
Supporting Fathers in a NICU: Effects of the HUG Your Baby Program on Fathers' Understanding of Preterm Infant Behavior

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ABSTRACT

Fathers of preterm babies in a neonatal intensive care unit (NICU) are under stress. Lack of knowledge about a preterm infant's behavior challenges new fathers who may be required to make decisions about the hospitalized infant, to update concerned family and friends, and to provide support to the mother while she recovers from giving birth. The NICU nurses have the opportunity to support and guide these new fathers, although no previous research has confirmed how to do so effectively. This study confirmed that using The HUG Your Baby DVD and family-friendly educational program with fathers of preterm babies in a NICU increased fathers' knowledge of infant behavior and, as previous research suggests, is likely to boost fathers' confidence and to promote the parent-child relationship and strengthen the family unit.

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Complicated childbirth, the birth of a preterm infant, and a neonatal intensive care unit (NICU) admission are all factors that increase parental stress (Shields-Poë & Pinelli, 1997; Singer et al., 1999), alter the expected parental role, and create feelings of separation that may delay parental attachment (Bialoskurski, Cox, & Hayes, 1999; Sullivan, 1999). Although there is research about a mother's experience in the NICU following the early birth of a child (Pohlman, 2005), there is inadequate information about the father's experience. With an estimated 12.9% preterm birthrate in Iran in 2010 (World

Health Organization, 2012), the problem of fathers in Iranian NICUs is substantial.¹

Research suggests that lack of knowledge about newborn behavior can undermine a new parent's confidence and can interrupt father-child attachment essential for infant development (Zelkowitz, Bardin, & Papageorgiou, 2007). Fathers in Iran usually see their babies in the NICU sooner than mothers, who are separated from their babies because of birth complications. Lack of communication from nurses to fathers, a father's need to cope with high levels of stress, and a father's lack

 For more information about the HUG Your Baby program go to: <http://www.hugyourbaby.com/about.html>

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of knowledge about infants are barriers for these fathers.

Providing evidence-based information in a family-friendly manner will support both mothers and fathers in their parenting role, minimize the parents' stress, and encourage parental interaction with their baby (Obeidat, Bond, & Callister, 2009).

Iranian fathers are often required to undertake both physical and emotional responsibilities for the mother and the baby in the immediate postpartum period. Their role includes decisions about the hospitalized infant, communicating with concerned family and friends, caring for other children, providing support to the mother (Mackley & Spear, 2010), and, in many cases, returning to work within a few days after the infant's birth.

In addition, today's Iranian men struggle with traditional roles as breadwinners (which promotes the primacy of work) and cultural norms that compel them to keep up a brave front while dealing with trauma, such as an unexpected early birth. The author's experience is that young fathers are often expected to father differently from the way they were fathered, yet they lack practical knowledge about infants and skills to help care for a newborn.

Typically, no supportive measures or interventions are taken to help reduce the father's stress or to increase the father's knowledge of his baby in an Iranian NICU. Because technical aspects of caring for a NICU baby can monopolize the time of nurses, attention to the father's needs is often overlooked (Johnson, 2008). Fathers in such situations have expressed a need for increased support and guidance (Lundqvist & Jakobsson, 2003).

Because of the prevalence of prematurity in Iran, the stress placed on fathers in a NICU, and the importance of understanding newborn behavior to promote parent confidence and attachment, this study was undertaken. The goal of this quasi-experimental study was to evaluate the effectiveness of the HUG Your Baby educational program² to help fathers of preterm babies in an Iranian NICU understand their infant's behavior.

METHOD

Nonprobability purposive sampling was used, and face-to-face recruitment was used to recruit 46 fathers with premature babies in a NICU. Twenty-three were assigned to the control group and 23 to the intervention group. This sample size was estimated sufficient to show a 5 score increase in fathers' knowledge of preterm infant behavior with 80% power and a 5% level of significance. The researcher set out specific inclusion and exclusion criteria for participants in this study (see Figure 1). To prevent any bias, blocking method was used.³ No statistical differences between groups were found in fathers' age, education, or career (see Table 1). None of the fathers left the study before completion. Infants in the control and intervention groups were statistically similar in weight, Apgar score, gender, gestational age, and type of birth (see Table 1).

With the permission of its author (Browne & Talmi, 2005), The Knowledge of Preterm Infant Behavior (KPIB) research scale was translated to Farsi and then back-translated to English by an independent translator.

The research setting was a tertiary level NICU of Children's Medical Center, which is affiliated to Tehran University of Medical Sciences.

Inclusion:

- Gestational age (between 32 and 37 weeks)
- Single parity
- First experience of preterm birth
- Fathers older than 18 years old
- No major critical medical complications or anomalies threatening infant's condition
- No documented congenital anomalies or conditions necessitating surgery and sedation
- No previous NICU experience
- No stressful condition in the family such as serious disease of another child
- Infant's hospitalization at least 1 week
- Father's daily visit of infant at least 15–30 minutes

Exclusion:

- Father's refusal to continue being in the study
- Any clinical situation which leads to infant's death or deterioration of infant's condition
- Fewer than four visits with infant during a week

Figure 1. Inclusion and exclusion criteria. NICU = neonatal intensive care unit.

TABLE 1
Demographic Characteristics of Participating Fathers and Infants

Variable	Control Group	Experimental Group
Gestational age (weeks)	<i>M</i> = 34.70, <i>SD</i> = 1.06	<i>M</i> = 34.10, <i>SD</i> = 1.62
Birth weight (grams)	<i>M</i> = 2128.00, <i>SD</i> = 414.80	<i>M</i> = 1961.00, <i>SD</i> = 433.90
Apgar score (Mean)	8.26	8.3
Number of children	<i>M</i> = 1.40, <i>SD</i> = 0.58	<i>M</i> = 1.52, <i>SD</i> = 0.59
Fathers' age	<i>M</i> = 29.50, <i>SD</i> = 5.90	<i>M</i> = 31.10, <i>SD</i> = 5.00
Monthly income (<i>n</i>)		
Sufficient	6	9
Insufficient	17	14
Insurance status (<i>n</i>)		
Have insurance	17	23
Do not have insurance	6	0

INTERVENTION

HUG Your Baby is a parent educational program⁴ created and produced by Jan Tedder, a family nurse practitioner and lactation consultant in the United States. The HUG (Help-Understanding-Guidance) program is designed to help parents understand newborn behavior to prevent and solve problems around a newborn's eating, sleeping, crying, and attachment. With permission from the HUG Your Baby author, the HUG's 20-min parent education DVD⁵ was dubbed in Farsi and the parent education handout⁶ was translated into Farsi.

After introducing research goals during the first to second day after admission of babies into the NICU, fathers in both the control and intervention group were asked to complete an informed consent form, a demographic data sheet, and a KPIB pretest to assess their knowledge of preterm infant behavior. Completion of the KPIB posttest was done prior to discharge.

Fathers in both the control and the intervention group visited their babies at least four times a week for about 15–30 min. The time and duration of visits were recorded both by a nurse in the nursing notes and by an additional colleague in a visitation record. There was no additional teaching in the NICU for the control or intervention group.

Control Group

Twenty-three fathers in the control group received routine care in the NICU, which included informal discussion regarding topics such as bathing the baby or the importance of immunization. Although

casual description of infant behavior might have been mentioned by NICU nurses, there was no well-structured and specific information given on infant behavior, social interaction, sleep states, or medical intervention.

Intervention Group

Twenty-three fathers in the intervention group attended a one-and-a-half hour HUG Your Baby class on the fourth or fifth day of the infant's hospitalization.⁷ This class was taught by the researcher, who had previously completed the online Certified HUG Teacher course.⁸ These fathers were shown the dubbed HUG DVD, received the translated HUG handout, and discussed the program with the teacher.

MEASURE

The KPIB consists of 36 multiple-choice questions that are used to assess a father's knowledge of a preterm infant's behavior. The KPIB includes questions about an infant's reflexes, physical responses to stimuli, motor activity, sleep–wake states, and social interaction capacities (see sample questions⁹). Secondly, the questionnaire assesses a father's knowledge of optimal interaction as well as how to help the infant develop self-regulation (see sample questions¹⁰).

Validity

The questionnaire validity was tested by submitting the questionnaire to 10 members of the scientific board of Tehran Nursing and Midwifery faculty. Modifications of the questionnaire were made under supervision of neonatologists from the NICU.

Reliability

First, a pilot study with 10 fathers was done to assess the tool. In this study Split-halves reliability method was used by utilizing Spearman Brown formula which was 0.96.

Ethics

Application and consent for participation of human subjects in this research study were approved by

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Tehran University of Medical Sciences Center Institutional Review Board.

Statistics

The SPSS statistical software version 18 was used for data analysis. Descriptive statistic was used for data sorting and debriefing of the results and deductive statistic and statistic test such as independent *t* test and χ^2 was used for research goals.

RESULTS

In the intervention group, there was a significant increase in fathers' knowledge about preterm infant behavior (see Figure 2). Total scores for the dependent variable (KPIB) were analyzed using a *t* independent test. The KPIB scores for knowledge were significantly lower for the control group than for the intervention group (*p* value < .001), indicating a positive effect of HUG education on fathers in the intervention group. Table 2 presents the mean scores and standard deviations for the outcomes in both groups.

There were equal numbers of subjects in the control and the intervention groups. Demographic and birth characteristics were similar in both groups, with the exception of insurance coverage. The 73.9% of the control group had insurance in comparison with 100% of the intervention group (*p* value = .022). There were no other significant differences between the two groups.

DISCUSSION

Most fathers in both the control and the intervention group reported that they were not satisfied with their income¹¹ and needed a second or third job to

support their families. Although many of these busy fathers needed to visit their hospitalized infants at night, all fathers adhered to the study's visitation requirements and no father dropped out of the study.

This study confirms previous work which shows that family-based interventions in NICU may increase parental knowledge of infants (Browne & Talmi, 2005). Previous literature has emphasized that more active involvement by mothers positively impacts parenting (Bryanton & Beck, 2010; Heinicke, Beckwith, & Thompson, 1988). This study demonstrates that a father's knowledge of his baby can be enhanced by HUG Your Baby teaching. This increased knowledge is likely to promote more effective fathering.

Short-term interventions involving hospital-based intervention in the newborn period have been found to be less effective than longer term hospital plus home-based interventions (Achenbach, Howell, Aoki, & Rauh, 1993; Beckwith & Cohen, 1989; Raugh, Achenbach, Nurcombe, Howell, & Teti, 1988). Although high-risk populations may benefit more from long-term hospital and home intervention, the significant economic and personnel expenditures involved in offering such programs may be prohibitive. This study demonstrated that a concise, family-friendly intervention like HUG Your Baby can be an effective educational program to help increase fathers' knowledge of preterm infant behavior. Thus, this short-term intervention may provide some benefits for the high-risk preterm population, findings consistent with that of other studies (Browne & Talmi, 2005; Myers, 1982; Parker-Lowen & Lytton, 1987). Also, the experience of HUG education for fathers in this study supports the idea that verbal communication between care provider and parents improve parents' feelings of connection to their infant (Fenwick, Barclay, & Schmied, 2001).

TABLE 2
Mean Score ± Standard Deviations of Outcome Measures by Experimental Group

Group Name	Before		After		T Square Results
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Control Group	10.00	1.30	9.80	1.10	<i>t</i> = 0.621 <i>p</i> value = .541
Intervention Group	11.00	3.40	22.10	4.06	<i>t</i> = 9.108 <i>p</i> value < .001
<i>t</i> -independent test	<i>t</i> = 1.30 <i>df</i> = 28.70 <i>p</i> value = .198		<i>t</i> = 13.96 <i>df</i> = 25.30 <i>p</i> value < .001		

Nursing shortage, a nurse's lack of knowledge about family-centered care, inadequate communication between the nurse and the parents, and a nurse's unwillingness to alter work practices are other factors that discourage a parent's involvement in the NICU (Ygge, Lindholm, & Arnetz, 2006). Although the health-care team clearly has a critical role to perform, parents need to be welcomed and offered knowledge and support to fulfill their important role as parents (Roden, 2005). This study suggests that use of the HUG DVD and handout as well as a HUG Your Baby parent educational class might be an efficient and cost-effective way to enhance involvement of fathers without jeopardizing the medical care of the infant.

Furthermore, this study confirms the effectiveness of using the HUG audiovisual DVD to help fathers understand their babies better. This finding is consistent with other studies that document the positive impact of media-based anticipatory

guidance for young families (Paradis, Conn, Gewirtz, & Halterman, 2011).

LIMITATIONS

Although this research confirmed the short-term, positive effect of HUG Your Baby teaching on a father's knowledge of preterm infant behavior, a future study might assess the long-term effects on the father-child relationship, father's subsequent involvement with baby care, and mother's perception of how this teaching impacted the father.

This research was conducted in a tertiary care facility in Iran. Future studies might attempt to replicate these findings in other countries and medical settings.

IMPLICATIONS FOR CLINICAL PRACTICE

This study confirms that incorporating HUG Your Baby into the care of fathers with a preterm baby

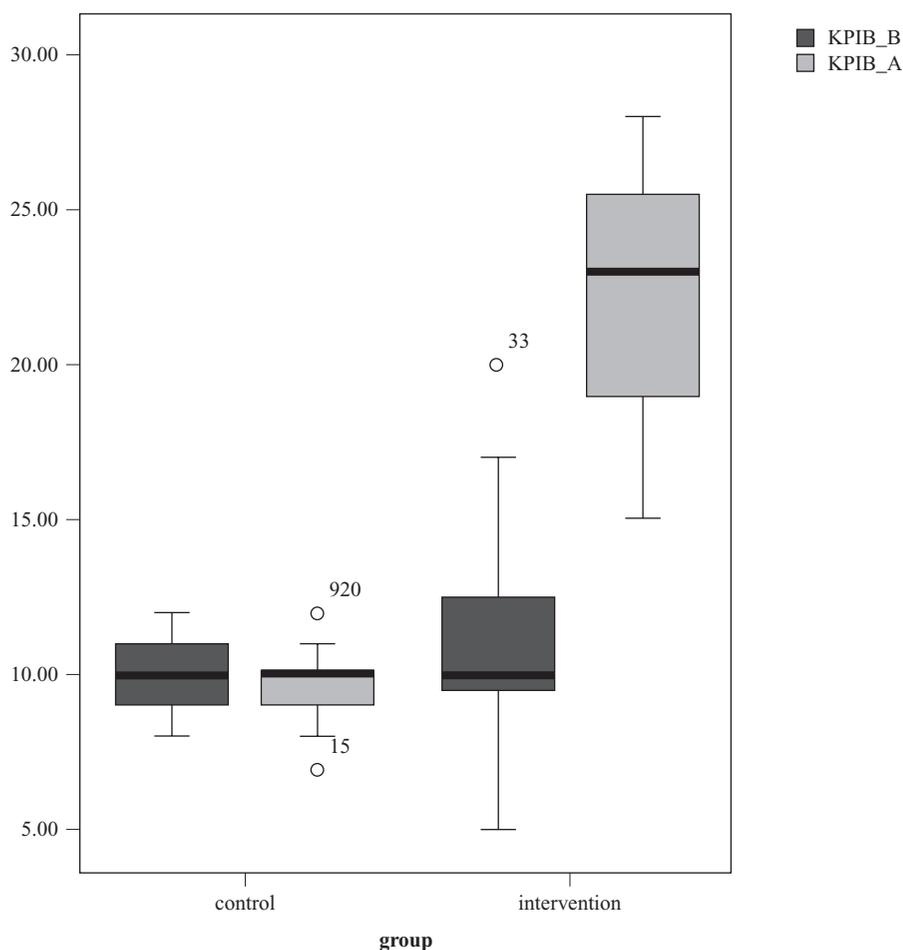


Figure 2. Comparison of fathers' knowledge before and after education in group control and intervention. KPIB = The Knowledge of Preterm Infant Behavior.

can increase those fathers' knowledge of newborn behavior and, as previous research suggests, is also likely to boost a parent's confidence and to promote the parent-child relationship. However, implications for using HUG Your Baby resources reach beyond the walls of a NICU.

Postpartum nurses, childbirth educators, and doulas are aware of an expanding body of literature confirming that expectant parents are eager to learn more information and to gain more skills to become effective, knowledgeable new parents (Barnes et al., 2008). In addition, lactation professionals know that understanding a baby's body language promotes breastfeeding initiation and duration (Kandish, Burian, & Amed, 2011).

Busy professionals also appreciate that digital teaching and learning is cost-effective and efficient (Paradis et al., 2011) and has the potential to reach an international audience. The HUG DVD—now available in English, Spanish,¹ and Farsi,¹—will soon be offered in Japanese and Korean as well. A comprehensive Certified HUG Teacher program (using DVD format) is now available for training Iranian professionals (www.hugforiran.com). For English speakers, the Certified HUG Teacher training can be taken online by NICU nurses as well as by other childbirth and parenting professionals around the world (HUG your baby training, n.d.). Spanish translation of the Certified HUG Teacher training materials is in process.

An international organization recently incorporated HUG Your Baby training into their certification process for doulas and for childbirth and lactation educators. Follow-up research with these professionals demonstrated that they, like the fathers in this study, found in the HUG Your Baby resources “new tools and strategies to help parents become the good moms and dads they long to be” (Tedder, 2012).

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NOTES

1. More than 15 million premature infants are born each year worldwide. Country-level data based on March of Dime 2010 report showed Iran is ranked 38th.
2. <http://www.hugyourbaby.org>
3. Considering that the average duration of a baby's hospitalization is about 2 weeks, first fathers of the control group were recruited. Two weeks later, recruiting for the intervention group was completed.
4. <http://www.hugyourbaby.com/about.html>
5. <http://www.hugyourbaby.com/skills.html>
6. <http://www.hugyourbaby.org/Home/research>
7. To accommodate the fathers' busy work schedules, three classes were offered.
8. <http://www.hugyourbaby.org/Home/hug-training/certified-teacher>
9. Reflexes: “When you push your finger against the inside of your baby's hand he will”; Physical response to stimuli: “Hiccoughs, spitting up, gagging, and grunting are all signs that . . .”; Motor activity: “When your baby extends her arm as if she is saluting this means . . .”; Sleep-wake states and social interaction capacities: “Your baby is telling you that she's alert and ready to play when she . . .”
10. Optimal interaction: “The best distance for your baby to be able to see your face is . . .” Self-regulation: “A common thing preemies do to get themselves under control is to . . .”
11. Control = 73.9% and intervention = 60.9%.

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