Current Parent Education on Infant Feeding in the Neonatal Intensive Care Unit: The Role of the Occupational Therapist

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Key Words: oral motor function • patient care team • patient discharge

Objectives. The purpose of this study was to describe current trends in parent education on infant feeding in the neonatal intensive care unit (NICU) and to clarify the role of the occupational therapist in educating parents.

Method. Questionnaires were mailed to 190 neonatologists across the United States who were asked to forward it to a NICU occupational therapist. The questionnaire gathered descriptive information about the structure of parent education in the NICU, the role of the occupational therapist in providing parent education, and demographics about respondents and their NICUs. The response rate was 53% (n = 100).

Results. All 100 hospitals responding provided parent education in some form, and most included a variety of topics and teaching methods. Occupational therapists were on the NICU team at 74 of the hospitals and were identified third most frequently as a provider of parent education. The occupational therapists were most frequently identified as responsible for teaching about positioning, infant development, and infant states and cues and were highly involved in educating parents about feeding.

Conclusion. Current parent education programs in NICUs are comprehensive in scope. Occupational therapists’ role in educating parents about infant care and feeding consists of a focus on certain topics where occupational therapists have specialized skills and education. Occupational therapists are recognized by their NICU colleagues as providers of parent education, but this study suggests that the occupational therapists’ role may not be clearly understood by other NICU professionals.

As a result of changes in the economics of health care and the emphasis on decreasing lengths of stay, infants are often being discharged from the neonatal intensive care unit (NICU) with complex medical and care needs. Although parents are being asked to take more responsibility at home for the care and feeding of their infant (Baker, Kuhlmann, & Magliaro, 1989; Shapiro, 1995), a review of the literature reveals that parents often feel inadequately prepared to care for their infants and that they have specific unmet needs and high levels of concern related to feeding after their infant has been discharged from the NICU (Butts et al., 1988; Gehl & Lantzy, 1990; Goodman & Sauve, 1985). For example, parents of infants with feeding tubes or with other health problems often have difficulty establishing a feeding routine (Sheikh, O’Brien, & McCluskey-Fawcett, 1993). These parents may experience vastly different interactions with their infants...
during and between feedings (Humphry, 1991). Relaxed interactions are lost if both parent and infant are fatigued or stressed by trying to get food into the infant during feeding. A parent's self-concept is often affected by an infant's withdrawal and failure to gain weight (Humphry, 1991). Many parents believe that they receive little support for their parental role in the NICU and even less once they return home (Kenner & Lott, 1990). Health professionals need to make sure that parents feel welcome in the NICU and to encourage them to become involved in caring for their infant so they develop confidence in their parenting skills (Saunders, 1994).

Because feeding is an activity of daily living that seems to happen so effortlessly in the healthy newborn (Matthews, 1994), it could be viewed as one of the least technical processes in the NICU. In reality, successful feeding is a complex and dynamic process that depends on the infant's oral musculature, physical health, oral sensitivity, positioning, relationship with the parent, and interaction with the environment. Adequate oral-motor skills are necessary for taking in nutrition for physical growth and are an important point of contact with the external world that infants use in order to explore, learn about, and interact with their environment (Einarsson-Backes, Deitz, Price, Glass, & Hays, 1994). An examination of parent education regarding feeding is important because feeding difficulties not only put the infant at risk for malnutrition and rehospitalization, but also can affect the parent–infant relationship and the child's future growth and development (Stevenson & Allaire, 1991).

Normal feeding development may be altered or interrupted by prematurity, illness, or congenital abnormalities, which can have a detrimental effect on the parent's self-concept (Humphry, 1991). In addition to the negative impact on parent–infant interaction, oral-motor feeding dysfunction can negatively affect important developmental activities, including object exploration and discrimination, acquisition of speech, and interpersonal skills (Dobrofsky, 1987). Because feeding difficulties can have far-reaching effects, health care professionals who work with infants and families on feeding issues not only must understand the complexity of the feeding process, but also must have advanced knowledge of typical growth and feeding development.

An occupational therapist's approach to feeding can differ from other NICU team members who may work only from a medical model background and whose primary focus is on the quantity of food intake and on the infant's weight gain. An occupational therapists' focus typically includes oral-motor and feeding skills, infant emotional health, development of parent–infant relationships, and teaching parents how to interpret their infant's cues. Possessing knowledge of feeding, infant development, family systems, and multicultural influences enables the professional to focus on family priorities, respond to parent concerns, select methods of sharing information that value and respect parents as individuals, and consider parents' views of their role and involvement in their infant's development (Humphry, 1991). The occupational therapy approach of assessing dysfunction from the infant's perspective and planning treatment that is based on the unique needs, values, priorities, and roles of the infant and family allow occupational therapists to help the NICU team provide services that may set the course for parent–infant closeness and successful feeding experiences in the NICU and beyond (Olson & Baltman, 1994). The parents' level of expertise and self-confidence for managing the care and feeding of their infant at home, combined with the infant's oral-motor skills and emotional development, are important both for achieving feeding success and preventing rehospitalization and malnutrition. Parents can benefit from education provided by occupational therapists and other health professionals who are sensitive to family circumstances, priorities, and concerns; who are knowledgeable about neonatal medical conditions and infant needs; and who recognize and respect the important role that families play in the lives of their infants. This type of family-focused education is essential to supporting families in caregiving roles and promoting optimal infant development (American Occupational Therapy Association [AOTA], 1993; Holloway, 1994).

Educating parents about proper techniques for facilitating oral-motor feeding and other developmental tasks is a function of many occupational therapists in the NICU setting. In a study evaluating the education and training of occupational therapists in the NICU (Dewire, White, Kanny, & Glass, 1996), 90% of 118 responding occupational therapists surveyed stated that consultation with parents or caregivers was a current practice activity, and 75% stated that developing feeding skills was a current practice activity. In addition, 65% of 172 respondents regarded educating parents as an essential area of knowledge, 91% regarded consulting with family members as an essential skill, 85% regarded enhancing parent or caregiver skills through demonstration and home programs as an essential skill, and 84% regarded facilitating feeding and oral motor skills as an essential skill for NICU occupational therapy practice.

Some confusion exists, however, about which professionals are primarily responsible for providing parent education on specific topics because of the interdisciplinary and complex nature of the NICU setting. Rapport's (1992) survey of 709 NICUs nationwide identifying the role and standards of practice of physical therapists and occupational therapists in the NICU produced only 216 (30%) respondents. Rapport found that 76% of the 216 respondents, including physicians, nurses, physical therapists, occupational therapists, and others, identified the discharge nurse as most responsible for parent education, 62% identified the physical therapists or occupational therapists as most responsible, and 51% identified other professionals as most responsible. In addition, 43% of respondents believed that
the occupational therapists and physical therapists provided the same services in the NICU. The lack of clear and consistent information about the specific role of the occupational therapist in parent education in the NICU and how occupational therapy services in the NICU can assist parents in better feeding and caring for their infants provided the rationale for the present study. Our objective was to gather descriptive data on current trends in parent education in the NICU and to more clearly define the role of the occupational therapist in providing parent education on feeding and caring for infants.

Method
Sample

Occupational therapists who are responsible for providing education to parents of infants in the NICU were targeted for this study. In the absence of an occupational therapist, information on a particular NICU was gathered from a NICU professional involved in parent education. Participants were selected if (a) the hospital where they were employed had a NICU and (b) the director of neonatology was listed in United States Neonatologists: Directory 1996 (American Academy of Pediatrics, 1996). In states with five or fewer NICUs listed in the directory, all the NICUs were recruited. In states with more than five NICUs, five were randomly selected to participate in the study. Questionnaires were sent to a total of 190 neonatologists in 46 states, Puerto Rico, and the District of Columbia. Four states did not have a NICU listed.

Instrument

A 32-item questionnaire was developed to gather data in the following areas: (a) general information about the structure of parent education in the NICU, including professionals on the team, teaching methods, program structure, information packages, and the extent of parent participation in daily care; (b) the role of the occupational therapist in providing parent education about infant care and feeding; (c) NICU discharge information related to parent education; and (d) demographic information about the hospital, NICU, and respondents. All items were presented in a closed-ended, multiple-choice format to allow for quantitative rating of responses; 19 items also included an open-ended response option where the respondent could describe an other or yes response. To ascertain how NICU professionals were involved in various subject areas of parent education, the respondents were asked in five multiple-choice questions to indicate all topics included in parent education at their NICU and which professionals were responsible for teaching the topics. The questionnaire was reviewed for content validity by two pediatric occupational therapists working in a NICU, a pediatric speech-language pathologist consulting in a NICU, and two occupational therapists teaching pediatrics courses at a university and revised for clarity and relevance according to feedback from these professionals.

Procedure

The questionnaires were mailed to the directors of neonatology at the selected NICUs, along with a postage-paid return envelope and a cover letter stating the purpose of the study. The directors were instructed to forward the questionnaire to an occupational therapist on the NICU team working either full time or part time, or to a head nurse if no occupational therapist was available. If neither an occupational therapist nor a nurse was available to complete the questionnaire, the director of neonatology was requested to forward it to the health professional most responsible for providing parent education. Reminder postcards were sent to nonrespondents 2 weeks later, and a second mailing of the research materials was sent to nonrespondents 4 weeks after the initial mailing.

Data Analysis

The data were numerically coded to facilitate statistical analysis by assigning each response on the questionnaire with a raw number and entering the numbers into a column-format computer spreadsheet program to form a data set. The SAS\(^1\) statistical analysis software package was used to compute frequency counts for each questionnaire item and for the entire data set. The data were then separated into two groups. Data from respondents who indicated that they had an occupational therapist on their NICU team comprised Group A \((n = 74)\) and data from all other respondents comprised Group B \((n = 26)\). Chi-square analysis was used to examine the differences between the two groups. Data from respondents who indicated that they were occupational therapists were assigned to one subset and were compared with a second subset of data from other respondents who were not occupational therapists in order to determine which aspects of parent education occupational therapists identified as their responsibilities versus what other health professionals reported as responsibilities of the occupational therapist for providing parent education in the NICU.

Results

Respondents

Of the 190 questionnaires sent, 100 (53%) were returned. They had been completed by 38 nurses, 37 occupational therapists, 13 physicians, 5 physical therapists, 4 speech-language pathologists, and 1 nutritionist. The respondents represented 41 states, the District of Columbia, and Puerto Rico. Most (66%) respondents indicated that their hospital was located in an urban setting. The size of the NICUs

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\(^{1}\)SAS Institute, Inc., SAS Campus Drive, Cary, North Carolina 27513-2414.
ranged from fewer than 10 to more than 40 beds. The majority (88%) of the respondents reported that they had received specialized training to work in the NICU, including continuing education through neonatal courses, self-study, and Neonatal Individualized Developmental Care and Assessment Program training.

Structure of Parent Education

There was considerable variation reported by the respondents on how parent education was structured in the NICU. Most of the respondents (73%) reported that they scheduled to meet with families for education whenever the family was present. The most commonly reported types of teaching methods were demonstration (98%), discussion (97%), handouts (95%), and hands-on practice (95%). Rooming-in was reported as a teaching method by 88% of the respondents, and 9 of these respondents commented that this was a criterion for discharge. Parent participation in the daily care (e.g., diapering, bathing, dressing) and feeding of their infant while in the NICU was reported by 100% of the respondents. The majority of respondents (93%) reported that their NICU had discharge criteria relating to parent education. The most commonly described discharge criteria were completion of a checklist of required skills and objectives, parent demonstration of infant care, and completion of an infant CPR class. Six respondents commented that the ability of the parent to feed the infant and pick up feeding cues was a criterion for discharge. Eighty-one percent of respondents indicated that follow-up with parents after discharge is a standard procedure, and 86% provided written discharge treatment plans or home programs to parents.

Parent Education on Infant Feeding

Of the NICUs with an occupational therapist on the team (Group A), nurses (97%), physicians (87%), and occupational therapists (87%) were identified most frequently as providers of parent education. Topics on which occupational therapists were highly involved are listed in Table 1. When compared with nurses and other health professionals, they were more frequently responsible than other health professionals for teaching about developmental milestones, infant assessments, early intervention services, play, and infant massage. Less than 5% of the 74 respondents from Group A indicated that occupational therapists were responsible for providing parent education on the following topics: monitoring medical status at home, daily infant care, infant CPR, medical support equipment use and care, respiratory care, tracheostomy care, ventilation equipment and care, administration of medications, and wound care. These topics were primarily the domain of nurses and other health professionals. Table 1 also illustrates differences in how occupational therapists and other health professionals reported the involvement of occupational therapists in providing parent education on each topic. It is important to note that chi-square analysis of homogeneity indicate that the discrepancies between occupational therapists’ reporting and others’ reporting on all topics were significant at the .01 level.

In reference to topics specific to infant feeding, occupational therapists were identified as highly involved in teaching parents about oral stimulation (70.3%) and topics related specifically to oral-motor feeding (see Table 2). Occupational therapists were one of the health professionals identified as being responsible for educating parents about bottle-feeding (64.9%) and breast-feeding (31.1%). Areas of breast-feeding in which occupational therapists were most commonly identified as being involved by Group A respondents were oral support (32.4%), environment (29.7%), and positioning (28.4%). Less than 4.1% of respondents reported that occupational therapists were involved in educating parents about various types of tube feeding. However, one respondent commented that the occupational therapist educates parents about transitioning from tube feeding to oral feeding, and four respondents indicated teaching about oral stimulation during tube feedings. As in Table 1, Table 2 illustrates differ-

Table 1
Frequencies With Which Occupational Therapists Were Identified as Responsible for Providing Parent Education

<table>
<thead>
<tr>
<th>Topics</th>
<th>Occupational Therapist Report (n = 37)</th>
<th>Other Report (n = 37)</th>
<th>Total Report (n = 74)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positioning</td>
<td>100.0</td>
<td>43.2</td>
<td>71.6</td>
</tr>
<tr>
<td>Developmental milestones</td>
<td>97.3</td>
<td>37.8</td>
<td>67.6</td>
</tr>
<tr>
<td>Infant assessments</td>
<td>94.6</td>
<td>29.7</td>
<td>62.2</td>
</tr>
<tr>
<td>Infant states and cues</td>
<td>91.9</td>
<td>43.2</td>
<td>67.6</td>
</tr>
<tr>
<td>Early intervention services</td>
<td>89.2</td>
<td>35.1</td>
<td>62.2</td>
</tr>
<tr>
<td>Parent–infant interaction</td>
<td>89.2</td>
<td>21.6</td>
<td>55.4</td>
</tr>
<tr>
<td>Feeding</td>
<td>86.5</td>
<td>43.2</td>
<td>64.9</td>
</tr>
<tr>
<td>Play</td>
<td>86.5</td>
<td>27.0</td>
<td>56.8</td>
</tr>
<tr>
<td>Environment</td>
<td>83.8</td>
<td>24.3</td>
<td>54.1</td>
</tr>
<tr>
<td>Infant massage</td>
<td>64.9</td>
<td>35.1</td>
<td>50.0</td>
</tr>
</tbody>
</table>

Note. These percentage frequencies are based only on responses from Group A. “Other report” includes responses from nurses, physicians, physical therapists, speech–language pathologists, and nutritionists (nurses comprised 64.8% of “other report”).

Table 2
Frequencies With Which Occupational Therapists Were Identified as Responsible for Providing Parent Education on Feeding Topics

<table>
<thead>
<tr>
<th>Topic</th>
<th>Occupational Therapist Report (n = 37)</th>
<th>Other Report (n = 37)</th>
<th>Total Report (n = 74)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeding environment</td>
<td>81.1</td>
<td>24.3</td>
<td>52.7</td>
</tr>
<tr>
<td>Nonnutritive sucking</td>
<td>75.7</td>
<td>37.8</td>
<td>56.8</td>
</tr>
<tr>
<td>Infant developmental states</td>
<td>70.3</td>
<td>21.6</td>
<td>45.9</td>
</tr>
<tr>
<td>Infant cues</td>
<td>67.6</td>
<td>18.9</td>
<td>43.2</td>
</tr>
<tr>
<td>Signs of aspiration</td>
<td>67.6</td>
<td>13.5</td>
<td>40.5</td>
</tr>
<tr>
<td>Suck–swallow–breathe coordination</td>
<td>59.5</td>
<td>27.0</td>
<td>43.2</td>
</tr>
</tbody>
</table>

Note. These percentage frequencies are based only on responses from Group A. “Other report” includes responses from nurses, physicians, physical therapists, speech–language pathologists, and nutritionists (nurses comprised 64.8% of “other report”).
ences in how occupational therapists and others reported the involvement of occupational therapists in providing parent education on each infant feeding topic.

Discussion and Conclusion

Overall, the parent education programs provided by respondents were comprehensive; parents were educated on all aspects of the infant's daily and medical care, were included in participation and demonstration of infant care procedures, and were given written information and home programs for after discharge. This would seem to correspond with McKim's (1993) recommendations in her study of the information and support needs of 56 mothers of premature infants. Based on survey responses from at least 36% of the mothers about what information they had wanted but had not received during their hospital stay, McKim recommended that instruction during hospitalization should focus on daily care, infant behavioral cues, infant development, and follow-up plans and that mothers be encouraged to participate in their infant's care so that they feel more competent about caring for their infant.

According to the occupational therapist respondents in our study, they play an important role in providing parent education in the NICU setting. The importance of their role is supported by the finding that although more than half worked 20 hr or less per week in the NICU, they were identified third most frequently by Group A respondents (NICUs with an occupational therapist on the team) as a provider of parent education and were seen by Group A as responsible for providing parent education on infant positioning, infant developmental milestones, interpretation of infant states and cues, and feeding. These topics coincide with areas where experienced occupational therapists in the NICU have the specialized skills and education to provide infant intervention and parent education (AOTA, 1986; Case-Smith, 1993; Hunter, 1996). Evaluation and treatment of feeding problems has been identified as an essential skill for NICU occupational therapy practice (Dewire et al., 1996), and the present study revealed that occupational therapists are highly involved in teaching parents about feeding, especially oral stimulation and oral sensitivity techniques. In addition, the present study corresponded with Matthew's (1994) report that support for normal development of bottle-feeding and breast-feeding is one of the occupational therapist's many roles in the NICU. The literature states that therapeutic positioning has been a consistent and essential role of the occupational therapist in the NICU (Updike, Schmidt, Macke, Cahoon, & Miller, 1986; Vergara, 1993). All of our occupational therapist respondents (n = 37) reported that they provide parent education on positioning, which suggests that this is an area where occupational therapists are in strong agreement about their role in the NICU.

On topics related specifically to feeding; however, a discrepancy existed between the responses of occupational therapists and responses of other professionals regarding the role of the occupational therapist in parent education. Other professionals reported lower occupational therapy involvement in parent education than occupational therapists did. This suggests that although occupational therapists use their knowledge and skills to play what they believe is an important role in parent education in the NICU setting, other professionals may not clearly understand this role or recognize the extent of services occupational therapists can provide to infants and their families.

Educating parents of infants with special needs is an important component of NICU intervention, and this study suggests that occupational therapists contribute to that component. Parent education programs deserve continued study so that NICU professionals, including occupational therapists, may become more effective in meeting parent needs. Further research on specific aspects of feeding infants and parent education in the NICU, such as discharge criteria related to feeding and parent readiness, could help NICU occupational therapists provide more effective parent education programs. Although NICU health professionals believe that they provide comprehensive parent education programs, studies examining parents' level of comfort and knowledge gained from such programs would reveal whether such programs are effective in diminishing parents' anxiety about caring for and feeding NICU infants at home. Research on NICUs where no occupational therapist is employed might reveal what differences exist in program structure and efficacy and what the implications are based on these differences. Further research is indicated to determine how other disciplines perceive the role of the occupational therapist in the NICU as well as to define and potentially improve current practice. In addition, research on the perceived role of occupational therapy in the NICU by other professionals may explain the reporting discrepancies of this study and guide occupational therapists in ways to promote their training, skills, and unique perspective so that other professionals may recognize the valuable services that occupational therapists can and do provide in the NICU. Finally, occupational therapists in the NICU should continue to explore how they can use a family-focused approach to intervention to make transition to home a less stressful and more satisfying experience for both parents and infants.

The study has several limitations. A pilot test of the questionnaire was not conducted, therefore, the items may not have been the most relevant to those in practice in U.S. NICUs regarding parent education, and the item wording may not have elicited the desired responses. The directory from which the sample was secured may not have been a complete listing of NICUs in the United States; therefore, some NICUs may not have been included in sampling. Addressing the questionnaire to the director of neonatology was not a direct method of reaching occupational therapists in the NICU; therefore, some
questionnaires may not have been forwarded appropriately. Additionally, with a 47% nonresponse rate, bias may have been a factor in the study.

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