

Investigation of the Effects of a Home-Based  
Nursing Intervention on Mother-Premature Infant Interaction  
Behavior and Maternal Feelings of Competence

by

M. Loretta Secco, B.Sc.N.

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presented to the University of Manitoba  
in fulfillment of the  
thesis requirement for the degree of  
Masters  
in  
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INTERVENTION ON MOTHER-PREMATURE INFANT INTERACTION BEHAVIOR  
AND MATERNAL FEELINGS OF COMPETENCE

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M. LORETTA SECCO

A thesis submitted to the Faculty of Graduate Studies of  
the University of Manitoba in partial fulfillment of the requirements  
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## DEDICATION

This thesis is dedicated to Dr. Ria Rovers who was killed in a tragic car accident January, 1988. Dr. Rovers was involved in my undergraduate maternal and child education and strongly influenced the directions of both clinical practice and graduate research.

## ABSTRACT

### Investigation of the Effects of a Home-Based Intervention on Mother-Premature Infant Interaction Behavior and Maternal Feelings of Competence

The investigator examined the effects of a nursing intervention on mother-premature infant interaction and maternal feelings of competence. Research indicates that families which experience premature birth require special care and attention.

Separation, high levels of technology, and experiences associated with premature birth affect both the mother and infant. The mother may simultaneously feel guilt, disappointment, and grief over the birth of an infant who may not resemble the infant of her dreams. Although the nurses encourage mothers to progressively provide infant care, the mother may be too frightened to do so in the unfamiliar, busy, and noisy neonatal intensive care unit. Premature infants have been labelled unresponsive, fussy, difficult feeders, and prone to health problems. All of these factors impinge on the developing parent-infant competence process.

The theoretical framework for the thesis investigation is a parent-infant competence process model which describes assessment of the infant's needs, intervention and evaluation of physical and interaction care. Qualities of both the mother and infant may affect the competence process. The mother's knowledge level and skill in infant care, available resources, and the quality of the premature infant's behavior can affect the process. The knowledgeable and skillful mother provides appropriate physical and interaction care for the infant. The infant with readable, responsive, and predictable behavior provides rewarding cues for the mother. The mother of a premature infant requires extra knowledge, skills, and resources which are not necessarily available to the mother after discharge.

After discharge the mother must assess and meet the premature infant's care needs on her own. The process is especially difficult if the premature infant's response to the mother's care is not predictable and readable. Stress and anxiety may decrease the quality of the mother's and infant's interaction and attachment. The mother may need to learn about the effects of a premature nervous system on infant behavior and interaction.

The thesis investigation examined the effects of a home-based teaching intervention on 18 mother-premature infant pairs. The mothers were visited in their homes during the first, third (experimental group only), and fifth week after the premature infants' discharge. The experimental group mothers received instruction about premature infant behavioral development, effects on mother-infant interaction, and strategies to enhance mother-infant interaction. Effects of the intervention on mother-infant interaction behavior during feeding and maternal feelings of competence were examined.

The data were analyzed using parametric and nonparametric statistical tests. Results indicated that mothers who received the teaching intervention had significantly higher scores on the Maternal Competence Questionnaire, fewer feelings of helplessness, and the infants had significantly higher predictability scores. The videotaped specific interaction behaviors revealed both development and intervention effects. A developmental effect was indicated in that both the experimental and control groups revealed a higher proportion of gross movement and mother smiling at the posttest. An intervention effect was shown in the significant increase in infant vocalizations for the experimental group. A more general qualitative impression of the interaction behavior was represented by the dialogic states data which showed the activity during a five second segment of the feeding session. The possible dialogic state activities include: mother acted alone, infant acted alone, the mother and infant both acted, or neither the mother nor infant acted. The experimental group mothers and premature infants revealed a significant increase in acting together (coaction; C), infant acting alone (I), and a decrease in quiet(Q) segments with time. Transitional state analyses revealed the proportion of time that a specific dialogic state followed another. The transitional states of the experimental mothers and infants included more coaction followed by coaction and mothers tended to break the quiet segments rather than the infants.

The Assessment of Premature Infant Behavior (APIB) described the premature infant's behavioral and developmental characteristics. Variation was detected in the infant's clarity and ability to maintain alert state, as well as the investigator's success in eliciting alert states. Motor strength was variable and may have been a key factor in the infant's contribution to interaction. The ABIP also revealed the premature infant's stimuli preferences and the mother's interest in observing the infant's behavioral repertoire.

The discussion evaluates the parent-infant competence process as a framework for nursing research. Factors which affect the comparison of various intervention study findings



are presented. Recommendations for future research and questions for future attention are outlined. Implications for action are described within the perspective of growing theoretical foundations and a changing health care system. Nursing care recommendations aimed at fostering maternal competence and promoting quality mother-infant interaction are offered.

The findings of this investigation indicate the importance of enhancing the parenting process through instruction, providing role models, and considering the inherent importance of the mother's and infant's socioemotional needs.

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## Chapter I

### INTRODUCTION

The need for comprehensive and appropriate health care for families of premature infants is more apparent today than ever. With health care advances over the past several decades greater numbers of premature infants are surviving. Premature infant care has been affected by both technology and a growing awareness of the importance of the mother-infant relationship. The greater numbers of premature infants who are being discharged home at progressively earlier developmental levels have unique needs and characteristics which place a great responsibility on the parents who provide physical and psychosocial care.

The premature infant's optimal development often depends on the quality of the environment that the parents create. Additional instruction and support in the parenting role would benefit both parents and premature infants. Although there are many questions about premature infant care and development that require intervention and research, this investigation focuses on the development of a healthy mother-premature infant interactive system. The investigation examines whether a home-based teaching intervention for mothers will affect mother-premature infant



behavior during interaction and maternal feelings of competence.

#### Statement of the Problem Area

Health care of the ever increasing population of high-risk premature infants is a significant and growing concern today. Of the approximately 378,260 babies born yearly in Canada (Stats Canada, 1986), 21,738 or 5.7% (Stats Canada, 1985) are premature. While the incidence of premature birth has remained stable since the turn of the century (Chapman, 1984), the survival rate has steadily increased. Major contributing factors to this increase are the medical and technological means to sustain the premature infant's life.

An overview of survival and handicap rates of the past several decades mirrors the progress of physiological health care for the premature infant. During the time period of 1965-1969, the survival rate of premature infants weighing less than 1500 grams was approximately 45%; the rate is now 85% (Hunt, Tooley & Harvin, 1982). A 95% survival rate is reported among premature infants weighing between 1501 and 2000 grams (Hack, Fanaroff, & Merkatz, 1979; Casiro, 1986). Currently the rate of severe handicaps (mental retardation, blindness, and cerebral palsy) among premature infants weighing less than 1500 grams at birth is reported as ranging between 5-20% (Hunt, Tooley & Harvin, 1982; Casiro, 1986). With survival almost guaranteed concern should now shift to quality of life for the premature infant.

Today's optimism due to increased survival and decreased handicap rates is justified. However, more parents are taking home premature infants who may have spent as many as four to sixteen weeks in the hospital. The greater number of survivors and the effects of the intensive care nursery environment on the premature infant have created a need for new and more appropriate health care and support services. Such health care services for the parents and premature infants must extend far beyond the discharge of the premature infant.

Health care must address both the physical and psychosocial needs of families of premature infants. Promotion of maximum development requires that parents provide for the physical, social, and sensory needs of the premature infant (Hack et al., 1979; Rice & Feeg, 1985). Creation of the optimum social and sensory environment in the home requires parental knowledge and intervention. Many of the social and sensory needs of the premature infant are met within the context of the parent-infant interactive relationship. Investigators have classified the premature infant as more difficult to care for and interact with than the full-term infant. Clearly, a need exists to enhance the parent's knowledge and skills in caring for and interacting with their premature infant (Eilers, Desai, Wilson & Cunningham, 1986).

An overview of the literature revealed numerous theories which support the need for early and comprehensive intervention with families and premature infants. Reasons for interventions include prevention of unnecessary separation and physical handicaps, promotion of attachment and the premature infant's behavioral competence. Bonding, attachment, and separation theories state that the strength and quality of the mother-infant relationship is dependent on physical and affectional contact. On the other hand, developmental theories emphasize the importance of the premature infant's behavioral maturity level in determining the nature and quality of interaction. Crisis theory helped describe the parent's perspective; the demands of premature delivery and the special needs of a premature infant create physical and emotional stress for the mother. The stress must somehow be alleviated in order to promote optimal parenting.

Since the 1950's there has been a growing realization about the importance of infant social development and the infant's role in mother-infant interaction. Research findings have consistently indicated that the infant's emotional and affectional needs are largely met through the parent-infant relationship and interaction. The negative experiences of the families and premature infants may affect this developing mother-infant relationship. A more elaborate discussion of each rationale for early intervention follows.

Research consistently points to the fact that the high-risk premature infant and mother often develop interaction difficulties (Bakeman & Brown, 1980; Brazelton, 1979; Field, 1980; Magyary, 1984; Thoman, 1980) which some researchers have attributed to faulty bonding. Bonding theorists believe that mother-infant contact during the first few hours after birth is necessary to promote a close mother-infant relationship (Bowlby, 1969; Klaus & Kennel, 1976). Close physical contact includes skin-to-skin touching, suckling, eye contact, and fondling. Due to the unstable condition of the premature infant after birth, the mother and infant are often separated and subsequently deprived of this recommended early contact. The mother-premature infant relationship, viewed within this bonding framework, would be considered imperfectly formed.

Attachment theory (Bowlby, 1969) describes the gradual development of a mother-infant affectional tie over the infant's first year of life. The crisis of premature labor and delivery, the premature infant's scrawny appearance and critical condition, and separation of the mother and infant may adversely affect attachment. The high-risk premature infant often spends one to four months in the hospital where the nurse is the primary caregiver. The longstanding assumption that an infant develops strong attachments with their caregiver because of satisfaction of physical needs (Hoffman, Paris, Hall & Schell, 1988) may affect the mother.

The mother needs reassurance that attachment will grow even though she does not initially perform the mothering tasks for her high-risk premature infant.

Separation of mothers and hospitalized or premature infants has been implicated in poor parenting outcomes. Child abuse, neglect, and failure-to-thrive are reported more frequently among premature infants (Jeffcoate, Humphrey, & Lloyd, 1979; Klein & Stern, 1971; Schmidt & Kempe, 1975). The infant with nonorganic failure to thrive does not eat or gain weight although there is no physiological basis for the condition. The 'vulnerable child syndrome', a persistent disguised mourning which occurs as a result of an earlier life-threatening illness of the child, is more common among mothers of premature infants (Green & Solnit, 1964; Ross, 1980). The 'vulnerable child' is overprotected and viewed as dependent; and the parents may find it difficult even to leave the child with a babysitter.

During premature labor and delivery, parents experience physical and emotional upheavals which are classified as crisis events (Bibring, 1959; Caplan, 1968; Kaplan & Mason, 1960). The initial threat of infant death may cause grief and anxiety which affect the developing mother-infant relationship. The mother-infant attachment process may be affected by the small amount of time the mother interacts

with the premature infant. Parents of premature infants may unconsciously use protective psychological mechanisms which have the potential to detract from the strength and quality of attachment. A detachment phenomenon may occur whereby the mother fails to begin the attachment process due to grief and fear of infant death. In the event that the infant survives the mother finds it difficult to begin the attachment process and attachment may be deficient or inadequate.

The infant's need for intensive and highly technical care may be interpreted by the parents as failure since, not only have they failed to produce a normal infant but, they lack the skills to care for the infant (Caplan, Mason & Kaplan, 1965; Kaplan & Mason, 1960). The self-centered nature of parental depression and grief may interfere with attachment and the amount of quality emotional time available for the infant (Emde, 1980). Intervention may be necessary to facilitate and strengthen the attachment process. (Bibring, 1959; Caplan, 1968; Kaplan & Mason, 1960).

Although social learning theorists state that attachment is the interaction between the infant and mother (Kaluger & Kaluger, 1984), evidence suggests that mother-infant interactional behavior is merely a reflection of the quality of maternal-infant attachment (Magyary, 1984). The behavior of both the mother and the infant contributes to the quality

of the mother-infant relationship. Difficult infant behavior, more common among premature infants, has been noted as a possible precursor to child abuse and failure to thrive (Campbell, 1979; Sameroff & Chandler, 1975). Behavioral development theorists stress the important role of infant behavior in social interaction (Brazelton, 1979). The premature infant's immature body organs and systems often result in behavior which the mother finds aversive (Blumberg, 1980; Broussard & Hartner, 1971). Even after survival is assured, the premature infant may continue to display behavioral and interaction difficulties.

The infant's temperament and personality characteristics affect the parents' response to the infant. The quality of attachment bond may depend equally on the infant's and parents' style (Hoffman et al., 1988). Research has labelled the premature infant as fussy, difficult to soothe, and as having a difficult temperament (Emde, 1980; Field, 1980). Temperamental difficulties reported include irregular body functions, very intense reactions, withdrawal, and slow adaptation to change (Chess & Thomas, 1973). Thomas, Chess and Birch (1968) suggest that parents of fussy infants develop feelings of guilt, anxiety, helplessness, and cope less effectively. The mother may become frustrated because the premature infant's behavior is difficult to interpret (Brazelton, 1979). The relative unresponsiveness of the premature infant, the less developed repertoire of

interactive abilities such as coos and smiles, frequent gaze aversion, and fussiness may affect the mother-infant relationship.

Parents have to work hard at generating responses such as attention, smiles, and contented vocalizations because the premature infant is less responsive (Field, 1982). The premature infant is less frequently available for interaction due to infrequent and short periods of alertness (Cohen & Beckwith, 1979; DeVitto & Goldberg, 1979; Field, 1977), decreased responsiveness to sights and sounds, an aversive cry (Goldberg, 1979), and fewer opportunities for eye contact. Exaggerated behavioral responses of the premature infant include startles, jerky movements, and tremors which can be disconcerting for the parents (Johnson & Grubbs, 1975). Frequent displays of negative affect (Crnic, Ragozin, Greenberg, Robinson & Basham, 1983) have caused the premature infant to be labeled as a difficult social partner (Censullo, Lester & Hoffman, 1985). If the negative cycle of interaction is not treated, the mother may either grow to avoid the unresponsive and aversive infant or overload the infant with inappropriate stimulation in the hope of eliciting a positive response.

During hospitalization, the parents and premature infant have limited opportunities to interact and get acquainted (Goldberg, 1979). Many premature infant care practices in



the hospital, while necessary in promoting physical growth and maturation of the body organs and systems, prevent mother-infant contact. The premature infant may not be held by the mother until a certain body weight is reached or may not be fed orally until the suck reflex and physiological condition stabilize. Consequently, the mother and infant do not experience the recommended quality contact necessary to develop a strong and interactively healthy relationship. Due to the decreased amount and quality of interaction time, the parents and the premature infant are less likely to be skilled social partners at the time of discharge.

After discharge the mother is expected to care for and interact with a fragile infant who has spent one to four months in the hospital. Caring for the discharged premature infant, along with fulfilling other responsibilities to the family, can be a physically draining and frustrating task. Premature infants often have feeding problems, difficulty in establishing a day/night schedule, and special health care needs may require frequent doctors visits and rehospitalization. Once at home, because the mother and infant are finally getting to know each other, stress and frustration should be kept to a minimal. A lack of support systems, either in the hospital or the community, can make the transition home difficult (Affleck, Tennen, Allen, & Gershman, 1986; Raff, 1986).