JOGNN CLINICAL RESEARCH

The Maternal Experience of Kangaroo Holding

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Objective: To describe the maternal experience of kangaroo holding premature infants in the neonatal intensive care unit.

Design: Qualitative, naturalistic inquiry design using open-ended, transcribed audiotaped face-to-face interviews.

Setting: Level III 70-bed tertiary care neonatal intensive care unit in Delaware.

Participants: Eighteen mothers who kangaroo held their premature infants were interviewed over a 5-month period of time.

Intervention: Mothers were interviewed following a 60-minute kangaroo holding session in the neonatal intensive care unit. Additionally, unobtrusive detailed observation of each mother's kangaroo holding experience was recorded and analyzed.

Main Outcome Measure: Maternal behaviors and interactions and related nursing and environmental interactions.

Results: Triangulation of demographic data, observation data, and themes of the interviews supports the use of kangaroo holding as a method to improve maternal confidence in caring for premature infants. Mothers reported feelings of "being needed" and "feeling comfortable" with the holding experience regardless of the infant's physical health status.

Conclusions: Results identify maternal experiences of and responses to kangaroo holding in the intensive care environment, leading to the increased understanding of the multifaceted advantages of kangaroo holding on maternal attachment behaviors. *JOGNN, 36*, 568-573; 2007. DOI: 10.1111/J.1552-6909.2007.00187.x

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A major nursing challenge in the neonatal intensive care unit (NICU) is supporting mothers in the intensive, technology-driven environment by merging physiological care of the infant with meaningful mother-infant interactions involving touch, communication, and intervention (Lawhon, 2002). This challenge forms the basis for nursing interventions such as kangaroo or skin-to-skin holding. Kangaroo holding of premature infants dressed only in diapers against their mothers' chest in the technology-intensive nursery environment is thought to promote maternal-infant feelings of closeness, build maternal confidence, and improve breastfeeding success, and may be a stress-reducing experience for both the mother and the infant (Dodd, 2005; Ludington & Engler, 1999; Neu, 2004). Although there is a plethora of kangaroo research that examine the physiologic effects on infants including thermoregulation, cardiorespiratory function, and oxygen saturation, few studies examine kangaroo holding from a maternal perspective (DiMenna, 2006). The purpose of this study is to describe the maternal experience of kangaroo holding premature infants in the NICU environment.

Literature Review

Kangaroo holding began in Bogotá, Columbia, as an intervention to maintain infant's body temperature when incubators were not available in the early 1980s. This practice of skin-to-skin holding of infants for hours at a time spread worldwide due to the reported benefits of this intervention. In Germany, infants as small as 500 g are kangaroo held routinely after birth (Ludington & Engler, 1999). In South Africa, kangaroo holding is considered a health promotion intervention that provides the optimal opportunity

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for breastfeeding. In a study conducted in a remote mission hospital without incubators in Zimbabwe, infant mortality was reduced by 40% for infants weighing less than 1,500 g (Bergman & Jurisoo, 1994). In this study, kangaroo holding was implemented for maintaining physiologic stability in the premature population.

Early research examining the effect of kangaroo holding on a small sample of premature infants (n = 12) noted that infants maintained physiologic stability measured as thermoregulation and cardiovascular status during and after kangaroo holding (Ludington-Hoe, Hadeed, & Anderson, 1991). A more recent study comparing the physiologic effects on preterm infants (n = 24) of a 3-hour continuous kangaroo hold to standard care reported comparable physiologic stability between interventions (Ludington-Hoe, Anderson, Swinth, Thompson, & Hadeed, 2004). To date, there are no significant reports of adverse physiologic effects on infant's temperature, cardiorespiratory function, or oxygen saturation (DiMenna, 2006; Ludington-Hoe et al., 1999; Ludington-Hoe & Swinth, 1996). Research of Messmer et al. (1997) examined behavioral and physiologic parameters of 20 premature infants before, during, and after kangaroo holding. Infant findings of increased sleep and decreased signs of agitation, along with maternal reports of increased confidence and optimism with kangaroo holding, support previous research findings and clearly build the case that the benefits of kangaroo holding are not limited to the infant.

Maternal benefits of kangaroo holding are reported in a qualitative study as feelings of intense connectedness and increased satisfaction with active parenting (Neu, 1999). Mothers described their holding experiences as nurturing and relationship building. Many of these mothers continued the kangaroo holding intervention long after discharge at home. These findings are supported in a more recent study that examined holding practices of mothers from hospital to home (Neu, 2004). Of interest, a case study of a woman with known risk factors for postpartum depression reported rapidly decreasing depression scores over the first 32 hours following delivery with a planned kangaroo holding intervention of her full-term infant (Dombrowski, Anderson, Santori, & Burkhammer, 2001). Although more research in this area is needed to determine whether kangaroo holding decreases maternal depression, this report supports the premise of Neu's (1999, 2004) research that maternal benefits of kangaroo holding are grounded in relationship building and attachment. The purpose of this study is to describe the maternal experience of kangaroo holding premature infants in the NICU to gain insight into specific maternal benefits of this intervention.

Study Design and Methods

The study was a naturalistic inquiry design using open-ended, transcribed audiotaped face-to-face interviews to obtain detailed subjective descriptions of maternal experiences of kangaroo holding premature infants. Mothers were interviewed following their third 60-minute kangaroo holding session in the NICU. Additionally, unobtrusive detailed observation of each mother's kangaroo holding experience was recorded and analyzed for themes in maternal behaviors and interactions, and related nursing and environmental interactions in a content analysis. The study was designed around the third kangaroo holding session to give depth of meaning to the data on the holding experience by decreasing the maternal apprehension that is reported following the first holdings (Neu, 1999).

Setting and Sample

After obtaining hospital institutional review board approval to conduct the study, data were collected over a 5-month period at a 70-bed tertiary care, Level III NICU in a large suburban community hospital located in a South Atlantic State of the Mid-Atlantic region. After explaining the study, consent to participate was obtained from every mother invited to participate in the study. The sample of primiparous mothers of premature infants (n = 18) had a mean age of 26.3 years, 77% of the sample were married, all but one mother had high school diplomas, while 55.5% of the sample had at least 2 years of college education. All mothers of the sample had at least five prenatal visits; no mother reported to have smoked, used alcohol, or used any other substances during this pregnancy. The majority of the sample (61.1%) were Whites, with 27.7% African American and 11.1% Asian American. At birth, the infant sample had a mean gestational age of 28.8 weeks and mean weight of 1,410 g, and at the time of the interviews, 27.7% of the sample were mechanically ventilated and 44.4% were on oxygen support by nasal cannula. All interviews were completed during the first 2 weeks after the infants' births while in the NICU environment.

Measures

Mothers enrolled in this study kangaroo held their infant for 60 minutes in the NICU environment three times over the first 2 weeks of their infant's life. When the infant was kangaroo held the third time, mothers were observed unobtrusively by the investigator in a nearby area. Field notes by the investigator denoted maternal behaviors and interactions and related nursing and environmental interactions during the holding experience. The investigator, who has cared for patients in this NICU, interviewed all 18 mothers following the third kangaroo holding experience at the infant's bedside. All open-ended interviews were audiotaped while the investigator took field notes to capture expressions and information on possible intervening variables such as environment.

Questions asked by the investigator were determined by a panel of three expert nurses working in that NICU.

These questions were then refined based on suggestions of two experts in qualitative, naturalistic methods. Guided interview questions accounted for patterns of visitation, maternal presence, mother-infant interaction, maternal confidence, and measures of comfort (Table 1). Additionally, direct observations were guided as before, during, and after holding observations in categories including interactions between the nurse and mother, the nurse and infant, the mother and infant, and all environmental interactions including noise, activity, and lights.

Data Analysis

The investigator transcribed the open-ended interviews verbatim. To ensure the accuracy of transcription, the audiotapes were played a second time as the transcriptions were read. The transcriptions were then coded by descriptive phrases that conveyed the meaning of each section for the content analysis. The codes with common meaning were grouped to establish main themes of the interview content.

Content of the observations of the mother-infant pairs were primarily tender, comforting actions including humming, singing, touching, stroking, and kissing. These actions were pooled with all behavioral, environmental, and anecdotal data from the field notes and the interview data to present a comprehensive description through content analysis of the maternal experience of kangaroo holding.

TABLE 1
Guided Interview Questions

1. How often do you visit your baby?
2. What are your usual activities when you visit?
3. Tell me what it is like in the nursery when you visit.
4. How do you interact with your baby?
   - How do you know how to interact with your baby?
5. Where did you learn about kangaroo holding?
   - Are you consistently offered the option of kangaroo holding?
   - How often have you kangaroo held your baby?
6. Tell me what it is like when you kangaroo hold your baby.
   - Are you comfortable while you kangaroo hold?
   - What supports make you more comfortable while you hold your baby?
   - What do you like best about kangaroo holding?
   - What don't you like about kangaroo holding?
7. Tell me how you feel as a mother/woman as you hold your infant?
8. How does your baby respond to being held?
9. How do your feelings change when you are not near your baby?
10. What is the most important benefit of kangaroo holding?
11. If you could change anything about this experience, what would it be?

Results

The three themes that emerged from analysis of the data were maternal-infant benefits of kangaroo holding, need for support for holding, and satisfaction with interactions. From each of these themes, sub-themes were revealed that gave depth to describing the maternal experience.

Maternal-Infant Benefits of Kangaroo Holding

Mothers expressed a certain joyfulness before, during, and after kangaroo holding in terms of facial expressions, body posturing, and dialogue that described maternal feelings of knowing as well as maternal interpretation of infant response to the holding experiences.

Mothers related feelings of "being needed."

Being Needed. A strong desire to be needed was verbalized by all mothers in this study. Mothers described their initial feelings of isolation in a "chaotic nursery" shortly after the birth of their infants. While each mother had support persons close to her, one mother recalled, "I prayed that this nightmare would disappear overnight. When it didn't, I blamed myself first and then I blamed my husband." This blame began to escalate to friction between the couple that ended, according to the mother, when a nurse involved her in caring for her baby. "I needed to be a mother. I had planned for it and couldn't have it in the NICU. At least, not at first. My husband couldn't fix it even though I now know that wasn't possible. The frustration was tearing me apart." Being involved in caring for the infant was described as being needed by every mother in the study.

Observed behaviors of mothers preparing for the holding experience included assessing infant's body temperature, talking softly to their infants about the plans for holding such as "mommy will sing to you our favorite song for as long as you want" and "I will make you feel so much better in my arms," and placing privacy screens around the bed space. During holding, many of the mothers appeared relaxed as they continued their soft talking to their infants. One mother read a story to her infant while yet another told her baby how much she "loved to hold him" and how this is what she yearned for during the pregnancy.

After holding, mothers described their role as "important" not only for their infants but also for the nurses. One

spoke of how her nurse "taught me how to care for my baby" and that this helped the nurse manage her "very busy job with all of the babies". Each mother reported a certain satisfaction in "being needed by nurses" as well as "being important" in caring for their infants. It should be noted that each of the study participants continued to kangaroo hold their infants beyond the study and throughout hospitalization.

Heart-Warming. Each mother described holding a bit differently, including as a "way to express my love" or "a warm feeling of joy" or "happiness I have never felt before." These expressions were displayed in maternal caring behaviors such as tender touching of hands, gentle kissing, and facial expressions of happiness during and after kangaroo holding. Several mothers reported "more patience" with their support persons and one acknowledged, "it isn't just my baby that needs me. My husband needs me, too." She further described this as a "confirmation" of their marriage and that it "is what being a family is all about." Several mothers articulated that the experience of holding was "heart-warming in many ways."

Confidence in Knowing. Although many of the mothers reported feeling "scared" or "nervous" the first time they held their infants, all mothers verbally confirmed personal confidence by the third holding experience. One mother said, "I was sure I would do something wrong that might hurt her" but that encouragement from the nurse before, during, and after holding "made me realize that I know my little girl" and that this confidence in knowing "makes each holding better than the last." Many of the mothers spoke how holding helped them "understand" their baby's needs better, which was supported in behavioral observations of care these mothers offered their infants.

Need for Support for Holding

The second theme, the need for support for kangaroo holding, was illustrated with the encouragement, teaching, and planning for the experience on the part of the nurse; the attention to environmental control of activity, noise, and visitation; and maternal articulation of the holding plan. For optimal experiences, nurses notably established plans for holding with the mother, with nursing care activities, with the infant, and with a verbalized need to limit environmental stimuli.

Nursing Guidance. Mothers described an essential need for nurses to guide the kangaroo experience by "telling me about holding," "explaining that this is a really good thing for my baby," and, as one mother told, "my nurse shows me how to be a mother in the NICU" and is "always there to encourage me." These statements were further illustrated in nursing actions that included teaching mothers how to provide care for their babies including changing diapers, touching, turning, and noticing behavioral cues. Nurses in all holding observations made themselves physically available to mothers despite unit activity as well as consistently verbally encouraging these mothers as they explored their infant while holding.

Schedule for Holding. Although each mother described a pattern of visiting their infant, less than half of the mothers could verbalize a schedule for care for their infant or planned holding their infant ahead of time. One mother stated, "I hope to hold my son everyday I visit, but I never am sure that it's possible until I get here." Another mother said, "when I know my nurse is working, we make a plan sometimes a few days early." The majority of the mothers expressed a desire "to know when I can hold" but were hesitant to ask if that was a possibility. It was observed that nurses supported mothers with open conversation, yet mothers consistently said, "I try not to ask if I can hold" and further stated that they "want what's best" for their baby. One said, "if the time is right for my baby to be held, my nurse tells me."

Quiet Space. Mothers and nurses were observed creating a quiet space for kangaroo holding by moving furniture, placing a mirror nearby, and enclosing the space with privacy screens. Nurses were heard asking staff to take conversation out of the immediate area as well as rescheduling housekeeping activities. Mothers related that this privacy gives "time alone with my little boy" and "almost like being at home." One mother said despite the "loud noises the rest of the time, we can escape to be alone for an hour." It is interesting that in a 70-bed unit, mothers can have this experience of quiet space.

Mothers verbalized "being comfortable" holding their infants regardless of the assessed physical health status of the infant.

Satisfaction With Interactions

Regardless of each of the infant's physical health status, gestational age, or ability to respond to the mother, each mother expressed satisfaction with their interactions before, during, and after the kangaroo holding experience. Maternal behaviors of nurturing actions including touch, voice, and focus on infant comfort clearly demonstrate kangaroo holding as an intense maternal-infant experience.

Feeling Connected. All mothers described a connectedness to their infants during kangaroo holding that differed from other holding experiences in that, as one mother stated, "I can feel her breathe and move against me," making this an "intense experience for both of us."

Another mother said, "she is telling me that everything is fine when she moves her hands near mine."

Learning to Mother. In addition to descriptions of knowing and connectedness, mothers spoke of how the holding experience "teaches me how to be a mother" and, as one mother stated, "you can't learn how to be a mother from a book. You have to learn with your baby." Observations of the mothers noticing behavioral cues and intervening to comfort their infant through containment, touch, and decreasing environmental stimuli indicate an increase in confidence in knowing how to respond to their infants. Moreover, these mothers appeared more active in providing care for their infants throughout the shift.

Discussion

The major themes in this study each integrated subthemes of clinical significance. These findings underscore the importance of kangaroo holding in the NICU for supporting early maternal role development while distinguishing the role of the nurse in providing essential support for the "best" holding experiences. Kangaroo holding experiences are not as spontaneous as one might think. For optimal holding experiences, each nurse determines plans for holding infants with the individual mother; these plans direct nursing care activities before, during, and following holding experiences. Moreover, the nursing assessment of the infants' physiologic stability is the final determinant of the suitability of holding at any given time. What this means is that the kangaroo holding experience, despite plans, cannot be guaranteed. Clinical implications are perhaps best recognized within each of the major themes of the study results.

Maternal behaviors of "knowing" infant needs are related to maternal confidence and attachment behaviors.

Maternal-infant benefits of kangaroo holding were expressed as heart-warming experiences that increased maternal confidence in knowing her infant and a sense of role as mother. These findings are similar to those of Messmer et al. (1997) of maternal reports of increased confidence in caring for their infants. The relationship of maternal role development and attachment to improve long-term neonatal outcome forms the theoretical foundation for research to strengthen confidence in parenting.

Mothers seek support to gain confidence in parenting in the NICU milieu. A necessary component of the kangaroo holding experience is guiding mothers to gain this confidence. Nurses play an essential role by offering the experience to mothers, planning the hold with the mother, determining the plan of care for a beneficial holding experience for all parties, and limiting environmental interaction during the holding experience by creating a quiet space for the mother and infant. The implications of this practice can be overwhelming to nurses and members of the multidisciplinary team. This intervention requires a time commitment from the nurse, competent assessment skills, and confident nursing practice in the NICU. This role must be supported with resources including good staffing ratios, nursing education, and an environment that is conducive to "best practice" experiences.

The satisfaction of interactions for mothers and infants again supports attachment in that mothers report feeling connected to their infant by recognizing behavior cues, becoming familiar with their infants through touch exploration, and experiencing maternal feelings. These maternal feelings of intense connectedness and increased satisfaction with active parenting build on those reported by Neu (1999) with maternal descriptions of confidence in knowing . The mothers in Neu's (1999) study described holding experiences as nurturing and relationship building, similar to the satisfaction of interactions reported in this study. Moreover, a second study of Neu (2004) suggests a relationship between kangaroo holding and decreased maternal depression, although more research in this area is needed.

Implications for Future Research

Results of this study serve to increase the understanding of the multifaceted advantages of kangaroo holding. The findings suggest that kangaroo holding supports early maternal role development in the NICU. Studies that examine maternal benefits of kangaroo holding would aid in understanding how the holding intervention improves maternal role satisfaction.

Limitations

The primary limitation of this study is the small, relatively homogenous sample that is representative of the unit, hospital, and geographic location. Although these findings may not be generalizable to other NICU populations without additional research, the data add to the description of maternal experiences of kangaroo holding. A second limitation is that mothers were interviewed only once. The maternal experience and attitudes may be different at later points during the hospitalization. Future studies may include descriptions of the experiences of parents with varying levels of support as well as infants with differences of illness severity.

Summary

Findings from this study add to the body of literature on the kangaroo holding experience in the NICU. There

are several important implications to nursing practice that emerge. Studies on early holding experiences report maternal apprehension and ambivalence, yet the mothers of this study report increasing maternal confidence with the third holding experience. It would be easier for nurses to not encourage holding with hesitant mothers, yet the benefits to attachment and mothering can be enormous. The fact that each of the study participants continued to kangaroo hold their infants beyond the study and throughout hospitalization speaks for itself. If mothers and infants are to benefit from kangaroo holding experiences, it is essential for nurses in the NICU to educate and encourage mothers to hold their infants. Furthermore, if nurses are to implement kangaroo holding practices, it is essential that NICU management supports nurses with resources for this practice.

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