<td>≤ .803</td>
</tr>
<tr>
<td>Normal Birth Weight</td>
<td>5.63</td>
<td>2.0</td>
<td>2-8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 13

Perception of Amount of Support Lost within the Past Year
(N = 18)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LBW</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A Great Deal</td>
<td>2</td>
<td>20.0</td>
</tr>
<tr>
<td>Quite A Bit</td>
<td>2</td>
<td>20.0</td>
</tr>
<tr>
<td>Moderate</td>
<td>3</td>
<td>30.0</td>
</tr>
<tr>
<td>None</td>
<td>3</td>
<td>30.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Normal Birth Weight</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A Great Deal</td>
<td>2</td>
<td>25.0</td>
</tr>
<tr>
<td>Quite A Bit</td>
<td>3</td>
<td>37.5</td>
</tr>
<tr>
<td>Moderate</td>
<td>2</td>
<td>25.0</td>
</tr>
<tr>
<td>None</td>
<td>1</td>
<td>12.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>8</td>
<td>100.0</td>
</tr>
</tbody>
</table>

* Table represents those who responded yes (n = 18) to having losses within the past year. Table does not include those who responded no (n = 42) to having losses within the past year.
correlation between the two variables and the relationship was not statistically significant \( (r = .03, p = .89) \).

**Research Question Seven**

The seventh research question investigated the relationship between maternal perception of infant health and maternal perception of emotional support in mothers of LBW infants and mothers of normal birth weight infants. For mothers of LBW infants there was a slight positive correlation between the two variables and the relationship was not statistically significant \( (r = .15, p = .43) \). For mothers of normal birth weight infants there was a slight positive correlation between the two variables and the relationship was not statistically significant \( (r = .18, p = .34) \).

**Research Question Eight**

The eighth research question investigated the relationship between maternal perception of caregiver burden and maternal perception of tangible support in mothers of LBW infants and mothers of normal birth weight infants. For mothers of LBW infants there was a slight positive correlation between the two variables and the relationship was not statistically significant \( (r = .16, p = .41) \). For mothers of normal birth weight infants there was a slight positive correlation between the two variables and the
relationship was not statistically significant ($r = .12$, $p = .53$).

**Research Question Nine**

The ninth research question investigated the relationship between maternal perception of caregiver burden and maternal perception of emotional support in mothers of LBW infants and mothers of normal birth weight infants. For mothers of LBW infants there was a slight positive correlation between the two variables and the relationship was not statistically significant ($r = .16$, $p = .40$). For mothers of normal birth weight infants there was a moderate negative correlation between the two variables, although the relationship was not statistically significant ($r = -.29$, $p = .12$).

**Summary**

The results of secondary data analysis were presented in this chapter. Descriptive statistics were used to describe the sample of thirty LBW infants and their mothers and thirty normal birth weight infants and their mothers. Independent t tests were performed to compare the mean scores of mothers of LBW infants with the mean scores of mothers of normal birth weight infants on perceptions of emotional support, tangible support, percentage of total functional support from each of nine source categories, situation-specific maternal support, and recent loss of
important relationships. There was no statistically significant difference between perceptions of mothers of LBW infants and mothers of normal birth weight infants.

The Pearson Product Moment Correlation Coefficient (r) was used to analyze the relationship between the two variables in each of the correlation questions. There was little relationship between maternal perception of infant health and tangible support, and maternal perception of infant health and emotional support, in mothers of LBW infants and mothers of normal birth weight infants.

There was a slight positive relationship between maternal perception of caregiver burden and tangible support, and maternal perception of caregiver burden and emotional support, in mothers of LBW infants. There was a moderate negative correlation between maternal perception of caregiver burden and emotional support in mothers of normal birth weight infants. The relationships were not statistically significant.
CHAPTER V

CONCLUSIONS AND IMPLICATIONS

The discussion of results, limitations of the study, and implications for nursing are presented in Chapter V. Recommendations for future research are also presented.

Discussion of Results

The goal of health for all by the year 2000 provided the context for this study's focus, recognizing the importance of maternal health in the mother's role as caregiver for her infant. The Neuman Systems Model, which reflects nursing's interest in people as holistic open systems and the environmental influences on the continuum of health, provided the guiding framework for this study. As defined within the Neuman Systems Model, maternal perception of infant health and maternal perception of caregiver burden were considered intrapersonal environmental stressors which may affect the mother's system stability (Neuman, 1989).

Wellness, as energy, is a manifestation of the highest possible level of system stability. Energy conservation is critical to client system stability. Social support was considered as energy conservation (Neuman, 1989). The Neuman Model also focuses on the client's perception or view of the situation, which was relevant for this study on maternal caregivers' perceptions (Fawcett, 1987).
The descriptive statistics from the demographic data showed homogeneity of the two subsamples. Demographic data presented in Table 6 show that 26 (86.7%) mothers of LBW infants and 26 (86.7%) mothers of normal birth weight infants perceived their infant's health as excellent or very good. No mother in the sample perceived her infant's health as less than fair. According to the Neuman Systems Model, an intrapersonal environmental stressor, perception of infant health, may affect the mother's system stability by taking energy or giving energy (Neuman, 1989). An excellent or very good perception of infant health may have given energy to 86.7 percent of the sample mothers through feelings of joy and satisfaction related to their infant's well-being. This may partially explain the lack of statistically significant results in comparing mothers of LBW infants and mothers of normal birth weight infants and incongruencies with the review of literature. Another demographic consideration when examining these results is the ethnicity of the sample, primarily Anglo and Mexican American. Chae et al. (1991) found that the extent to which burden has an adverse effect on the family caregiver depends on cultural factors and perceptions, driven by the social environment which mediate their impact.
Maternal Perception of Emotional Support

The finding of no statistically significant difference in maternal perception of emotional support between mothers of LBW infants and mothers of normal birth weight infants is incongruent with the findings of Richardson (1987), who found that pregnant women experiencing premature labor perceived less affection from people upon whom they depended than pregnant women who were having normal full-term pregnancies. The findings are also different from those of Clipp and George (1990), who found that caregivers with higher caregiving demands were more likely to perceive their support inadequate. Incongruencies may be related to demographic differences and situational differences between the samples in the literature and the sample for this study.

Homogeneity of the two subsamples on many demographic variables and the cultural differences between the LBW and normal birth weight subsamples of this study may, in part, explain the results. The LBW mothers were 63.3 percent Mexican American, in contrast to 26.7 percent Caucasian. The Mexican American culture values the family, interdependence, cooperation, presence, and support (Leininger, 1983; Chae et al., 1991). Therefore, the LBW infant mothers may have perceived more emotional support compared with the normal birth weight infant mothers, who were 50 percent caucasian and just 40 percent Mexican
American. The Caucasian or Anglo-American culture values independence, autonomy, individualism, and self-care (Leininger, 1983; Chae et al., 1991). A total sample of all Caucasian mothers or all Mexican-American mothers might have shown more significant differences between LBW and normal birth weight mothers and perception of emotional support.

Maternal Perception of Tangible Support

The finding of no statistically significant difference in maternal perception of tangible support between mothers of LBW infants and mothers of normal birth weight infants was incongruent with the Brown et al. (1989) study which showed that families of very LBW infants had less economic (tangible) support than the general public. This incongruency may be partially explained by comparing the Brown et al. sample with the LBW subsample in this study. Sixty-five percent of the Brown et al. LBW infant families (N=72) were Medicaid recipients. Just 36.7 percent of the LBW infant subsample (n=30) in this study had AHCCCS/public support as their health care payor. The LBW subsample in this study may have had more tangible support available to them than was available to families in the Brown et al. study. Also, 50 percent of the normal birth weight subsample for this study had AHCCCS/public support as their healthcare payor, which may have minimized any differences
between the two subsamples related to perception of tangible support.

Clipp and George (1990) found that caregivers (N=510) of Alzheimer's family members who perceived the greatest caregiving demands reported the least instrumental or tangible assistance. The findings of Clipp and George (1990) were not supported by this study, which showed little difference between maternal caregivers of LBW infants and normal birth weight infants in their perception of tangible support. The variance may be related to factors which include differences in the sample size, the acuity of care required for the care recipient, the caregivers' perceived need for tangible support and the age and health differences of caregivers studied.

The Richardson (1990) results of less perception of help from the support network by women experiencing preterm labor as compared with full-term pregnant women were not supported in this study. Possible cultural differences between the subsamples in the Richardson study and this study may partially explain the incongruency. This subsample of mothers of LBW infants, 63.3 percent Mexican American, may perceive more tangible support as compared with other samples of LBW infant mothers.

Other demographic variables which may account for the similarities in perception of tangible support between the
two subsamples in this study are the similarity of financial support for the infants, as shown in Table 5, and the higher percent (50%) of normal birth weight infants whose payors for health care are AHCCCS/public health insurance as compared with LBW infants (36.7%), as presented in Table 6.

Perception of Percentage of Total Functional Support from Support Sources

There was no statistically significant difference in perception of percentage of total functional support from support sources for mothers of LBW infants and mothers of normal birth weight infants, as shown in Table 7. The highest percentage of perceived total functional support came from the family. When spouse/partner was included in the percentage, the combined perceived total functional support provided by family and spouse/partner was 70.09 percent for mothers of LBW infants and 70.76 percent for mothers of normal birth weight infants. These data reinforce the homogeneity of the maternal subsamples. The results are similar to the findings of Brust, Leonard, and Sielaff (1992) in their study of mothers of disabled children. The mothers named fathers and family members (88.7%) almost exclusively as those providing help for them (Brust et al., 1992).

The findings in this study are also congruent with the results of the Turner-Henson et al. (1992) study of mothers
with chronically ill children (N=367). Their results indicated that mothers perceived receiving minimal support, but the most support they received came from spouse/partner and family members, as was found in this study.

Similar findings were reported by Norbeck et al. (1983) and Norbeck and Anderson (1989). In the Norbeck et al. (1983) study of employed adults (N=136), the female subsample (n=89) received 86.4 percent of their total functional support from spouse/partner, relatives, friends, or work and school associates. Although this total percent includes support from friends and work and school associates, it reflects the use of the informal support system. A low perception of support from professional sources was found. For the Norbeck study, these results may reflect that the sample was from a nonclinical population of working adults (Norbeck et al., 1983). For the sample in this study, the results may reflect the mothers' positive perceptions of their own health and their infant's health, resulting in a possible lack of need for professional support. Results also could reflect inaccessibility of professional support or cultural differences related to usage of professional support.

Similar results were also reported by Norbeck and Anderson (1989), in their study of psychosocial predictors of pregnancy outcomes in low-income women (N=208), in which
96.6 percent of total functional support was provided by spouse/partner, mothers, and other relatives and friends. These results are supported by the findings in this study and a study of pregnant teens' (N=31), in which teens' mothers, fathers of the unborn child, and other family or relatives were the major sources of support (May, 1992).

**Perception of Situation Specific Maternal Support**

There was no statistically significant difference in perception of situation specific maternal support between mothers of LBW infants and mothers of normal birth weight infants. Little research, as indicated by the literature review, has been done to investigate sources from which mothers obtain information and help specific to infant health and care. However, the study by Leonard et al. indicated that intervention and education programs with specific information for LBW infant mothers whose infants were placed on home monitors positively influenced their perceptions of their infant's health. Also, a visit by a community health nurse the first week post discharge provided the opportunity for mothers of LBW infants to ask specific information about infant care and significantly altered maternal perception of having a difficult first week home. Further investigation of situation specific maternal support is warranted.
Perception of Recent Loss of Important Relationships

There was no statistically significant difference in perception of loss of important relationships within the past year between mothers of LBW infants and mothers of normal birth weight infants. However, thirty percent (n = 18) of the total sample did experience loss of relationships, with fifty percent of these (n = 9) experiencing a great deal or quite a bit of lost support, as presented in Table 13.

The review of literature indicated that very little research has been done on recent loss of supportive relationships in caregiving situations. Further investigation is warranted as supported by the intensity of lost support perceived by mothers who experienced loss in this study and findings of Kelley (1993) and Turner-Henson et al. (1992). Kelly (1993) found that grandparents, as primary caregivers of grandchildren, perceived loss of peer social relationships as a major stressor. Turner-Henson et al. (1992) found that maternal caregivers perceived having minimal support from their social networks, which could indicate possible loss of important relationships. They also found that time constraints caused by caregiving responsibilities decreased time for social/family interaction (Turner-Henson et al., 1992). This could ultimately cause social isolation from family and peers.
Relationship between Maternal Perception of Infant Health and Maternal Perception of Tangible and Emotional Support

There was little correlation between maternal perception of infant health and tangible support, and a slight positive correlation between maternal perception of infant health and emotional support, in mothers of LBW infants and mothers of normal birth weight infants. The positive perception of their infant's health for both subsamples may partially explain the results. Cultural influences in the subsample also may have influenced the results related to the emotional and tangible support variables. With 63.3 percent of the LBW infant mothers Mexican-American, this subsample may have the perception of ample emotional and tangible support compared with the LBW infant samples described in the literature.

Leonard et al. (1992) found that mothers whose LBW infants (n = 19) were placed on home monitors had more positive perceptions of their infants than mothers of nonmonitored LBW infants (n =13), and had a very similar mean score to that of mothers of full-term infants (n =14). In this study forty percent (n = 12) of the LBW infants were using home monitors which, in keeping with the Leonard et al. study, may be associated with positive maternal
perception of infant health, similar to that of the normal birth weight subsample.

Findings of the Brooten et al. (1988) study indicated that multiparas had significantly more depression at the time of LBW infant discharge than primiparas. Fourteen (46.7%) of LBW mothers in this study were primiparas, which may be associated with the positive maternal perception of infant health.

**Relationship between Maternal Perception of Caregiver Burden and Maternal Perception of Tangible Support and Emotional Support**

There was little correlation between maternal perception of caregiver burden and tangible support in mothers of LBW infants, and mothers of normal birth weight infants. And there was a slight positive correlation between maternal perception of caregiver burden and emotional support in mothers of LBW infants. These findings may be influenced by the Mexican-American and Caucasian cultural differences and economic similarities of the subsamples as described in interpretation of results for research questions one and two. However, there was a moderate negative correlation between maternal perception of caregiver burden and emotional support in mothers of normal birth weight infants. This finding suggests that mothers of the normal birth weight infants subsample may have
experienced caregiver burden and a perception of lower emotional support.

The findings of a slight positive correlation between maternal perception of caregiver burden and tangible and emotional support for mothers of LBW infants were incongruent with other studies which had found that the greater the burden of care, the less time for and availability of supportive relationships (DesRosier et al., 1993; Kelley, 1993; Turner-Henson et al., 1992). Using the data analyzed in this study, Hu (1994) found that caregiver burden was inversely related to perception of infant health. Mothers of LBW infants had a statistically significantly higher perception of caregiver burden (Hu, 1993). Perhaps even with increased burden mothers of LBW infants did not perceive their need for social support as exceeding the availability of support.

The relationship between perception of caregiver burden and tangible and emotional support was explored in two studies (Clipp & George, 1990; Tobey & Schrader, 1990). They found that caregivers who perceived the greatest burden and need perceived the levels of tangible and emotional support as inadequate (Clipp & George, 1990; Tobey & Schrader, 1990). However, the relationship between social support and perceived need was not explored in this research and warrants investigation.
McHaffie (1990) found that supportive adults providing aid with child care for very LBW infants helped relieve maternal perception of burden. The mothers in this sample, especially from the Mexican-American culture, may have benefited from the kind of aid described by McHaffie (1990), which could have influenced their perception of burden and ultimately reflected the low correlation between caregiver burden and tangible and emotional support.

**Limitations of the Study**

A larger sample for this study may have provided more statistically significant results, although the sample size was adequate for the statistical analysis used. The homogeneity on the sociodemographic variables in the LBW subsample as compared with the normal birth weight subsample is unusual as indicated by the literature on low birth weight infants. This difference may be related to the high proportion of AHCCCS supported births for all women at the hospital where the sample was selected, as reflected in the subsample of mothers of normal birth weight infants. Therefore, the sample may be of lower socioeconomic status than the general population, which may have influenced the results related to the variables of emotional and tangible support.

Another instrument to measure social support might have been more precise in eliciting differences in this sample,
since many mothers in both subsamples had low socioeconomic indicators. An exception to sample homogeneity was ethnicity, which may have affected the results due to cultural variables, which were not explored in this research.

**Implications for Nursing**

Little research has been done to describe the perception of infant health, caregiver burden and social support of mothers of LBW infants as compared with mothers of normal birth weight infants. The research with this sample (N = 60) indicated no statistically significant differences on the research variables between mothers of LBW infants and mothers of normal birth weight infants. However, Hu (1994) found in a secondary analysis of this sample that the mothers of LBW infants perceived significantly more caregiver burden than mothers of normal birth weight infants. This implies that nurses and mothers must plan interventions aimed at identifying caregiver burden stress factors. The moderate negative correlation between maternal perception of caregiver burden and emotional support for mothers of normal birth weight infants indicates the need for nurses and mothers to plan strategies for prevention of caregiver burden and promotion or utilization of emotional support opportunities.
The demographic descriptive statistics of the sample provide a picture of clients for nurses and other health care providers to explore in planning appropriate, efficient, and cost effective use of resources related to maternal caregivers and their infants. Mothers in this sample may benefit from tangible assistance with infant care, maternal and infant nutritional support, disease prevention, and case management for obtaining necessary resources.

Maternal perception of infant health and mothers' own health was positive for a high percentage of the sample. Preventive and health maintenance strategies can support the positive perceptions of this population. Mothers came from varied cultural backgrounds. Thus culturally based health care, sensitive to individual needs, must be implemented.

Findings indicated the percentage of perceived total functional support from source categories of the NSSQ (Table 7) and showed that caregiver support is family based. Therefore, nurses and other health care providers must plan and implement interventions to support the family system and relate to the contextual functioning of clients. These interventions may include parenting/family education, marital/family counselling, support groups, elder care, respite care and child care.
Recommendations for Further Study

The secondary analysis in this study demonstrated no statistically significant difference in maternal perception of infant health, caregiver burden and social support between mothers of LBW infants and mothers of normal birth weight infants. However, several recommendations for further study can be generated from this research.

The following recommendations for further study are proposed:

1. Replication of this research with a larger sample.
2. A secondary data analysis using these data to investigate the ethnic variables associated with Mexican American and Anglo American maternal perceptions.
3. Research on this population using another instrument to measure the social support variables.
4. Research to investigate maternal perception of social support provided in relation to perceived need.
5. Research to further investigate sources of situation specific maternal support.
6. Research to investigate loss of supportive maternal relationships and the effects on mothers and infants.

Summary

The discussion of results, limitations of the study, implications for nursing, and recommendations for further study were presented in this chapter. The Neuman Systems
Model, which reflects nursing's interest in people as holistic open systems and the environmental influences on system stability was the guiding framework for this study. The review of literature indicated significant differences in maternal perception of infant health, caregiver burden and social support in mothers of LBW infants as compared to mothers of normal birth weight infants.

The secondary analysis in this study revealed no statistically significant difference in maternal perception of infant health and social support between mothers of LBW infants and mothers of normal birth weight infants. A moderate negative correlation between caregiver burden and emotional support was found in mothers of normal birth weight infants.

Recommendations for further research include secondary analysis using the same data base and investigating the ethnic variables to expand nursing knowledge related to cultural diversity, research to investigate maternal perception of social support provided in relation to perceived need, and research to investigate loss of supportive maternal relationships and the effects on mothers and infants.
APPENDIX A

HUMAN SUBJECTS APPROVAL
MEMORANDUM

TO: Mavis Brandos, R.N.
FROM: Leanna J. Crosby, DNSc, RN
       Director of Intramural & Laboratory Research
DATE: November 8, 1994
SUBJECT: Secondary Analysis

Your request to complete a secondary data analysis of the data collected by Dr. Kathleen May has been approved by the Office of Nursing Research.

We wish you success with your research.

LJC/ms
August 3, 1992

Kathleen M. May, D.N.Sc., R.N., C.
Division of Family & Community Nursing
College of Nursing, Room #320
Arizona Health Sciences Center

RE: EXEMPT STUDY/DEVELOPMENT OF AN INSTRUMENT TO MEASURE HELP-SEEKING

Dear Dr. May:

We received your 30 July 1992 memo and accompanying revised version of the Help Seeking Questionnaire and the Parenting Care Questionnaire with addition of item #4. Approval is granted effective 3 August 1992.

Sincerely yours,

William F. Denny, M.D.
Chairman
Human Subjects Committee

WFD: sj
cc: Departmental/College Review Committee
MEMORANDUM

TO: Kathleen May D.N, Sc., R.N., C.
FROM: Leanna Crosby, D.N.Sc, R.N., Director of Intramural Research
DATE: December 16, 1991
SUBJECT: Human Subjects Review: "Development of an Instrument to Measure Help-Seeking"

Your research project has been reviewed and approved by William Denny, M.D., Chairman of the University of Arizona Human Subjects Committee, and deemed to be exempt from review by their full committee. You will be receiving a confirmation letter from Dr. Denny. In addition, your project has been reviewed and approved by the College of Nursing Human Subjects Review Committee. A disclaimer may be used versus a signed consent form. Please be certain that the subjects read the disclaimer prior to giving their oral consent to the research.

We wish you a valuable and stimulating experience with your research.

LC/ga
December 12, 1991

Kathleen M. May, D.N.Sc., R.N., C.
Division of Family and Community Nursing
College of Nursing, Room 320
Arizona Health Sciences Center

RE: DEVELOPMENT OF AN INSTRUMENT TO MEASURE HELP-SEEKING

Dear Dr. May:

We received documents concerning your above cited project. Regulations published by the U.S. Department of Health and Human Services (45 CFR Part 46.101(b)(3) exempt this type of research from review by our Committee.

Please be advised that approval for this project and the requirement of a subject's consent form is to be determined by your department.

Thank you for informing us of your work. If you have any questions concerning the above, please contact this office.

Sincerely yours,

William F. Denny, M.D.
Chairman,
Human Subjects Committee

WFD:sj

cc: Departmental/College Review Committee
APPENDIX B

DISCLAIMER
DISCLAIMER

Development of an Instrument to Measure Help-Seeking

You are invited to participate in a study of mothers of infants. The purposes of this research are: 1) to learn about the ways mothers of infants get the help they want when they have an infant for whom they are providing care; and 2) to evaluate the usefulness of the questionnaires and interview guide used in this study.

If you agree to participate, you will meet the nurse researcher at a convenient place to answer questions on getting help related to caring for an infant, the relationships that are important to you, and general questions like your age and experiences in giving care to your infant. It will take about 30-60 minutes to answer the questions. You may choose not to answer some or all of the questions, if you desire. You may ask questions or stop at any time without affecting your infant's or your own treatment or care by your health care providers. Your identity will be kept anonymous and confidential by the nurse researcher. Your name will not be on the answer sheets. Your answer sheets will be seen only by the nurse researcher and possibly by her faculty sponsor for the research.

There are no known risks or costs except the time it takes to answer the questions. At the end of the questions you will receive $5.00 in cash. There are no other known benefits for you except the chance to share your ideas in this research, which may help others.

If there are any questions, please contact:
Kathleen M. May, DNSc, RNC
College of Nursing
The University of Arizona

Telephone: (602) 626-2707
APPENDIX C

INSTRUMENTS
Demographic Questions

Please fill in the blank or put a check mark next to the answer that applies to you.

1. Length of my pregnancy: _____ weeks

2. My baby is a: _____ (0) boy
   _____ (1) girl

3. When my baby first came home from the hospital he/she was _____ weeks old.

4. My baby is now _____ weeks old.

5. This baby is my _____ (1st, 2nd, etc.) child.

6. My baby/children and I live: (please check one)
   _____ [0] by ourselves
   _____ [1] with my partner/husband
   _____ [2] with family/relatives
   _____ [3] with friends
   _____ [4] other

7. If someone else is "head of household" that person's occupation is: ____________________.

8. My usual occupation is: ____________________.

9. My baby is supported financially mostly by: (please check one)
   _____ [0] my own money
   _____ [1] my partner/husband
   _____ [2] our joint money
   _____ [3] friends
   _____ [4] family/relatives
   _____ [5] AFDC or other public support
   _____ [6] military
   _____ [7] combination

10. My baby's health care is paid for mostly by: (please check one)
    _____ [0] my own insurance
    _____ [1] my partner/husband
    _____ [2] our joint insurance
    _____ [3] friends
    _____ [4] family/relatives
    _____ [5] AHCSS or other public support
    _____ [7] combination

11. My baby receives health care (checkups, immunizations) from:
    _____ [0] a private pediatrician
    _____ [1] a hospital clinic
    _____ [2] the public health department
    _____ [3] other
    _____ [4] military clinic

12. At birth my baby weighed _____ grams
    _____ pounds

13. My baby uses: a monitor. yes no
15. oxygen. yes no
16. a g-tube. yes no
17. other equipment yes no
18. (please list)________________________
19. My baby is on medication.  yes no

20. Since first coming home, my baby has been seen by a physician or nurse _____ times for illness or health problems.

21. My baby has been re-hospitalized _____ times.

22. My baby has had an accident or safety problem (for example, falling) _____ times.

23. My baby has been seen for well-baby check-ups or immunizations _____ times.

24. The extra health care activities (beyond what most babies need) that I do for my baby are:

[25] 

[26] 

27. My baby’s one biggest health problem is:

[28] 

29. My one biggest concern about my baby is:

[30] 

(Please circle the answer that best applies to you and your baby.)

31. Since first coming home from the hospital, my baby’s health has been:
   excellent  very good  good  fair  poor

32. Since my baby first came home from the hospital, my health has been:
   excellent  very good  good  fair  poor

33. I feel my ability to handle my baby’s health needs has been:
   excellent  very good  good  fair  poor
Infant Health Questionnaire

(For each statement, please circle the answer that applies.)

1. My baby has eye problems.
   - strongly agree
   - agree
   - disagree
   - strongly disagree

2. My baby is hard to feed.
   - strongly agree
   - agree
   - disagree
   - strongly disagree

3. My baby's development is progressing well.
   - strongly agree
   - agree
   - disagree
   - strongly disagree

4. My baby has stomach problems.
   - strongly agree
   - agree
   - disagree
   - strongly disagree

5. My baby shows a personality.
   - strongly agree
   - agree
   - disagree
   - strongly disagree

6. My baby eats well.
   - strongly agree
   - agree
   - disagree
   - strongly disagree

7. My baby has breathing problems.
   - strongly agree
   - agree
   - disagree
   - strongly disagree

8. My baby is healthy.
   - strongly agree
   - agree
   - disagree
   - strongly disagree

9. My baby is growing well.
   - strongly agree
   - agree
   - disagree
   - strongly disagree
10. My baby's health problems are serious.
   strongly agree disagree strongly disagree

11. My baby is gaining enough weight.
   strongly agree disagree strongly disagree

12. My baby cries a lot.
   strongly agree disagree strongly disagree

   strongly agree disagree strongly disagree

14. My baby is happy.
   strongly agree disagree strongly disagree

15. My baby sleeps well.
   strongly agree disagree strongly disagree

16. My baby will outgrow present problems.
   strongly agree disagree strongly disagree

17. Using date of birth, my baby is small for this age.
   strongly agree disagree strongly disagree

18. My baby is small for adjusted age (adjusted for prematurity).
   strongly agree disagree strongly disagree
does not apply
CAREGIVING QUESTIONNAIRE

Code:___(1-3) Card__(4)

(For each statement, please circle the answer that applies to you.)

1. My past experience giving care to a baby gives me confidence in giving care to this baby.
   strongly agree disagree strongly agree disagree

2. I had practice giving care to my baby in the hospital.
   strongly agree disagree strongly agree disagree

3. My practice giving care to my baby in the hospital gives me confidence in giving care to my baby at home.
   strongly agree disagree strongly agree disagree

4. My husband/partner talks freely about any concern he may have about the baby.
   always usually half the rarely never have no
   time husband/partner

5. I worry about whether I can handle the equipment (for example, monitor, oxygen, g-tube) my baby needs.
   always usually half the rarely never uses no
   time equipment

6. My husband/partner helps with the care of the baby.
   always usually half the rarely never have no
   time husband/partner

7. When the doctor or nurse tells me the baby is doing well, I have confidence that I am giving good care to the baby.
   always usually half the rarely never not seen by
   time doctor or nurse

8. Giving care to my baby requires more adjustment by my husband/partner than is common with most babies.
   always usually half the rarely never have no
   time husband/partner
9. To protect my baby, I limit who can come into my home.
   always usually half the rarely never
time

10. I am the one responsible for watching my baby for any health problem.
    always usually half the rarely never
time

11. Compared with giving care to most babies, giving care to my baby requires more worry.
    always usually half the rarely never
time

12. Compared with other babies, my baby needs more protection from illness than most babies need.
    always usually half the rarely never
time

13. It is hard for me to have to spend as much time as I do at home with the baby.
    always usually half the rarely never
time

14. Because of my baby, I work less than I want to work at a job outside the home.
    always usually half the rarely never
time

15. Having my baby at home has required a change in home routines.
    always usually half the rarely never
time

16. Giving care to my baby takes more physical energy than would be needed for giving care to most babies.
    always usually half the rarely never
time

17. Compared with other babies, my baby needs more care than most babies.
    always usually half the rarely never
time
18. My concern about my baby makes it hard to sleep at night.
   always usually half the rarely never time

19. I get a break from giving care to my baby when I want.
   always usually half the rarely never time

20. I worry about my baby's health.
   always usually half the rarely never time

21. Giving care to the baby takes all my time.
   always usually half the rarely never time

22. I worry that my baby may be slow in learning or developing.
   always usually half the rarely never time

23. I worry about my baby when I am not with the baby.
   always usually half the rarely never time

24. I get enough sleep.
   always usually half the rarely never time

25. I do not know if I can give the care my baby needs.
   always usually half the rarely never time

26. I am the one who takes my baby for check ups and other health care.
   always usually half the rarely never time

27. Compared with most babies, my baby requires more change in home routines.
   always usually half the rarely never time
28. I keep a positive attitude about giving care to my baby.
   always usually half the rarely never time
29. I stay home at home with my baby.
   always usually half the rarely never time
30. I spend a lot of time taking my baby to appointments with health care and other professionals.
   always usually half the rarely never time
31. I feel well.
   always usually half the rarely never time
32. I am the one who feeds my baby.
   always usually half the rarely never time
33. I am the one who gives other care to my baby.
   always usually half the rarely never time
34. My baby needs more appointments with health care and other professionals than most babies need.
   always usually half the rarely never time
35. I feel confident that I can give good care to my baby.
   always usually half the rarely never time
36. Giving care to my baby takes more time than most babies need.
   always usually half the rarely never time
37. My baby’s progress gives me confidence that I am giving good care to the baby.
   always usually half the rarely never time
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:

<table>
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<tr>
<th>First Name or Initials</th>
<th>Relationship</th>
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<td>1. MARY T.</td>
<td>FRIEND</td>
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<td>2. Bobs</td>
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<td>3. M.T.</td>
<td>MOTHER</td>
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<td>4. SAM</td>
<td>FRIEND</td>
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<td>5. MRS. R.</td>
<td>NEIGHBOR</td>
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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?

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

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GO ON TO NEXT PAGE
Question 3:
How much can you confide in this person?

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

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

1 = ____________________________
2 = ____________________________
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5 = ____________________________
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<th>Question 5:</th>
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<td>If you needed to borrow $10, a ride to the doctor, or some other immediate help, how much could this person usually help?</td>
<td>If you were confined to bed for several weeks, how much could this person help you?</td>
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1 = not at all
2 = a little
3 = moderately
4 = quite a bit
5 = a great deal
<table>
<thead>
<tr>
<th align="left">Question 7: How long have you known this person?</th>
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<td align="left">1 = less than 6 months</td>
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<td align="left">2 = 6 to 12 months</td>
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<td align="left">3 = 1 to 2 years</td>
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<td align="left">4 = 2 to 5 years</td>
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<td align="left">5 = more than 5 years</td>
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<tr>
<th align="left">Question 8: How frequently do you usually have contact with this person? (Phone calls, visits, or letters)</th>
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<tr>
<td align="left">5 = daily</td>
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<td align="left">4 = weekly</td>
</tr>
<tr>
<td align="left">3 = monthly</td>
</tr>
<tr>
<td align="left">2 = a few times a year</td>
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<tr>
<td align="left">1 = once a year or less</td>
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1. __________________________  1. __________________________
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3. __________________________  3. __________________________
4. __________________________  4. __________________________
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PLEASE BE SURE YOU HAVE RATED EACH PERSON ON EVERY QUESTION. GO ON TO THE LAST PAGE.
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?

______ 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
______ family members or relatives
______ friends
______ work or school associates
______ neighbors
______ health care providers
______ counselor or therapist
______ minister/priest/rabbi
______ other (specify) ____________________________

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

______ 0. none at all
______ 1. a little
______ 2. a moderate amount
______ 3. quite a bit
______ 4. a great deal
Number ________________________
Date ________________________

PERSONAL NETWORK

<table>
<thead>
<tr>
<th>First Name or Initials</th>
<th>Relationship</th>
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<tbody>
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</table>
Situation Specific Maternal Support Questions

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

Question 10:
If you needed help deciding something about your infant's health how much could this person help you?

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 11:
If you needed information about care and health of an infant how much could this person help you?

1. ____________________________ 2. ____________________________ 3. ____________________________ 4. ____________________________ 5. ____________________________
6. ____________________________ 7. ____________________________ 8. ____________________________ 9. ____________________________ 10. ____________________________
11. ____________________________ 12. ____________________________ 13. ____________________________ 14. ____________________________ 15. ____________________________
16. ____________________________ 17. ____________________________ 18. ____________________________ 19. ____________________________ 20. ____________________________
21. ____________________________ 22. ____________________________ 23. ____________________________ 24. ____________________________
To enable us to compare the results of this study with people from different groups and situations, we would like some additional information about your background. Please complete the following items.

1. **AGE**
2. **SEX**
   - 1. male
   - 2. female
3. **MARRITAL STATUS**
   - 1. single, never married
   - 2. married
   - 3. divorced or separated
   - 4. widowed
4. **EDUCATIONAL LEVEL**
   What is the highest grade of regular school that you completed? (Circle one)
   
<table>
<thead>
<tr>
<th>Grade School</th>
<th>High School</th>
<th>College</th>
<th>Graduate School</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7 8</td>
<td>9 10 11 12</td>
<td>13 14 15 16</td>
<td>17 18 19 20 21 22</td>
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</tbody>
</table>

5. **ETHNIC BACKGROUND**
   - 1. Asian
   - 2.
   - 3. Caucasian
   - 4. Mexican-American
   - 5. Native American
   - 6. Other (Specify)

6. **RELIGIOUS PREFERENCE**
   - 1. Protestant (Specify)
   - 2. Catholic
   - 3. Jewish
   - 4. Other (Specify)
   - 5. None

7. **PARTICIPATION IN RELIGIOUS ACTIVITIES**
   - 1. Inactive
   - 2. Infrequent Participation (1-2 times a year)
   - 3. Occasional Participation (about monthly)
   - 4. Regular Participation (weekly)
REFERENCES


