Abstract

Adaptive maternal feeding behaviors are sensitive and responsive to the infant and support the infant's participation in feeding. Adaptive infant behaviors help the infant to participate in the feeding within developmental capacities and to interact in a positive manner with the mother. Therefore, the purpose of this study was to explore the contribution of the adaptiveness of early maternal feeding behavior to the adaptiveness of later infant feeding behavior, accounting for maternal depressive symptoms and neonatal health. Thirty-seven premature infants and their mothers were assessed in the special care nursery just before discharge and in their homes at 4 months postterm age. The adaptive quality of maternal and infant behavior was assessed using the Parent-Child Early Relational Assessment. Maternal depressive symptoms were assessed using the Center for Epidemiological Study–Depression Scale. Infant health was assessed using the Neonatal Health Index. Linear regression analyses revealed that the adaptiveness of maternal feeding behavior before special care nursery discharge contributed significantly to the adaptiveness of infant feeding behavior at 4 months postterm age, accounting for neonatal health and maternal depressive symptoms. Although further study of the relationship is needed, findings support development of interventions to enhance the adaptiveness of mothers' early feeding behaviors.

Keywords: *Mother-infant interaction, Infant feeding, Infant behavior, Mother behavior, Infant, Premature*

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The Effect of Maternal Depressive Symptoms and Early Maternal Feeding Behavior on Later Infant Feeding Behavior

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Feeding is one of the primary settings of interaction for mothers and their very young premature infants and of the infant's formation of an attachment relationship. During feeding, infants begin to construct internal working models of the self, mother, and the mother-infant relationship. When infants' signals for protection, nurturance, or comfort are recognized and responded to appropriately and consistently, they develop positive expectations about their mothers' present and subsequent availability and responsiveness.[1,2] These expectations support the infant in feeding adaptively and interacting more effectively with their mothers. However, the individual mother's psychological condition, in particular, symptoms of depression, may affect her ability to consistently read and respond sensitively and responsively to her infant's signals.[3] Furthermore, the immature neuromotor system of premature infants makes it difficult for them to process stimuli and manage the stimulation of feeding and interaction appropriately.[4,5] The preterm infant's health in the neonatal period, including respiratory problems and the residuals of intraventricular bleeds, may interfere with sensory-motor functions that are important for feeding and interaction.

Transition to home from a special care nursery (SCN) is difficult for both mothers and infants. Feeding interactions before this transition can often set the

stage for how competent and adaptive a mother believes she can be in caring for her preterm infant after discharge. Little study of the relationship of early maternal feeding behavior with later infant feeding behavior has been done. The purpose of this study was to explore the contribution of the adaptiveness of a premature infant's feeding behavior at 4 months postterm age (PTA) to the adaptiveness of very early maternal feeding behavior, accounting for maternal depressive symptoms and the premature infant's health.

Background

Adaptive Feeding Behavior

Adaptive maternal feeding behavior is characterized by warmth in the mother's tone of voice; positive affect; gentleness and warmth in her physical contact; her sensitivity to infant signals for protection, nurturance, and comfort; her responsiveness to infant behaviors; the mirroring she does of the infant's feelings; and her ability to structure and mediate the infant's feeding environment. The mother's adaptive feeding behavior is also evident in avoidance of anger, hostility, or displeasure; her lack of harsh or abrupt physical contact; and the absence of maternal rigidity, intrusiveness, inconsistency, or unpredictability.[6-10]

The adaptiveness of maternal feeding behaviors that an infant experiences may influence the adaptiveness of an infant's later feeding behavior through the expectations of the mother's feeding behavior that the infant develops. Through repeated interactions with the mother, the infant begins to develop a "process-oriented map" of how feeding exchanges are expected to operate.[11] More simply, the infant comes to know the behaviors of the mother during feeding and, over time, the responses to these behaviors because of the previous experiences and mutually developed expectations.

Adaptive infant feeding behavior is organized and regulated in a manner that supports participation in the feeding within the limits of developmental capacities, pleasurable interaction with mother, and intake of adequate nutrients. Specifically, for the infant, adaptive social-emotional and task-related feeding behavior is characterized by organization of the motoric system, state of arousal, and regulated emotional and motoric responses. Infants whose feeding behavior is adaptive have good muscle tone throughout the feeding. They are alert and seek eye contact with their mothers. If upset, these infants are easily soothed; and they give clear cues during the feeding.[10,12,13]

Infant and Maternal Conditions That Contribute to Adaptive Feeding Behavior

Maternal Depressive Symptoms

A mother's symptoms of depression can negatively influence her interactive behaviors with her infant.[3,14-16] These symptoms may include a depressed mood, sleep and appetite disturbances, a sense of guilt, and feelings of worthlessness and hopelessness. The risk for depression of mothers of premature infants is likely to be high, both at the time of the infant's discharge from hospital and through the first postterm year. Researchers found that at the time of hospital discharge of technology-dependent or medically fragile infants, 45% of the mothers had scores on the Center for Epidemiological Study–Depression (CES-D) Scale that indicated risk for depression. Twelve months later, 36% of these mothers had CES-D scores indicating high risk for depression.[17] Poehlmann and Fiese[15] found that even subclinical depressive symptoms in the mother at 12 months PTA of the infant may have an effect on mother-infant interaction regardless of whether the infant was preterm or full-term.

Research has shown links between a mother's depressive symptoms and infant feeding behavior.[18] Clinically depressed mothers, when compared with nondepressed mothers, were less sensitive to their infants during feeding. Nondepressed mothers were found to be more available, accepting, responsive, and affectionate toward their infants. These mothers also had infants who were more adequately nourished and more competent in social interactions than the infants of mothers who were depressed and demonstrated decreased sensitivity.[18]

Infant Health

The premature infant's health at birth and in the neonatal period puts them at risk for less adaptive social-emotional and task-related feeding behavior.[6] These conditions include both immaturity- and prematurity-related medical problems that are likely to interfere with the organization and regulation of infant behavior as well as advancement to being fed by the mother. Infants must be able to master internal regulation of physiological systems before a dyadic quality is possible in their interactions. Singer and her colleagues[19] found full-term infants to be more responsive and give clearer cues than premature infants during the first year of life. Premature infants who experience more health complications at birth typically exhibit more interactional difficulty through the first postterm year than infants with fewer medical complications such as periventricular leukomalacia, bronchopulmonary dysplasia, and acute respiratory disease.[19-21]