

# Implementing a Parent Education Program in the Special Care Nursery

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## ABSTRACT

**Background:** Parents of preterm hospitalized infants, whose lengths of stay can range from a few days to several months, often experience emotional lability. Because the Neonatal Intensive Care Unit (NICU) or Special Care Nursery (SCN) is a stressful and intimidating environment, prompt attention should be given to reducing parental stress and increasing parental confidence in preparation to care for their child post-discharge.

**Methods:** A quality improvement pilot project was designed to evaluate the parent education and support program, titled HUG Your Baby, in a Level II SCN for its ability to decrease stress and increase confidence for postpartum mothers of preterm infants born at less than 35 weeks gestation during the infant's hospitalization.

**Results:** The outcomes demonstrated a statistically significant decrease in maternal stress and a statistically significant increase in maternal confidence.

**Discussion:** The HUG Your Baby program is an effective parent education and support program that would benefit NICU and SCN families. *J Pediatr Health Care.* (2018) XX, 1–7

## KEY WORDS

Patient education, parent–child relations, preterm infant

## INTRODUCTION

The preterm birth rate in the United States has increased to 9.8%, that is, approximately 380,000 or 1 in 10 infants being born before 37 weeks (March of Dimes, 2018). Having a preterm hospitalized infant is often filled with emotional ups and downs, with inpatient stays that can range from a few days to several months. For many parents, the neonatal intensive care unit (NICU) or special care nursery (SCN) is an intimidating, unfamiliar, and stressful environment that is suboptimal for supporting the parent–infant relationship (Bracht, O'Leary, Lee, & O'Brien, 2013). The lights, sounds, appearance of the infant, and ongoing separation of the family is a major source of stress and anxiety for parents (Kadivar, Seyedfatemi, Akbari, & Haghani, 2015), but many report being most concerned about the alteration in their parental roles (Russell et al., 2014). Studies show that lack of knowledge about newborn behavior also contributes to decreased parental confidence and increased parental stress (Kadivar & Mozafarinia, 2013). Russell et al. (2014) found that the provision of emotional support, reassurance to parents in their role as caregiver, and encouragement can reduce or alleviate parental stress. Bracht et al. (2013) reiterated these findings by adding that educational programs that not only provide information about newborns but support active involvement in care decrease parental stress and

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increase parental confidence. Furthermore, when given the tools to care for their infants in the NICU or SCN, parents recognize their own strengths, increase their problem-solving strategies, and are more emotionally prepared to confidently care for their child at discharge (Bracht et al., 2013). Ra and Lim (2012) studied the use of video-format parental education to assess the use of technology to provide standardized education for parents. The participants reported that video was easier to understand and the content was easier to apply to actual care of their infant compared with education from booklets or in-person lectures alone. In addition, video was more effective for role modeling appropriate care and parent–infant interactions (Ra & Lim, 2012). The HUG Your Baby parent education and support program, available at [www.hugyourbaby.org](http://www.hugyourbaby.org), incorporates both video-format education and handouts. Because the program resources were low cost, readily available online, and applicable to the clinical site, HUG Your Baby was subsequently chosen to be the educational program for this quality improvement pilot project.

**Parents report being most concerned about alterations in their parental roles.**

HUG is an acronym for “Help, Understanding, and Guidance.” The evidenced-based program is supported by both child development and lactation literature. The Healthy Start Epic Center, a program within the Health Resources and Services Administration, has deemed it evidence based with a Level II rating (Health Resources and Services Administration, 2015; Healthy Start EPIC Center, n.d.).

**HUG is an acronym for “Help, Understanding, and Guidance.”**

HUG Your Baby is designed to help parents understand and respond appropriately to their baby’s body language and cues in an effort to prevent and/or solve common problems related to infant feeding, sleeping, and crying and improve parent–child interaction and bonding (HUG Your Baby, 2018). The HUG Your Baby program incorporates both video-format education and parent handouts that are available in multiple languages (Kadivar & Mozafarinia, 2013; Tedder, 2008). The program is appealing in clinical settings because it provides a consistent message, it addresses a variety of learning styles, and the video highlights multicultural families.

HUG Your Baby professional training is available through Web-based modules or in-person workshops. This training enables nurses and other health care professionals to implement HUG Your Baby programming at clinical sites in both hospitals and outpatient settings. Clinicians interested in more in-depth education and

training have the added option of becoming a certified HUG teacher.

Most research on the HUG Your Baby program has been limited to healthy, full-term infants (Tedder, 2008, 2015). There have been few studies evaluating the effectiveness of the program with preterm infants in the NICU or SCN (Kadivar & Mozafarinia, 2013). However, the design of the program suggests that HUG Your Baby would be an appropriate educational intervention for families of both full-term and preterm infants in a variety of settings.

The purpose of this quality improvement pilot project was to implement the HUG Your Baby program in a Level II SCN in an urban community hospital located in the Southeastern region of the United States. The specific aims of the project were to determine if the HUG Your Baby program was effective at decreasing stress and increasing confidence for postpartum mothers of preterm infants born at less than 35 weeks’ gestation during the infant’s hospitalization.

## METHODS

### Setting

The community hospital selected for this project handles the births of more than 2,000 babies each year (Duke Health, 2018). The 18-bed Level II SCN provides care for newly born infants older than or at to 32 weeks’ gestation or stable infants greater than or equal to 1,000 g who no longer require a higher level of care. In addition, the SCN admits full-term infants who are sick or need additional support (March of Dimes, 2015).

The SCN has an all-registered nurse staff. Job titles are based on a clinical ladder and range from Clinical Nurse I to Clinical Nurse IV. Professional experience ranges from new graduate nurses to nurses with more than 20 years of SCN experience. All Clinical Nurse IIIs and Clinical Nurse IVs have obtained their certification in low-risk neonatal nursing. The unit has mandatory staff training on developmental care for preterm infants. Before HUG Your Baby, newborn care and discharge teaching involved discussions and demonstrations and varied among nurses.

### Design

This quality improvement project used a one-group pre-/post-intervention design. A convenience sample of mothers of infants admitted to the SCN was used for this project. Inclusion criteria included English-speaking mothers of infants born at less than 35 weeks’ gestation who had no critical medical complications or anomalies and who would be hospitalized for at least 5 days. Exclusion criteria included mothers who were unable to visit at least 2 times per week, spoke a language other than English, or had an infant with significant health deterioration. A sample size of at least 18 mothers was needed to complete the surveys to obtain a large

effect (.80). Appropriate Collaborative Institutional Training Initiative (CITI) modules were completed. The CITI program provides training on research ethics and compliance. Formal institutional review board approval was not required because this quality improvement project was formally evaluated with a quality improvement checklist and was determined not to be human subjects research.

## Intervention

Mothers with infants who met the inclusion criteria were informed of the HUG Your Baby project within a few days of admission, typically between 1 and 3 days. After voluntarily agreeing to participate, mothers were asked to complete a demographic data sheet and two measurement tools: the Parental Stress Scale: Neonatal Intensive Care Unit (PSS: NICU) and the Perceived Maternal Parenting Self-Efficacy (PMP SE) questionnaire before watching the 20-minute HUG Your Baby video and receiving handouts. All documents required 10 to 15 minutes to complete.

The evaluation tools for this project, the PSS:NICU (Beheshtipour, Baharlu, Montaseri, & Razavinezhad Ardakani, 2014; Hoffenkamp et al., 2015; Turner, Chur-Hansen, Winefield, & Stanners, 2015) and PMP SE (Aliabadi, Borimnejad, Kamali, Rassafiani, & Nazi, 2013; Barnes & Adamson-Macedo, 2007; Pitetti, Smith, & Hsiao, 2016) were selected for their validity, reliability, efficacy, and use in literature with preterm infants and their parents and in other parental education study interventions. The PSS:NICU is a 26-question tool that uses a 5-point Likert-type scale to evaluate stress experienced by parents of preterm infants in the NICU. Mothers were asked to rate items from *not stressful* (1) to *extremely stressful* (5). The tool contains three subscales: Sights and Sounds, Baby Looks and Behaves and Treatments, and Parental Role. The PSS:NICU can be scored based on stress occurrence (Metric 1) or overall stress level (Metric 2). Metric 1 was used for this project. The PMP SE is a 20-question tool that uses a 4-point Likert-type scale to evaluate maternal–infant interactions. Mothers were asked to rate their perceptions for each item ranging from *strongly disagree* (1) to *strongly agree* (4). It contains four subscales: Care Taking Procedures (Factor 1), Evoking Behaviors (Factor 2), Reading Behaviors or Signaling (Factor 3), and Situational Beliefs (Factor 4). Mothers can have individual scores that range from 20 to 80. Higher scores indicate greater self-efficacy and confidence. For the purpose of this project, the data were evaluated as a group and not individually.

Consent to use both tools was obtained from the authors before project implementation, and both tools were free to use. After viewing the HUG Your Baby video and receiving standardized education handouts, typically between 4 and 6 days after admission, participants had an in-person visit with the project coordinator, a veteran SCN nurse with HUG Your Baby training, who was available to offer in-person education, answer

questions, or clarify any teaching points from the HUG Your Baby video and handouts. After the in-person visit and before discharge, participants completed the PSS: NICU and PMP SE a second time.

To further evaluate the effectiveness of the program, the SCN nursing staff caring for each participant's infant was asked to complete a checklist of observed caregiving behaviors demonstrated in the HUG Your Baby video. Behaviors included feeding, skin-to-skin contact, holding and talking to the infant, and recognizing overstimulation and signs of active and deep sleep.

Staff members did not receive specific training on the behavioral checklist. They were asked only to review the HUG Your Baby video and evaluation tools before project implementation. Because all staff members are trained in developmental care of preterm infants and because breastfeeding and skin-to-skin contact are both standards of care in the SCN, there were no protocols established for the observations.

The checklists were collected and analyzed at the end of the evaluation period, along with the PSS:NICU and the PMP SE questionnaires. The duration of the HUG Your Baby pilot project was 13 weeks to ensure adequate enrollment and evaluation of participant data.

## Privacy

No protected health information was used for this project. All information was de-identified before evaluation or analysis of data. Participants were assigned a number that correlated with the order in which they enrolled in the project. All participant evaluation data were kept in an encrypted, password-protected electronic folder for the duration of the project, per institutional guidelines where the project occurred. Paper-formatted evaluation data were kept in a secured location that was accessible to the project coordinator. After analysis of the results, all paper evaluation data were destroyed.

## Statistical Analysis

Paired *t* tests were used to analyze data from the PSS:NICU and PMP SE before and after the intervention. Descriptive statistics were used to display categorical data from the behavioral checklist. IBM SPSS, version 24, was used to conduct data analyses with  $\alpha$  set to .05.

## RESULTS

From November 2017 through February 2018, 22 postpartum mothers participated in the HUG Your Baby educational intervention. Nineteen participants (87%,  $n = 19$ ) completed both the pre- and post-intervention surveys. Three mother–infant dyads were discharged before completing the post-intervention surveys.

## Demographics

Maternal demographics ( $N = 22$ ) are displayed in Table 1. Of the 22 participants, 11 (50%) were age 30 to 39 years, 12 (54.5%) were married, and 8 (36.4%) had some college but no degree. Half of the participants ( $n = 11$ ) worked 40 or more hours a week, and almost half ( $n = 10$ ) had an income between

**TABLE 1. Maternal demographics (N = 22)**

Variable	n	%
Age, years		
18–20	2	9.1
21–29	9	40.9
30–39	11	50.0
Marital status		
Married	12	54.5
Never married	10	45.5
Education		
Less than high school	2	9.1
High school degree or equivalent (GED)	3	13.6
Some college but no degree	8	36.4
Associate's degree	2	9.1
Bachelor's degree	4	18.2
Graduate degree	3	13.6
Employment		
Employed, working 40 or more hours per week	11	50.0
Employed, working 1–39 hours per week	6	27.3
Not employed, looking for work	2	9.1
Not employed, not looking for work	2	9.1
Disabled, not able to work	1	4.5
Income		
\$0–\$9,999	1	4.5
\$10,000–\$24,999	3	13.6
\$25,000–\$49,999	5	22.7
\$50,000–\$74,999	5	22.7
\$75,000–\$99,999	3	13.6
\$100,000–\$124,999	3	13.6
Prefer not to answer	2	9.1
Race		
White	7	31.8
Black or African American	10	45.5
Asian	1	4.5
Some other race	4	18.2

Note. GED, General Equivalency Development.

\$25,000 and \$74,999. Most mothers identified as Black or African American ( $n = 10$ , 45.5%) or White ( $n = 7$ , 31.8%).

Infant ( $N = 22$ ) mean gestational age and birth weight were 33 weeks and 1,960.41 g, respectively. The median Apgar scores were 7 at 1 minute and 9 at 5 minutes of life. See Table 2 for additional infant demographic data.

### Subjective Measures

Descriptive statistics (mean and standard deviation) and mean comparison results for the PSS:NICU ( $n = 19$ ) are

displayed in Table 3. There was a statistically significant decrease in stress for the Sights and Sounds subscale ( $p = .013$ ), a marginally significant decrease for the Baby Looks and Behaves and Treatments subscale ( $p = .091$ ), and a statistically significant decrease for the Parental Role subscale ( $p = .001$ ). The results of the PMP SE questionnaire ( $n = 19$ ) showed a statistically significant increase in confidence from before the intervention (mean = 3.17, standard deviation = .51) to post-intervention (mean = 3.47, standard deviation = .40;  $p = .002$ ).

**TABLE 2. Infant demographics (N = 22)**

Variable	n	%
Sex		
Male	11	50.0
Female	11	50.0
Birth type		
Vaginal	10	45.5
Cesarean	12	54.5
Birth order		
First	13	59.1
Second	6	27.3
Third	2	9.1
Fourth	1	4.5

### Behavioral Measures

The nurse-observed behavioral checklist is displayed in Table 4. Results showed that 86.4% ( $n = 19$ ) of mothers put their babies to the breast or offered expressed breast milk and that 72.7% ( $n = 16$ ) of mothers or other caregivers held their babies skin to skin (kangaroo care). By the end of the evaluation period, 100% of mothers or caregivers demonstrated the ability to calm their baby when fussy and talk or play with their baby ( $N = 22$ ). However, most caregivers were unable to recognize or verbalize physical/behavioral signs of overstimulation (81.8%,  $n = 18$ ) or signs of active or deep sleep (86.4%,  $n = 19$ ).

**TABLE 3. PSS:NICU paired *t* test results (*N* = 19)**

Subscale	Before intervention, <i>M</i> ( <i>SD</i> )	After intervention, <i>M</i> ( <i>SD</i> )	<i>p</i>
Sights and Sounds	2.62 (1.05)	1.98 (.84)	.013
Baby Looks and Behaves and Treatments	2.80 (.98)	2.30 (1.01)	.091
Parental Role	3.89 (1.06)	2.79 (1.28)	.001

Note. *M*, mean; PSS:NICU, Parental Stress Scale: Neonatal Intensive Care Unit; *SD*, standard deviation.

## DISCUSSION/IMPLICATIONS FOR PRACTICE

The results of this quality improvement pilot project suggest that the HUG Your Baby parent education and support program can effectively decrease maternal stress and increase maternal confidence when caring for her newborn. The results from the PSS:NICU and PMP SE after the HUG Your Baby intervention support what previous studies have concluded: active involvement in care, emotional support, reassurance, encouragement, and giving parents the tools needed to care for their child decreases stress and increases confidence. The addition of education via video format, parent handouts, and in-person methods after initial instruction can further help parents navigate stressful NICU and SCN environments.

**Parents need support, reassurance, and encouragement to care for their child.**

Most babies in this project received breast milk and were placed skin to skin, important benefits highlighted in the HUG Your Baby video. Although the specific aims of this project did not include increasing breastfeeding rates in the SCN, the benefits are significant. Breastfeeding reduces the risks of

necrotizing enterocolitis and late-onset sepsis in preterm infants and protects against a variety of other illnesses and diseases ([American Academy of Pediatrics, 2018](#)). Skin-to-skin care is associated with longer and more exclusive breastfeeding, improved maternal–infant attachment and bonding, and decreased maternal stress and feelings of helplessness ([Baley, 2015](#)). These two interventions alone significantly improve health outcomes for mothers and infants. In addition, 100% of mothers and caregivers demonstrated nurturing behaviors such as holding, comforting, talking to, and playing with their infant. This indicates increased confidence with care giving, parent–infant bonding, and attachment.

Because overstimulation is frequently discussed in the SCN, one could conclude that the low percentage of parents and caregivers not recognizing overstimulation could indicate a failure to document this on the behavioral checklist versus a true lack of recognition by the family. Regarding active and deep sleep, many parents or caregivers may not have been present for a full infant sleep cycle. Therefore, this measure of effective parent education may be better evaluated in the home instead of in a hospital environment.

The PSS:NICU Baby Looks and Behaves and Treatments subscale result was only marginally significant. It would be reasonable to conclude that it continues to be

**TABLE 4. Behavior checklist observation results (*N* = 22)**

Item	Not observed, <i>n</i> (%)	Observed for mother, <i>n</i> (%)	Observed for father, <i>n</i> (%)	Observed for other, <i>n</i> (%)	Observed for both mother and father, <i>n</i> (%)	Observed for mother, father, and other, <i>n</i> (%)
Did the caregiver recognize or verbalize (physical/behavioral) signs of overstimulation (SOS)?	18 (81.8)	3 (13.6)	0 (0.0)	0 (0.0)	1 (4.5)	0 (0.0)
Did caregiver place infant skin to skin (kangaroo care)?	6 (27.3)	11 (50.0)	1 (4.5)	0 (0.0)	4 (18.2)	0 (0.0)
Was caregiver able to calm infant when he/she was fussy?	0 (0.0)	13 (59.1)	0 (0.0)	0 (0.0)	8 (36.4)	1 (4.5)
Did caregiver talk to or play with infant?	0 (0.0)	11 (50.0)	0 (0.0)	0 (0.0)	10 (45.5)	1 (4.5)
Did caregiver recognize or verbalize signs of active versus deep sleep?	19 (86.4)	2 (9.1)	0 (0.0)	0 (0.0)	1 (4.5)	0 (0.0)
Did mother put infant to breast or offer expressed breast milk?	3 (13.6)	19 (86.4)	—	—	—	—

difficult for a mother to see her infant with tubes and lines or experiencing painful procedures despite being adequately educated or prepared.

Hug Your Baby is an excellent resource that nurses and other health care professionals should consider using for parent education. Benefits of the HUG Your Baby program include its ease of use, due to the video format and in-color handouts, its minimal disruption to workflow, and the fact that it is time efficient because it supplements and reinforces newborn care and discharge teaching. The low cost to train HUG champions and implement and maintain the program over time is also cost effective. Additionally, providing education that is culturally sensitive and family centered increases parental satisfaction with care.

Although the pilot location for this project was an 18-bed Level II SCN, the results suggest that the program would be applicable in a variety of NICU and SCN settings, including those with limited nursing and educational resources.

### Limitations

This quality improvement project focused on English-speaking postpartum mothers of preterm hospitalized infants. Future innovations will assess the effectiveness of the program for mothers of full-term infants, in settings outside of the NICU or SCN, and for non-English-speaking mothers to address the increasingly diverse populations that are served in the nursery. Although the data showed reduced maternal stress and increased maternal confidence after the educational intervention, future projects may want to assess the long-term effects of the program after discharge via special infant care follow-up clinics or pediatric primary care sites.

Another limitation was the limited number of HUG Your Baby Champions at the pilot location. If more staff completed online or in-person HUG training, the program may have produced even more significant results because SCN team members would be more able to provide reinforcement of the parental educational concepts. The limited number of champions likely contributed to the three mother-infant dyads who were discharged without completing the postintervention surveys as well.

The SCN is exploring HUG Your Baby education for all mothers, including those with infants who require only a short length of stay in the hospital. Because these mothers would benefit from increased knowledge about newborn behavior and increased confidence to care for their newborns, the HUG Your Baby video and handouts would be presented early in the admission process. A 1-day HUG training session for all nursing staff to maximize the effectiveness of the program is also being considered.

The evaluation period for this project averaged 7 to 10 days. Future projects may want to explore shorter time frames such as a 1- to 2-hour parent class facilitated by a HUG provider or allow more time for care

and parental involvement before completing the post-intervention surveys. Participants in this project watched the HUG video only once. Benefits of viewing the video repeatedly may want to be explored. This can be achieved by streaming the HUG video in waiting areas of the NICU or SCN and on mother-baby units and making the DVD readily available for parents to view upon request while in the nursery. Future projects may also want to explore the impact of HUG Your Baby on paternal stress and confidence.

Finally, this quality improvement pilot project used a small convenience sample, and the participants were not randomized. Future projects should consider larger sample sizes and include randomization.

### CONCLUSIONS

HUG Your Baby is an affordable, evidence-based parent education and support program that is effective in providing culturally sensitive information and guidance to parents. The program provides consistent and standardized education that helps parents build confidence in their role as caregiver, supports their overall well-being, and gives them the tools necessary to promote successful transition from the NICU or SCN to home. In combination with a HUG champion, the HUG Your Baby program is an effective clinical discharge teaching tool for parents of preterm infants.

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