A STUDY OF HIGH-RISK MOTHER'S RESPONSE TO MATERNAL TRANSPORTS

by

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This thesis has been approved on the date shown below:

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This manuscript is fondly dedicated to my mother:

Mrs. Josephine Twigg
The researcher wishes to acknowledge the willing cooperation and advice of her thesis committee: Ada Sue Hinshaw, R.N., Ph. D., Chairman; Carol Lindstrom, R.N., Ph. D.; Margarita Kay, R.N. Ph. D.; and Harlan R. Giles, M.D. Sincere gratitude and appreciation are expressed to Lois Prosser, R.N., MSN, who served as a committee member when Carol Lindstrom could no longer remain on the committee.

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ABSTRACT

Modern obstetrical and neonatal care has been successful in reducing maternal, fetal, and neonatal mortality and morbidity rates in the United States. This may be partially attributed to the regionalization of perinatal care. Despite improvements, the management of perinatal care is still under attack. The critics are not only concerned with the quality of life produced but with the psychosocial effects of the care on all family members.

The goal of this study was to contribute to the evaluation of a regional perinatal care system. The study was an initial attempt to measure the level of A-state anxiety (situational anxiety) in new mothers who had been transported to a perinatal center.

Data for the study do not provide evidence that transported high-risk mothers have higher A-state anxiety levels. The data do indicate that high-risk mothers have a moderately high level of A-trait anxiety. This anxiety can be explained by the variables of length of stay on postpartum, the length of stay in labor and delivery, and transport. The results of the study are non-conclusive and suggest that more study is needed.
CHAPTER 1

INTRODUCTION

The primary goal among obstetrical and neonatal health care providers is to reduce the rates of maternal, fetal, and neonatal mortality and morbidity. Since 1970 the United States has ranked 11th to 15th among the developed nations of the world in infant mortality (Ryan, 1974). Studies have indicated that rates of maternal, fetal, and newborn mortality can be reduced if high-risk mothers and their newborns are identified early and intensive perinatal care is appropriately given. It has also been shown that critically ill newborns survive with less damage when they are treated with the best available neonatal techniques and technology (DeGeorge, Nesbitt, and Aubry, 1971; Harris, Isaman, and Giles, 1978).

As an outgrowth of the knowledge and technology for the management of high-risk perinatal patients, there has been a great impetus to improve the care and management of abnormal pregnancies and critically ill newborns. A systems approach is required to make optimal maternal, fetal, and newborn care accessible and available to all pregnant women and their newborns. A regional perinatal care system has been adopted and recommended by the Committee on Perinatal Health (1977). Regionalization requires the development of
a coordinated, cooperative system of health care in a systematic fashion within a geographic area (Lewis, 1976). Under such a system the perinatal consumer is assured access to high-quality perinatal medical and nursing care.

There is growing evidence that a systematic intensive perinatal care system improves the outcome of maternal and neonatal care. However, an evaluation of a perinatal care system can not focus only on the physical health of the mother and infant. The evaluation must also consider the psychosocial effect of the system on the family. The provision of perinatal care on a regional basis may necessitate the transfer of mothers to a center for clinical care; this transfer may be some distance from the pregnant woman's home and family.

The purpose of this study is to further the knowledge about the effect of maternal transports on the high-risk mother. Specifically, the study attempts to determine the mother's emotional response to the transport; that is, the level of anxiety produced by the transport.

Statement of the Problem

This study attempts to answer the question: What is the difference in the level of anxiety between identified high-risk mothers who are transported to a perinatal center and those mothers with identified high-risk pregnancies who are not transported?
Significance of the Study

A regional perinatal care system provides for a systematic method of planning and developing perinatal care programs based on the needs of the population and the resources available. The conceptual models for a regional system consist of three components or levels of graded care (Committee on Perinatal Health, 1977). The three levels of care are: Level I, hospitals whose function is to provide care to uncomplicated maternity and neonatal patients; Level II, hospitals who provide a full range of maternal and neonatal services for uncomplicated patients and for moderately complicated obstetrical patients and certain neonatal illnesses; and the Level III center which may provide care for the uncomplicated patient, but where the primary focus is on the serious maternal, fetal, and neonatal problems.

The Arizona Perinatal Program has developed a specialized, statewide health care system for all pregnant women and their newborns. There are four tertiary centers (Level III) and one secondary center for perinatal care (Level II) in Arizona. The tertiary centers provide consultation services, clinical care, and non-routine diagnostic services for the exceptional high-risk perinatal client (Arizona Perinatal Program News, 1976). The emphasis has been on the reduction of maternal, fetal, and neonatal mortality and morbidity through the development of
sophisticated medical techniques and regionalization of perinatal care.

The problem addressed in this study is significant to nursing because the answers will affect the nursing care given women in their home communities before and after transport. The problem is also significant to nurses in perinatal centers because the answers will assist in planning appropriate nursing intervention for high-risk maternal transport patients.

The problem is significant to the mothers because of the effect that a state of emotional stress and anxiety can have on their physical health, their relationship with their new infant and their family, and the effect this experience may have on future pregnancies.

Finally, the problem is significant because of the increasing numbers of regional perinatal centers developing throughout the United States. As more regional programs for high-risk pregnancies are developed, the problem will become more important to consumers of perinatal care and to the medical and nursing professions. For nursing to neglect the study of the emotional responses associated with the transport of high-risk patients, it would mean that an essential part of modern obstetrical and neonatal nursing care had been omitted,
Theoretical Framework

Lazarus' psychological stress theory proposes that a stressful situation is one which elicits a reaction to circumstances of a threatening significance (Lazarus, 1966). Stressful situations produce psychological and physiological responses; the exact response an individual will have to a stressful situation cannot be predicted. An individual searches the environment for clues about his internal and external environment; then each stimulus or input is evaluated as to its relevance and significance. The core of the analysis is based on the manner in which the person comprehends and interprets any given situation (Lazarus and Aveill, 1972).

In regard to the psychological responses to a threat, two types of anxiety may be described. Spielberger (1972) notes that the first type of anxiety is evoked when a person perceives a particular stimulus or situation as potentially harmful, dangerous, or threatening. Spielberger (1972) also describes a second type of anxiety which refers to a personality trait or individual difference in anxiety proneness. Situational, or the first type of anxiety described, is called A-state anxiety by Spielberger (1972), while the personality type is denoted as A-trait anxiety.

A-Trait anxiety is not directly manifested in behavior, but may be inferred from the frequency and the intensity of an individual's elevations in A-state
Spielberger, 1972). High A-trait individuals, that is, individuals who are anxious, are more vulnerable to stress and they tend to experience anxiety reactions of a greater intensity and with a greater frequency than other individuals.

Figure 1 is a diagrammatic representation of Lazarus' psychological stress theory with A-state anxiety as an ultimate response. In this representation, a stimulus is perceived by the individual to be threatening. The stimulus may activate but does not determine the nature of the response, which depends on the way the individual perceives the situation. When the individual does not know how to handle a threatening situation or perceives that his usual modes of action are blocked by obstacles, Lagerlof (1967) notes that anxiety is most often aroused. As discussed above, this may be spoken of as A-state anxiety. In Figure 1, the obstacles noted by Lagerlof are viewed as personal and environmental barriers that inhibit individual striving toward a secure status.

Psychological studies have shown that a feeling of security is an important need in modern complex societies (Morgan and King, 1966). This feeling of security involves being able to maintain what one has and being assured that the future will be as good as the past. Individuals depend upon other individuals and upon their own internal and
Figure 1. Diagram of Psychological Stress Theory
external environment to help provide and maintain this feeling of security.

Since security is a basic human need, an individual will strive to maintain his security. Personal environmental situations which are perceived as a threat to this secure status may produce an anxiety-state (Lazarus and Aveill, 1972).

Application of Theory to Problem

This study applies the psychological stress theory to transported high-risk mothers. The researcher proposed that a high-risk pregnancy would produce an anxiety situation for the mothers and that a maternal transport for a high-risk pregnancy would produce additional anxiety levels. It is the intent of this study to test the anxiety level produced from a maternal transport.

It is well documented that pregnancy is an emotionally dynamic time. There is general agreement that even a normal pregnancy constitutes a period of transient ego vulnerability marked by minimal regressive changes (McDonald, 1968; Robin, 1962). Pregnancy is an event which precipitates psychological responses as well as psychological changes.

Psychological studies have explored the relationship between emotional factors and obstetrical complications. The most consistent findings among the studies indicate that
women who experience obstetrical complications have higher A-trait anxiety levels than women who have normal, uncomplicated pregnancies and deliveries (McDonald, 1968).

The term high-risk pregnancy is applied to those situations in which the mother and/or the fetus is in potential or actual jeopardy (Stallworthy, 1971). The diagnosis of a high-risk pregnancy is often a shock to the involved couple and causes anxiety about the outcome of the pregnancy and the health of the mother and the unborn infant. At a time when a woman in a normal pregnancy is working on the psychological tasks of pregnancy, the woman with a high-risk pregnancy is working on several additional tasks relating to the risk factors of the pregnancy (Galloway, 1976). The medical risks associated with obstetrical and neonatal complications of pregnancy may be viewed by the mother as a threat to her own feeling of security and to the security and well-being of her unborn infant. The mother's usual methods of coping with stressful situations may be inadequate because (1) she is unable to change the risks relating to the pregnancy, and (2) she is physically unable to remove herself from the perceived threat to her own health and that of her unborn infant.

A person whose secure status has been threatened will look to those things which are familiar and which can restore their feeling of security. There is general agreement among obstetrical nurses that pregnant women look to
significant family members or friends and to their physician for security during their pregnancy, labor, and delivery. The high-risk mother who is transported to a perinatal center may view the transport as an additional threat to her feeling of security because: (1) she is dependent on the health care system for the special medical care needed and (2) she physically is removed from her familiar environment and those individuals on whom she is dependent.

Figure 2 shows the application of the Lazarus psychological stress theory to the specific situation of transporting high-risk mothers to a perinatal care center. The researcher predicted that a mother with an identified high-risk pregnancy will respond to a transport with increased anxiety levels. In Figure 2, a maternal transport for a high-risk pregnancy is the stimulus which may be perceived as a threat to the health of the mother and her unborn infant. The personal and environmental barriers to coping with this perceived threat are the risk factors of the pregnancy, the health care system, the removal of the mother from the environment to which she is familiar, and the mother's level of A-trait anxiety. The combined effect of these factors (stimulus, perceived threat, and personal and environmental barriers) results in a measurable anxiety state,
Figure 2. Diagram of the Psychological Stress Theory as Applied to Research Problem
Statement of Purpose

The purpose of this study is to determine if high-risk mothers who are transported to a perinatal care center have higher levels of anxiety than mothers who are identified as high-risk and are not transported.

Hypothesis

High-risk mothers who are transported to a perinatal center will have higher levels of anxiety as measured by the Multiple Affect Adjective Check List (MAACL) than high-risk mothers who are not transported.

Definitions Specific to the Study

For the purpose of this study, the following definitions of terms were used.

1. Perinatal high-risk pregnancy. A perinatal high-risk pregnancy, as utilized in this study, applies to those situations in which the mother or the fetus is in potential or actual medical jeopardy (Ryan, 1974).

2. Maternal transport. A maternal transport refers to those mothers who are transported via private car, ambulance, helicopter, or aircraft at least twenty-five ground miles to a perinatal center prior to the delivery of their infant.

3. Tertiary perinatal center. A tertiary perinatal center is a health center which provides specialized

4. **A-Trait anxiety.** Spielberger (1972) describes A-trait anxiety as a personality trait or individual difference in anxiety proneness. A-Trait anxiety, as utilized in this study, applies to the anxiety of pregnancy and the high-risk factors of a pregnancy.

5. **A-State anxiety.** A-State anxiety is evoked when a person perceives a particular stimulus or situation as potentially harmful, dangerous, or threatening. A-State anxiety, as used in this study, refers to the anxiety produced by a maternal transport.
CHAPTER 2

LITERATURE REVIEW

The following section reports on areas of published material that relates to the problem of this study. First, there is a discussion of pertinent studies on the psychological effects of pregnancy, the role of emotional factors in obstetrical complications, and the stress of high-risk pregnancies. Next, a review of the studies relating to the effect of anxiety on physical illness and finally, a discussion of articles related directly to regionalization of perinatal care and maternal and neonatal transports.

Psychological Effects of Pregnancy

Pregnancy is a time of physical stress triggering changes in numerous organ systems (McDonald, 1968). Human pregnancy is a biological event and an emotional experience. It begins with a relationship between two people and ushers in a new relationship between them and their new infant. Pregnancy tends to be a time of aloneness for a woman during which she is involved in performing the psychological tasks necessary to enable her to relinquish past gratifications and anticipate those of the future (Chiota, Goolkasian, and Ladewig, 1976).
Rubin (1974) identifies four broad, interdependent tasks which are part of the content and substance of pregnancy "work." The four areas may be described as: (1) seeking safe passage for herself and her child through pregnancy, labor, and delivery; (2) ensuring the acceptance of the child she bears by significant persons in her family; (3) binding into her unborn child; (4) learning to give of herself. The pregnant woman concerns herself with all four tasks concurrently and with equal importance. An impasse in any one task area seems to be directly related either to the abandonment of the pregnancy or to severe stress in maintaining the pregnancy (Rubin, 1974).

Each trimester during the pregnancy brings with it different physiological changes in the woman and requires her to make varying psychological adaptations. In the first trimester, the pregnant woman experiences rather subtle changes in her body. The primary psychological task during the first trimester is to "bind-in" to the idea of the pregnancy (Rubin, 1974). Binding-in during pregnancy is an incorporation of the baby into the woman's own self.

Dramatic changes occur during the second trimester. Following "quickening" the pregnant woman is suddenly aware of the baby (Chiota et al., 1976). The pregnant woman's focus moves from the pregnancy itself to the baby. The pace of being pregnant quickens, and all the tasks of pregnancy are undertaken with more seriousness (Rubin, 1974).
In addition to quickening and enlarging body, there are numerous hormonal changes which occur during the second trimester. These hormonal changes are in response to the increasing maintenance demands of the rapidly developing fetus (McDonald, 1968). The hormones of pregnancy have a cosmetic effect. Most pregnant women's appearance improves during this phase of pregnancy and they feel good. This sense of goodness and self-respect is associated with their heightened awareness of the unborn child (Rubin, 1974).

The third trimester renews the pregnant woman's awareness of the extent and demands of pregnancy. She becomes tired of being pregnant, she feels burdened with the weight of the pregnancy, and she wants it to end. Conflicts develop between her desire to hold on to the child and her desire to let go of the pregnancy (Rubin, 1974). The reality of childbirth becomes apparent during the third trimester. Often pregnant women begin having feelings that they are going to die (Cassidy, 1974).

The process of childbirth reduces the strength and cohesion of the ego (Cassidy, 1974). It is understandable that a pregnant woman may fear labor and delivery. Throughout pregnancy, she has been concerned with a safe passage for herself and her child (Rubin, 1974). With the termination of the pregnancy becoming more apparent, the woman's fear for her own safety, and for the safety of her child becomes heightened. The fears which the pregnant woman
experiences during the last trimester serve to reinforce her sense of helplessness and the feeling that something will happen to her that she cannot control (Cassidy, 1974).

Caplan (1957) sees pregnancy as a period of increased susceptibility to crisis. A crisis may be provoked when a person faces an obstacle to an important life goal (Caplan, 1961). A pregnant woman who perceives childbirth as a threat to her own safety and that of her child is in a state of disequilibrium. Man constantly strives to maintain his equilibrium by using coping mechanisms (Rapoport, 1965). The pregnant woman who is preparing for labor and delivery and who sees childbirth as a threat may find her usual methods of coping ineffective because she has no control over the situation.

Studies of the emotional aspects of normal pregnancies reveal that anxiety is the common denominator in all pregnancies (Cassidy, 1974). The degree of anxiety exhibited during pregnancy and childbirth depends on a number of variables. Klein (1950) identified six childbirth anxieties: (1) the character, structure, and emotional tone of the woman; (2) her attitude toward conception; (3) the woman's educational preparation for labor and delivery; (4) the amount of trust she has in her doctor and nurse; (5) the effect of and response to medications; and (6) the progression of the birth process.
Anxiety develops in all pregnant women regardless of their physical, emotional, or economic status and is expressed in varying degrees throughout the nine months of pregnancy (Cassidy, 1974). Psychological studies have shown that women who experience obstetrical complications have a higher degree of anxiety than women who have normal labors and deliveries (McDonald, 1968). High anxiety levels do influence the relationship between the psychological and physiological changes in pregnancy (McDonald, 1968) and anxiety will influence the character of labor (Cassidy, 1974). The degree of anxiety exhibited by a pregnant woman during pregnancy, labor, and delivery is dependent on: (1) her basic personality, (2) her general adaptations toward the pregnancy, and (3) her attitude toward the conception of the child (Cassidy, 1974).

The Stress of High-Risk Pregnancy

It has been shown that the many special needs and psychological tasks associated with a normal pregnancy do contribute to a stressful time for any woman. However, when this normal stressful situation is compounded by the anxiety that all may not go well with the pregnancy, the mother's reserves are subject to a massive drain. Aside from the normal tasks of pregnancy, the high-risk mother must first accept herself as a high-risk mother; second, she wonders if the pregnancy will accept her; and finally, she must accept
the pregnancy as a risk to herself and to her unborn infant (Galloway, 1976). The diagnosis of an obstetrical complication assumes there is a new threat in relation to the pregnancy.

Once the high-risk mother has accepted her pregnancy as a potential or actual jeopardy to herself or to her unborn infant, she must then set about achieving the maternal tasks of pregnancy as described by Rubin (1974). The task of securing a safe passage for herself and her unborn infant is a difficult one for the high-risk mother because of the uncertainty regarding her own safety and that of her infant.

The high-risk mother most likely goes through emotional trauma in trying to ascertain the acceptance of the infant by her significant others, another maternal task (Galloway, 1976; Rubin, 1974). Considering the high-risk condition, the mother wonders about the normality of the infant and she seeks signs of the father's acceptance of her and of the pregnancy. If the infant is born less than normal, the mother wonders how she can accept the infant and if the father will accept the infant.

Realizing the stresses high-risk mothers are under, the tasks they are trying to achieve, and the special needs which must be met during the pregnancy are important to helping the mother and her family in coping with the risk factors of the pregnancy (Galloway, 1976). When the
diagnosis of a high-risk pregnancy or an obstetrical complication is made late in the pregnancy or at the onset of labor, the mother and her family may not have adequate time to deal with the situation in an appropriate manner.

Effect of Anxiety on Physiological Changes

There is growing evidence that emotional factors alter the outcome of physical illness. Although much of the early work related to anxiety and physiological changes was done on the cardiovascular and nervous systems, it is believed that the findings are applicable to pregnancy and the birth process.

Morris (1935) conducted a classic study of the physiological variables of pulse, blood pressure, and blood sugar as they compared during a state of calm and a state of excitement. The findings of the study indicate that there is an increase in the diastolic and systolic blood pressure during a period of excitement and that a higher blood sugar is produced in prolonged and severe emotional excitement.

Another classic study indicated that the psychological responses of anger and fear produce changes in the physiological system (Ax, 1953). The psychological response of anger stimulates a combined response of epinephrine and norepinephrine. Fear stimulates an epinephrine-like response. Jost et al. (1952) obtained similar results while attempting to measure the central autonomic nervous system activity under physical and psychic stress.
A positive relationship between psychological and physiological functioning does seem apparent. More recent studies show evidence that maternal anxiety alters physiological functions and the progress of labor (Lederman et al., 1978). Crawford (1969) reported that when a laboring woman becomes extremely anxious, the adrenal glands respond by secreting hormones which suppress the uterine muscle contractions. According to McDonald, the concept that emotional factors may causally affect obstetrical complications through adverse physiological alterations seems valid (McDonald, 1968). Operationally, anxiety is suggested as a central factor in psychogenic obstetrical complications.

**Regionalization of Perinatal Care**

The infant mortality rate (IMR) is an index which has been considered an important measure to compare the health status of countries around the world. The infant mortality rate is defined as the number of infant deaths from birth to one year of age in a given year divided by the number of live births in that year (Harrison, 1975). In 1970 the United States had an infant mortality rate of 19.8 and ranked sixteenth with Sweden, Finland, the Netherlands, Norway, and Japan far ahead (World Health Organization, 1972).

The development of specialized neonatal intensive care units in hospitals throughout the country has been an
important development in improving neonatal outcomes. Studies have shown that critically ill newborns who are cared for and treated in a neonatal intensive care unit, with the best available techniques, have significantly less damage than ill newborns treated in non-intensive care units (DeGeorge et al., 1971). Wisconsin developed its first neonatal intensive care unit in 1968. The first year of operation, the center demonstrated a decrease in the state's neonatal mortality rate from 16.9 to 14.9, and by 1970 this rate fell to 12.6 (Schlesinger, 1973).

Specialized neonatal intensive care services are costly to develop and maintain. Ryan (1974) has stated that the cost of developing and maintaining a neonatal intensive care unit is so high that such units should be established only where the need is clear. The cost of establishing a specialized neonatal intensive care units was, and is, prohibitive for many hospitals. To make optimal neonatal services and care appropriate to the needs of the population and available to all, the regionalization of neonatal intensive care units with a program to transport sick newborns to the centers was initiated. Regionalization can increase the economic efficiency of hospital care as well as improve the quality of care available to the population (Harrison, 1975).

The regionalization of intensive care services for high-risk Arizona-born infants began in 1967 under the first
phase of the Arizona State Premature Transport Project (Mast, 1974). Since 1967, all Arizona-born high-risk infants have had access to intensive neonatal care through the Arizona Newborn Transport System, then known as the Arizona State Premature Transport Project. By transporting premature and sick newborns to highly sophisticated newborn intensive care centers, the neonatal mortality rate has decreased from 17.1 per 1000 live births in 1961 to 10.3 per 1000 live births in 1973, a decrease of 40.8% (Harris et al., 1978). Arizona has risen in neonatal ranking from thirty-seventh to third in the nation in prevention of neonatal deaths (Montgomery, 1974; Meyer, 1977).

A regional perinatal care system is a program that emphasizes both quality and economical care to a large population. The first perinatal center providing both intensive maternal and neonatal services was established in Wisconsin in 1971. Wisconsin's regional perinatal centers have reduced perinatal mortality to approximately half that recorded in the precenter era (Schneider and Graven, 1975). In 1975 Arizona was one of eight regions in the United States to receive a five-year grant from the Robert Wood Johnson Foundation for the expansion and development of specialized health care programs for women with high-risk pregnancies and their infants during the perinatal period. The grant is unusual in that it was made jointly to The University of Arizona and the State of Arizona through the
offices of the Arizona Medical Association Foundation. The Arizona Perinatal Program is a program of the Arizona Medical Association Foundation and is therefore a private organization (Twigg, 1979).

The selection of Arizona as one of the eight regional programs can be attributed to a number of factors. Sixth in land size, Arizona presents geographical and population distribution features unique only to certain western states. The state is characterized by mountains, deep canyons, and desert areas. The estimated population in 1975 was 2,250,000, ranking Arizona 32nd among states in population. The majority of the population resides in two of the fourteen counties; Maricopa County with the metropolitan city of Phoenix, contains 33% of the population and Pima County with the city of Tucson, has 20% of the state's population. Although the overall population density in Arizona is nineteen persons per square mile, the density outside the two metropolitan counties is only six persons per square mile. Likewise, the physicians and most of the health care in Arizona are concentrated in these two metropolitan areas (Giles et al., 1977).

Another factor which attributed to the selection of Arizona as one of the regional programs is the Department of Health Services' highly successful Arizona Neonatal Transport System. As shown by Harris et al. (1978), the neonatal
mortality rate in Arizona decreased significantly following
the establishment of regional care for high-risk infants.

The major purpose of the Arizona Perinatal Program
is to focus existing health manpower, technology, and in­
stitutions on the early identification and care of high­
risk pregnant women and their infants. The goal of the
regional perinatal program is to assure all pregnant women
and their unborn infants accessibility to the best available
maternal, fetal, and neonatal health care (Twigg, 1979).

An initial view of the Arizona High-Risk Maternal
Transport System demonstrated that the maternal transport
program is workable, and that it does provide increased
accessibility, acceptability, comprehensiveness, and quality
maternal and infant health care services (Giles et al.,
(1977). More recent data from the Arizona Maternal Trans­
port System begins to demonstrate the expected results of a
regional perinatal care program. The data indicate that the
high-risk maternal transport system broadens the scope of
care to mothers and babies and that a high-risk maternal
transport system further reduces neonatal mortality and
morbidity rates (Harris et al., 1978).

A major element in a regional perinatal care system
is the high-risk maternity center in conjunction with the
neonatal intensive care unit. About 60% of perinatal mor­
tality will occur in the identified high-risk mother (Ryan,
1974). Perinatal mortality rates include neonatal deaths as
well as fetal deaths when the fetus is at least twenty weeks' gestation (Harrison, 1975). As a result of developments in technology and knowledge, the high-risk pregnancy, whether a potential or actual risk to the mother or her unborn child, can be identified earlier and the appropriate management started (Nesbitt and Aubry, 1969).

In a regional perinatal care system with an established maternal transport program, the high-risk mother can be delivered in an intensive care maternity center where her newborn can receive immediate intensive care without the delay of a neonatal transport. There is wide general agreement that the mother is the best transport incubator in existence (Harris, 1976).

**Summary**

This chapter has presented a review of the literature related to the various aspects of the research problem and question. First, works have been cited that indicate that human pregnancy is a biological event and an emotional experience during all three trimesters. Second, studies have been reviewed that show that the diagnosis of a high-risk pregnancy adds a new and threatening dimension to the already stressful situation. Next, there was a review of the literature which shows the effect of anxiety on the physiological functioning of the body. Finally, regionalization of perinatal care is discussed. Studies are
cited which show that regional perinatal care programs are effective in reducing maternal, fetal, and neonatal mortality and morbidity rates. The researcher was unable to find any studies associated with the psychological responses to maternal transport, and no nursing studies on maternal transports have been published. Therefore, this study attempts to address the psychological responses of high-risk mothers to a maternal transport.
CHAPTER 3

RESEARCH DESIGN

This study attempted to determine the emotional responses of high-risk mothers to maternal transports. It was hypothesized that high-risk mothers who were transported to perinatal centers would have higher levels of anxiety than mothers who were identified as high-risk and were not transported. The following sections describe the study design and the measuring scales used in the study.

Design of the Study

A comparative, descriptive design was used to compare A-state anxiety of high-risk non-transport mothers to high-risk transport mothers. A-state and A-trait anxiety levels of both groups of mothers were determined by the administration of two psychological tests. Each test was given to six transported high-risk mothers and nine non-transported high-risk mothers. This design provided a means of accounting for A-trait anxiety which may be associated with the high-risk nature of the pregnancy as well as the personality of the mother. This study investigated the stimulus of maternal transport to higher levels of A-state anxiety as measured by the Multiple Affect Adjective Check List (MAACL).
Criteria for the Study Population

Each mother selected for the study population met the following criteria:

1. Diagnosed as a high-risk pregnancy with one or a combination of the following obstetrical complications: (a) premature rupture of the chorioamnion, (b) premature labor and delivery, or (3) pre-eclampsia/eclampsia.

2. Pregnancy terminated by a vaginal delivery.

3. Was from an Anglo-American background.

4. Was able to read, write, and speak English.

5. Had an infant whose condition was identified as stable, satisfactory, or good by the nursery personnel and by the mother.

6. Was willing to participate in the study (see consent, Appendix A).

7. Had not been and was currently not receiving antidepressant medications.

In addition, mothers in the transport group had to have received their prenatal care somewhere other than the perinatal center and must have been transported at least twenty-five ground miles. Mothers in the non-transport group must have received their prenatal care at the perinatal center and live within twenty-five miles of the center.
A total of fifteen patients met these criteria and were selected for the study. Six of the study population were transported mothers and nine were non-transported high-risk mothers. The study population included those mothers who were admitted to and delivered in the perinatal center between January 10, 1977, and May 15, 1977.

**Data Collection Protocol**

The study was designed to administer the IPAT Anxiety Scale (Cattell and Schéier, 1963) and the Multiple Affect Adjective Check List (MAACL) (Zuckerman and Lubin, 1973) twenty-four hours after transfer from the labor and delivery area. The time chosen to administer the two psychological tests was based on three assumptions which, it was believed, would aid in decreasing the level of anxiety in the mothers. First, twenty-four hours after transfer to the postpartum unit would assure that the mother's obstetrical condition was resolved or stabilized. In the perinatal center where the study was conducted, high-risk mothers are transferred from the labor and delivery area when the mother no longer requires specialized medical treatment or constant care and observation. Second, twenty-four hours after transfer would assure that the infant's condition would be known and/or stabilized. For the purpose of this study, only mothers whose infant's condition was identified as good or stable were admitted to the study.
It was assumed that the mother's level of anxiety would be greater if her infant's condition was unknown or unstable. Finally, the assumption was made that twenty-four hours after transfer to the postpartum unit would provide the mother adequate time to become accustomed to her new hospital environment and the less intense, less constant nursing care provided on a general nursing unit. In a study done on patient's response to transfer from the coronary care unit, it was found that the patients had a higher level of anxiety after transfer from a coronary care unit to a general unit (Verran, 1970). Patients who have been receiving constant, highly skilled nursing care must become adjusted to receiving less constant, less technically skilled nursing care. Thus, it was speculated that high-risk mothers who have been receiving constant, highly skilled nursing care in the labor and delivery area would need time to adjust to a different, less constant type of nursing care on the postpartum unit.

Because of the usual activities on a postpartum unit, the psychological tests were administered to the mothers 16 to 35 hours after transfer. The researcher was careful not to interfere with regular visiting hours or with infant care provided by the mother.

The data collected from each subject were recorded on a raw data sheet shown in Appendix B. In addition to data on the transport, if applicable, and scores on the IPAT
Anxiety Scale and Multiple Affect Adjective Check List (MAACL), general information was also obtained on the maternal age, marital status, parity, length of gestation, number of prenatal visits, length of stay in labor and delivery, the presence or absence of a significant person, and length of time on postpartum after transfer from labor and delivery.

The above general information was used to determine whether the two groups were alike and therefore able to be compared. The researcher felt that these variables would affect A-state anxiety and confound the major effect of transport. IPAT Anxiety Scale total scores were also used to measure A-trait anxiety in the study groups.

The final variable, length of time on the postpartum unit after transfer from labor and delivery, is actually determined by the time the anxiety tests were administered on that unit. As discussed previously, the time chosen to administer the two psychological tests was based on three assumptions which it was believed would aid in decreasing the level of anxiety in the mothers.

**Measurement Tests**

Two psychological tests were selected for this study to measure anxiety levels. These instruments are paper and pencil tests that require an average of ten minutes each to complete. The two tests chosen are the IPAT Anxiety Scale
and the Multiple Affect Adjective Check List (MAACL). The next sections give pertinent details regarding these psychological measures of anxiety.

**IPAT Anxiety Scale**

The Institute for Personality and Ability Testing (IPAT) Anxiety Scale is based on extensive statistical factor analysis research with normal and clinical cases leading to a knowledge of anxiety structure. The construct validity for the IPAT Anxiety Scale is estimated at +.85 to +.90 for the total scale. Test-retest reliability for the total scale score is reported as $r = +.87$ to $+.93$ (Cattell and Scheier, 1963). The IPAT Anxiety Scale consists of forty questions. It is self-administering and takes only five or ten minutes of the examinee's time (Cattell and Scheier, 1963).

**Multiple Affect Adjective Check List (MAACL)**

The Multiple Affect Adjective Check List (MAACL) test is designed to measure A-state anxiety, depression, and hostility in persons with at least an eighth grade reading comprehension level. The retest reliabilities for the MAACL Anxiety test is reported as .68 for the "General" form and as .31 for the "Today" form. The borderline reliability of the "Today" form ($r = .31$) does measure daily changing anxiety levels. Criterion validity studies suggest the
instrument can be useful for studying generalized negative affect such as anxiety (Zuckerman and Lubin, 1973). The test is in the form of a questionnaire, it is easy to administer and required approximately five to ten minutes for completion (Zuckerman and Lubin, 1973).

The MAACL test consists of two forms, a long (132-item) and a shorter (48-item) version; each form includes three subscales to measure A-state anxiety, depression, and hostility. For both the long and the shorter forms, a "Today" and a "General" test are available. The "Today" test is relevant to describing the present mood and feeling of the respondent and the "General" form is intended to describe longer-range tendencies in affect (Zuckerman and Lubin, 1973).

Because the researcher was interested in an inclusive measure of the subject's present state, only the "Today" portion of the long MAACL version was administered. This scale consists of adjectives which are descriptive of moods or feelings. The respondent checks the adjective which she feels is applicable to her feelings. Scale items are keyed with a plus (+) if check or a minus (−) if not checked. Total scores for each scale are computed separately by summing the number of plus (+) items and the number of certain keyed items not checked.

The MAACL test was administered to both groups of mothers to determine if there was a difference in the level
of A-state anxiety between the two groups. The purpose of this study was to determine if high-risk mothers who were transported to a perinatal center would have higher levels of A-state anxiety immediately postpartum than mothers who were identified as high-risk and were not transported.

**Statistical Analysis**

Using a Student's t for the difference between means, groups were compared on age, parity, length of gestation, number of prenatal visits, length of stay in labor and delivery, length of time on postpartum after transfer from labor and delivery, and IPAT Anxiety Scale total scores. A chi square test of independence was used to compare the two groups on the categorical variables of marital status and presence of a significant person. A Student's t was also used to test the difference between mean MAACL scores in order to test the hypothesis of the study.

In addition to the above analyses which relate to the specific study purpose, a multiple regression with a stepwise solution was performed. This analysis was used to determine what variables, of those measured, contributed most to the levels of anxiety associated with the high-risk pregnancy, which, in this study, has been identified as A-trait anxiety as measured by total IPAT Anxiety Scale scores. For this analysis, the total IPAT Anxiety Scale
score was the dependent variable and age, marital status, parity, length of gestation, number of prenatal visits, length of stay in labor and delivery, presence or absence of a significant person, length of time on postpartum after transfer, and whether transported or not served as the multiple independent variables.

The significance level for all analyses was set at .10 due to the limited size of the sample.
CHAPTER 4

PRESENTATION AND ANALYSIS OF DATA

This chapter presents the statistical analysis of the data collected from the study described in the previous chapters. First, the demographical characteristics of the non-transport and transport mothers are discussed. This is followed by a presentation of the data as related to the stated hypothesis in this study. The last section presents data from the multiple regression analysis in an attempt to explain basic levels of A-trait anxiety.

Demographical Characteristics of the Population

As described in the preceding chapter, a total of fifteen non-transported and transported high-risk mothers were admitted to the study. The diagnosis of the high-risk pregnancy was made immediately prior to transportation/admission to the perinatal center or at the time of admission to the labor and delivery area in the center. During the researcher's postpartum interview with each mother, the mothers gave evidence that they were knowledgeable regarding their pre-delivery condition and the accompanying risks to themselves and to their unborn infants. The transported mothers were given an explanation for the purpose of
their transport by their primary physician before transport. The non-transported mothers were informed of their obstetrical problem in the outpatient clinic just prior to admission or at the time of admission to the labor and delivery area. The mode of transport for the transported mothers was via ambulance, helicopter, or private car.

Table 1 gives the characteristics of the sample for the continuous variables. The mothers had a total mean age of 22.46 years with the transported mothers having a mean age of 22.66 years and the non-transported mothers a mean age of 22.33 years. The transported mothers had a mean of 2.66 pregnancies, and the non-transported mothers had a mean of 2.11 pregnancies. Gestation was recorded in weeks with the mothers in both groups having a mean gestation of 37.20 weeks. The transport mothers had a mean gestation of 35.16 weeks with the non-transport mothers having a mean gestation of 38.55 weeks. The mean number of prenatal visits was 8.00 for both groups of mothers. The transport mothers had a mean of 6.33 prenatal visits, and the non-transport mothers had a mean of 9.11 prenatal visits. Length of stay in labor and delivery was recorded in hours with both groups of mothers having a mean of 29.53 hours. The transported mothers had a mean of 46.83 hours in labor and delivery, and the non-transport mothers had a mean stay in labor and delivery of 18.00 hours. The length of stay on the postpartum unit was recorded as the number of hours
Table 1. Demographic, Obstetrical, and Trait Anxiety Characteristics of Sample

<table>
<thead>
<tr>
<th></th>
<th>Length of Stay</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Age</td>
</tr>
<tr>
<td>Transport (N = 6)</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>22.66</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>4.13</td>
</tr>
<tr>
<td>Non-Transport (N = 9)</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>22.33</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>2.64</td>
</tr>
<tr>
<td>Total (N = 15)</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>22.46</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>3.18</td>
</tr>
<tr>
<td>t-test*</td>
<td>-.18</td>
</tr>
<tr>
<td>Probability Level</td>
<td>.86</td>
</tr>
</tbody>
</table>

*Degrees of Freedom = 13.
after transfer from labor and delivery that the mothers completed the two anxiety tests. The mothers had a mean of 26.46 hours on the postpartum unit. The transported mothers had a mean stay on the postpartum unit of 24.66 and the non-transported mothers had a mean stay of 27.66 hours on the postpartum unit. The mothers had a mean score of 33.33 on the Total IPAT anxiety scale. The transported mothers had a mean score of 31.50 on the Total IPAT and the non-transport mothers had a mean score of 34.55 on the Total IPAT. The tests for difference between the means of each variable are non-significant at the stated level. Therefore, the groups, transport and non-transport mothers, may be considered alike in these variables.

It is interesting to note that while the variables were non-significant at the stated level, the mean gestation and length of stay in labor and delivery were different between the two groups. The transported mothers had slightly more premature labor and deliveries with a difference in the mean gestation of 3.39 weeks. The transported mothers also stayed in the labor and delivery area longer than the non-transported mothers, a difference of 28.83 hours in the mean length of stay between the two groups. The findings related to the variables of gestation and length of stay in labor and delivery are non-conclusive and indicate that further study is needed.
Table 2 gives the characteristics of the sample for the categorical variables of marital status and presence of a significant person. There were a total of fifteen mothers in the study with eleven of the mothers married and four single. Five of the transported mothers were married, and one mother was single. Six of the non-transported mothers were married and three were single. Twelve of the mothers in the study had a significant person with them and three mothers were alone. Five of the transported mothers had their husbands with them during transport, labor, and delivery. The transported mother who was single was alone during transport, labor, and delivery. Seven of the non-transported mothers had a significant person with them during labor and delivery and three mothers were alone. The chi square tests were non-significant. Therefore, the transported and non-transported mothers may be considered alike on these variables.

As indicated in Table 1, there was no difference in the level of A-trait anxiety experienced by the two groups of mothers as measured by the IPAT Anxiety Scale. A score of 37 indicates a high level of anxiety as measured by the IPAT Anxiety Scale. Thus, both groups of mothers were experiencing moderately high levels of anxiety at the time the psychological tests were administered. The high standard deviation of 12.51 for these data indicates a high
Table 2. Marital Status and Personal Support Characteristics of Sample

<table>
<thead>
<tr>
<th></th>
<th>Non-Transport (n = 6)</th>
<th>Transport (n = 9)</th>
<th>Total (n=16)</th>
<th>Chi Square</th>
<th>df</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>5</td>
<td>6</td>
<td>11</td>
<td>.51</td>
<td>1</td>
<td>.46</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>9</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significant Person</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>5</td>
<td>7</td>
<td>12</td>
<td>.10</td>
<td>1</td>
<td>.75</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>9</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

degree of variability in the subjects on the measure of A-trait anxiety.

Findings Related to the Hypothesis

The hypothesis of this study stated that high-risk mothers who are transported to perinatal centers will have higher levels of anxiety as measured by the Multiple Affect Adjective Check List (MAACL) than high-risk mothers who are not transported.

Each respondent in the transported and non-transported group completed the two psychological tests described earlier. The data from the MAACL were analyzed using the t-test and are summarized in Table 3. The MAACL was administered to both groups of mothers to determine if
Table 3. Difference Between Mean Scores on A-State Anxiety Instrument (MAACL)

<table>
<thead>
<tr>
<th></th>
<th>No.</th>
<th>Mean Score</th>
<th>Standard Deviation</th>
<th>t-test</th>
<th>df</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport</td>
<td>6</td>
<td>6.33</td>
<td>3.01</td>
<td>-.48</td>
<td>13</td>
<td>.639</td>
</tr>
<tr>
<td>Non-Transport</td>
<td>9</td>
<td>5.55</td>
<td>3.12</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

there was a difference in the level of A-state anxiety between the two groups. As outlined in Table 3, the raw scores on the MAACL psychological test for anxiety were slightly higher for the transported mothers than for the non-transported mothers. The slightly higher raw scores for anxiety are not statistically significant at the designated .10 level. Therefore, the hypothesis of a difference in A-state anxiety between transported and non-transported high-risk mothers is rejected.

Data Related to Anxiety Due to High-Risk Pregnancy

Results of the IPAT Anxiety Scale indicated a moderately high level of anxiety for the mothers in the two groups, the transported and non-transported mothers. This anxiety, as measured by the IPAT Anxiety Scale, may be attributable to the mothers having a high-risk pregnancy; that is, a pregnancy which is a real or potential danger to the mother or to her unborn infant.
An attempt was made to determine those variables that significantly influenced this high-risk anxiety. Using multiple regression analysis, the dependent variable, total IPAT Anxiety Score, was regressed on nine independent variables identified in this study. These variables are:

1. Maternal age,
2. Marital status,
3. Length of stay on postpartum unit,
4. Length of stay in labor and delivery,
5. Transport/non-transport,
6. Parity,
7. Gestation,
8. Number of prenatal visits,
9. Presence or absence of significant person.

In other words, this analysis is concerned with the amount of variation in A-trait anxiety, as measured by the IPAT Anxiety Scale, that can be explained by linear dependence upon the nine independent variables operating jointly.

The multiple regression analysis done with this problem indicated that only three of the nine independent variables significantly influenced the explanation of A-trait anxiety. These data are given in Table 4. This table shows the unstandardized regression coefficients ($b$), the standard error for each of these coefficients, and the probability level for the individual $b$'s. In addition, $R^2$ is noted at the bottom of the table. This value indicates that 67.62% of the variation in anxiety may be explained by linear combination of the length of time on postpartum, length of stay in labor and delivery, and
Table 4. Regression Coefficient of Three Variables Significantly Influencing A-Trait Anxiety of High-Risk Mothers (IPAT Anxiety Scale)

<table>
<thead>
<tr>
<th>Variable</th>
<th>b</th>
<th>Standard Error B</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of time on post-partum</td>
<td>1.38</td>
<td>0.40</td>
<td>0.006</td>
</tr>
<tr>
<td>Length of stay in labor and delivery</td>
<td>-.28</td>
<td>0.08</td>
<td>0.006</td>
</tr>
<tr>
<td>Transport</td>
<td>9.22</td>
<td>5.00</td>
<td>0.094</td>
</tr>
<tr>
<td>(Constant)</td>
<td>1.25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[ R^2 = .67625; \ F = 7.65908; \ Significance = .005; \ N = 15 \]

whether the mother was transported. The \( R^2 \) is 7.65908 and is significant at the .005 level.

A step-wise regression was used for this problem. This technique enters first the independent variable that has the highest correlation with the dependent variable and proceeds next to the independent variable that adds the most to the \( R^2 \). This procedure continues with all variables which add a specified amount to the \( R^2 \) value. Criteria for inclusion of a variable into the equation were an \( F \) value of at least .01 and a tolerance value of .001. Of the ten possible independent variables that could be added to the regression only the three noted in Table 4 influenced the anxiety level significantly; therefore, the remaining six independent variables will not be considered further.
For the length of stay on postpartum, the $b$ was 1.38 with a standard error of 0.40 and a probability level of 0.006. The data on the length of stay in labor and delivery shows a $b$ of -0.28 with a standard error of 0.08 and a probability level of 0.006. The length of stay in labor and delivery has a negative relationship with the anxiety as measured by the IPAT Anxiety Scale and the variable which indicates that the longer the length of stay in labor and delivery the lower the anxiety. Table 4 also shows that the independent variable of transport has a $b$ of 9.22 with a standard error of 5.00 and a probability level of 0.094. The other six variables did not evidence this significance and each added less than 1% to the $R^2$. 
CHAPTER 5

DISCUSSION OF THE STUDY

This chapter includes a discussion of the analysis of the data as it relates to the hypothesis and to anxiety. The implications of this study to perinatal nursing is presented along with the discussion; and finally, recommendations are given for further study relating to high-risk pregnancies and to the psychological responses to maternal and neonatal transports.

Analysis of Data Relating to the Hypothesis

The regionalization of perinatal care services in the United States is an attempt to decrease the rate of maternal, fetal, and neonatal mortality and morbidity. Studies have shown that the outcome of high-risk pregnancies is improved with the development of a regional perinatal care system which includes a program for transporting high-risk mothers and/or newborns to a perinatal center (DeGeorge et al., 1971; Schlesinger, 1973; Giles et al., 1977; Harris et al., 1978). Regionalization of perinatal care in one approach which will help meet the consumer's rising expectations for quality health care and accessibility to that care. However, little is known about the psychosocial
effect that a regionalized perinatal care system has on the high-risk mother or her family.

The purpose of this study was to further the knowledge relating to the emotional responses of mothers to maternal transports. The researcher proposed that transported high-risk mothers would have increased levels of anxiety as a result of the transport. It was hypothesized that high-risk mothers who are transported to perinatal centers would have higher levels of anxiety as measured by the Multiple Affect Adjective Check List (MAACL) than high-risk mothers who were not transported. The hypothesis was not supported. Several factors may have contributed to the non-support of the hypothesis.

The first, and most significant, of these factors was the size of the study population. As described, the study included nine high-risk non-transported mothers and six high-risk transported mothers. Three of the criteria used for the selection of the study population tended to restrict the size of the sample. These criteria were: (1) mothers from an Anglo American background; (2) mothers whose pregnancies were terminated by a vaginal delivery, and (3) mothers whose infants were identified as stable, satisfactory, or good by the nursery personnel and the mother.

The intent of the restrictions was to control the number of variables which would affect the level of anxiety experienced by high-risk mothers. Ethnic characteristics
were perceived as a variable which would affect the expression of an emotional response to maternal transports. In the perinatal center where this study was done, sixty-one per cent of the maternal transports to the center are from an Indian, Spanish, Black or Oriental background (Giles et al., 1977). This variable was the most significant factor limiting the size of the sample.

The two other variables that were responsible for limiting the size of the sample were those restricting the population to only mothers who delivered vaginally and whose infants were stable, satisfactory, or good. As would be expected, the incidence of Cesarean births and infants who have problems in the initial period following delivery is higher in high-risk pregnancies.

The maternal transport mothers' previous association with the perinatal care center or their knowledge of the care provided mothers and newborns at the center may have been a second contributing factor in the non-support of the hypothesis. Five of the transported mothers had heard of the perinatal center and the maternal transport system before they were transported. These mothers said they were "relieved" when they learned they were being transported. One transported mother who delivered premature twins stated that she had heard "so many good things about the intensive care nursery at the center" that she knew her babies were getting "the best care available." This same mother said
that the MAACL test was missing a word which best described her feelings; that word was "smug."

The researcher proposed that the transported mothers who were not accompanied by a significant person would have more difficulty coping with the transport; thus this would influence the level of anxiety experienced by the transported mothers. Five of the transported mothers had their husbands accompany them on the transport and remain with them throughout their stay in the labor and delivery area. Because of the small sample, the relationship between this variable, anxiety, and the transport was not able to be determined.

Review of Data Relating to Anxiety

Studies have indicated that a normal, uncomplicated pregnancy is an emotional, stressful experience (Caplan, 1961; Cassidy, 1974; Klein, 1950). Anxiety is a common experience associated with pregnancy regardless of the pregnant woman's physical or emotional status. The diagnosis of an obstetrical complication is often a shock and causes additional anxiety in the pregnant woman (Galloway, 1976). Concerns regarding the outcome of the pregnancy produces additional stress which must be dealt with by the pregnant woman. The potential risk of a high-risk pregnancy to the mother's health and the health and safety of her
unborn infant adds a new and threatening dimension to her already emotional state.

For the purpose of this study, the IPAT Anxiety Scale was administered to both groups of high-risk mothers as a measure of the anxiety resulting from the pregnancy. The data from this study show that the high-risk mothers were experiencing moderately high levels of anxiety. This anxiety may be attributable to the length of stay in labor and delivery, length of stay on postpartum, and transport. The influence of high-risk pregnancies on the level of anxiety experienced by the pregnant women needs to be further studied.

The level of anxiety experienced by all pregnant women is significant to nursing and to the planning and implementing of nursing care to pregnant women and new mothers. Nursing has an obligation to the consumers of perinatal care to develop nursing standards and nursing practice which will assure quality care. This care must assure the recognition of needs and the planning of perinatal care to meet those needs. The influence of a high-risk pregnancy and/or a maternal or neonatal transport on the anxiety mothers experience must be considered in the planning of nursing care and the follow-up care for high-risk mothers in a regional perinatal care program. A study is needed that would compare the anxiety experienced by
high-risk mothers with that experienced by non-high-risk mothers.

As mentioned, this study indicated that there were three primary variables which contributed significantly to the anxiety experienced by the two groups of high-risk mothers. The variables were: (1) the length of stay on the postpartum unit after transfer from the labor and delivery area, (2) length of stay in labor and delivery, and (3) transport.

The first of these variables was the length of stay on the postpartum unit after transfer from labor and delivery. One of the issues that may have influenced this variable's relationship on the mothers' anxiety levels is the length of hospitalization following transfer from the labor and delivery area. This is comparatively short for most obstetrical patients. Several of the mothers in the study population were either anticipating discharge or were discharged from the hospital at the time the psychological tests were administered.

The high-risk mothers' feelings of readiness for discharge and her understanding of the high-risk factors of this pregnancy and the implications of this pregnancy on future pregnancies may have influenced the level of anxiety demonstrated in this study. Little is known about the high-risk mother's perceptions of her preparedness for self care or infant care following discharge.
Much time and effort has been spent on identifying the high-risk factors of a pregnancy and in developing knowledge and technology which will improve the outcome of high-risk pregnancies. Little effort has been focused on the emotional needs of the high-risk mother either prenatally or during the postpartum phase of the pregnancy. Nursing must accept the responsibility for assessing the needs of the high-risk mother and for developing nursing care practices which will meet the needs of these mothers. Discharge planning must be an integral part of obstetrical and neonatal nursing care. The planning and coordinating of care between the perinatal center and the community is a vital role of all nurses caring for high-risk perinatal patients.

The second variable which contributed significantly to the anxiety experienced by the two groups of high-risk mothers was the length of stay in the labor and delivery area. The length of stay impacted negatively on A-trait anxiety. This negative relationship is consistent with other studies. One such study is that by Verran (1970). As demonstrated in that study, the correlation between the length of stay in a coronary care unit and the level of anxiety following a transfer from the unit indicated that the shorter the association of the patient with skilled care the higher the level of anxiety following a transfer.
In this study, the negative impact by the variable length of stay in labor and delivery on A-trait anxiety indicated that the mothers who had a shorter stay in labor and delivery had higher levels of anxiety at the time the psychological tests were administered. The implications of the higher level of anxiety experienced by mothers who are transferred to the postpartum unit following a shorter stay in labor and delivery is significant to postpartum nurses. Further study needs to be done to determine the nursing care needs of these mothers and the care which is effective in reducing the anxiety.

The final factor which significantly added to the explanation of the level of A-trait anxiety experienced by high-risk mothers was the variable of transport. Whether or not the mother was transported did affect the baseline level of anxiety. That is, it was influential in explaining the anxiety level of high-risk mothers in association with the above two variables.

Recommendations for Future Study

The findings of this study indicate that while maternal transport mothers did not evidence increased anxiety levels, high-risk mothers have a moderately high level \( R^2 = .67 \) of A-trait anxiety that can be explained by a linear combination of the length of stay in postpartum, time in labor and delivery, and transport. The results of
this study suggest that more investigations need to be done involving the high-risk pregnancy and maternal transports. Recommendations for future nursing study include:

1. Replication of this study with a larger sample and with more sensitive psychological instruments. This study should include all maternal transport mothers and should involve other regional perinatal centers.

2. Investigation of the level of anxiety experienced by maternal transport patients at various time-spans following the transport.

3. Investigation of family members' psychosocial responses to maternal and neonatal transports, and to high-risk pregnancies using anthropological methods of data collection.

4. Further investigation of the anxiety level produced by high-risk pregnancies as compared to the levels of anxiety experienced by a normal, uncomplicated pregnancy.

5. Further investigation of the anxiety levels produced by maternal transports as compared to the anxiety produced by neonatal transports.

6. Investigation of the coordination and the continuity of care in a regional perinatal system.

7. Experimental study that explores the effects of nursing intervention on the reduction of anxiety in
high-risk pregnancies. This study to include the prenatal, antepartum, and postpartum phases of the pregnancy.
CHAPTER 6

SUMMARY

The study described in the preceding chapters was an attempt to further the knowledge about regionalized perinatal care. A psychological stress theory was applied to a specific health care situation. The theory proposes that a stressful situation is the reaction to a circumstance of threatening significance. Security is a basic human need; this need becomes more intense when threatened. Anxiety results if the individual's efforts to maintain his/her security are blocked by personal and/or environmental barriers. The specific situation investigated in this study involved the transporting of high-risk mothers to a perinatal center.

Purpose of the Study

The purpose of the study was to determine if high-risk mothers who are transported to a perinatal center have increased levels of anxiety as a result of the transport. Regionalization of perinatal care is designed to transport the high-risk mother to a perinatal center specifically equipped and staffed to care for her and her unborn infant.

The problem which was explored in the study attempts to answer the question: What is the difference in the level
of A-state anxiety between identified high-risk mothers who are transported to a perinatal center and those mothers with identified high-risk pregnancies who are not transported? This problem is significant to health professionals and to consumers of regional perinatal care systems because: (1) the answers will affect the type of care required in various aspects of the perinatal care system; (2) increased anxiety affects the mother and her relationship with her infant and family; and (3) the number of regional perinatal care programs are increasing throughout the country.

The literature summarized in the study reviews studies on the psychological effects of pregnancy, the role of emotional factors in obstetrical complications, the physiological effects of anxiety, stress in high-risk pregnancies, and specific studies relating to neonatal and maternal transport programs. Few references or studies specific to maternal transports are available. The researcher was unable to find any studies associated with the psychological responses to maternal transport, and no nursing studies on maternal transports have been published.

Methodology

A comparative, descriptive design was used to test the emotional response of high-risk mothers to maternal transports. The design involved administering two psychological tests to transported and non-transported mothers
between sixteen and thirty-five hours after they were transferred from the labor and delivery area. The Institute for Personality and Ability Testing (IPAT) Anxiety Scale and the Multiple Affect Adjective Check List (MAACL) were used to measure the level of anxiety in each group of mothers. For the purpose of this study, the total score of the IPAT Anxiety Scale was designed to measure the A-trait, the level of anxiety proneness as a personality trait, in both groups. The MAACL "Today" test was used to measure the anxiety level of the subjects at the time the instruments were administered; that is, the difference in A-state anxiety between the transported and non-transported mothers.

The study population included six transported and nine non-transported mothers who met the specific criteria for the study.

**Findings**

The hypothesis tested in this study was: high-risk mothers who are transported to a perinatal center will have higher levels of anxiety than high-risk mothers who are not transported as measured by the MAACL. A multiple regression analysis with a stepwise solution was used to analyze the relationship between total IPAT scores and the multiple demographic and independent variables. The significance level for all analysis was at the 0.10 level. There was no statistical difference between the means of the MAACL for
both the transported and non-transported groups; therefore the study hypothesis was not supported.

The stepwise multiple regression analysis indicated that three variables significantly affected the level of A-trait anxiety as measured by the IPAT Anxiety Scale. These variables were, in order of their relative importance, length of stay on postpartum, length of stay in labor and delivery, and transport. The other independent variables did not add significantly to the explanation of anxiety.

**Conclusion**

The findings of this study indicated that while mothers who are transported to a perinatal center because of a high-risk pregnancy did not evidence increased A-state anxiety levels, high-risk mothers do have a moderately high level of A-trait anxiety. This anxiety can be explained by a linear combination of the length of stay on postpartum, the length of stay in labor and delivery, and transport. The results of the study do suggest that more study is needed involving the psychosocial effects of a high-risk pregnancy and/or a maternal transport on the high-risk mother and her family.

Recommendations were made for future study. These recommendations are:

1. Replication of this study with a larger sample and with more sensitive psychological instruments. This
study should include all maternal transport mothers and should involve other regional perinatal centers.

2. Investigation of the level of anxiety experienced by maternal transport patients at various times following the transport.

3. Investigation of family members' psychosocial responses to maternal and neonatal transports; and to high-risk pregnancies using anthropological methods of data collection.

4. Further investigation of the anxiety level produced by high-risk pregnancies as compared to the levels of anxiety experienced by a normal uncomplicated pregnancy.

5. Further investigation of the anxiety levels produced by maternal transports as compared to the anxiety produced by neonatal transports.

6. Investigation of the coordination and the continuity of care in a regional perinatal care system.

7. Experimental study that explores the effects of nursing intervention on the reduction of anxiety in high-risk pregnancies. This study to include the prenatal, antepartum, and postpartum phases of the pregnancy.
APPENDIX A

SUBJECT'S CONSENT FORM

PROJECT TITLE: A Study to Determine the Level of Anxiety Produced from Perinatal High-Risk Transports

I understand the purpose of the study is to further the knowledge about the effects of perinatal transports. I also understand that I will be asked to complete two questionnaires which will take approximately twenty minutes. The questionnaires require that I make a check (✓) beside the appropriate response.

I understand that the information obtained from the questionnaires will be analyzed and reported collectively, and that my individual responses are confidential and will be seen by no one other than the investigator. I understand that a coding system will be used to identify the questionnaires and raw data sheets; however, my name will remain anonymous and will not be related to the code on the questionnaire or on the raw data sheet.

I understand that the results of this study will provide perinatal health professionals more information about mothers; so that improvements in perinatal care can be made. I also understand that the professionals who are taking care of me will gain more information about my own needs and will be able to help me more as a new mother. I understand that I may ask questions and that I am free to withdraw from the study at any time without question.

I have read the above description of study and agree to participate in the study. The nature, demands, and benefits of the study have been explained to me. I understand no monetary payment will be made to me for my participation in the study.

Subject's Signature ___________________________ Date ____________

Parent or Guardian ___________________________ Date ____________

Investigator's Signature ________________________ Date ____________

(Witness)
APPENDIX B

SAMPLE RAW DATA SHEET

Case Number:__________  Permission Obtained:__________

Diagnosis:__________________________________________

Transport:  Yes_______  No__________

Means of transport:  Origin of transport:

Ambulance_________  ______________

Helicopter_________  Distance_________

Aircraft_________

Presence of Significant Person:  Yes_______No_______

Husband/Baby's Father _________

Family Member (relationship)_________

Friend _________________

General Information

Parity_________  Gestation:______________

Number of Living Children:___________________________

Number of Prenatal Visits:___________________________

Ethnic Group:_________  Marital Status:_________

Condition of Baby:______________________________

Nursery:_________  Mother_________

Length of Stay in Labor and Delivery:

Admitted (date and time):__________________________
Transfer (date and time): ________________________

Total hours: _______________

Medications Received in Labor and Delivery (medication and dosage):

_____________________________________________________________________

_____________________________________________________________________

Medications Presently Being Received (medication and dosage):

_____________________________________________________________________

_____________________________________________________________________

Anxiety Scores

IPAT Anxiety Scale: Total Score ________

MAACL Anxiety Scale:

<table>
<thead>
<tr>
<th>Total Score</th>
<th>Anxiety</th>
<th>Depression</th>
<th>Hostility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Today test</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
</tbody>
</table>

Mother's Comments:
_____________________________________________________________________

_____________________________________________________________________

Researcher's Comments:
_____________________________________________________________________

_____________________________________________________________________

Psychological tests administered ____________________________
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