



Promoting Early Language Development and Parent Engagement in the NICU

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Background

- Recent medical advances have contributed greatly to increased survival rate for infants born pre-term and/or with medical complications (Fanaroff et al., 2007).
- However, such infants are at greater risk for developmental delays. In particular, infants in private rooms, where language stimulation may be reduced, may be at higher risk for language delays. For caregivers, stress of being in the NICU may also impact early attachment and bonding (Aarnoudse-Moens et al., 2009; Pineda 2014).
- The *Mother Goose on the Loose: Goslings* curriculum addresses the needs of medically fragile infants/ families:
 - Adaptation of Mother Goose on the Loose (early-literacy program for infants/toddlers and their caregivers).
 - Interactive sessions with rhymes, songs, puppets, musical instruments, and more to teach parents.
 - Trains parents to read and respond to their baby's signals and cues of readiness for interaction and overstimulation.

Study Objectives

- Do parents think Goslings provided them with skills to promote early literacy and child development?
- Do parents think Goslings increased their knowledge of their infant's signals of readiness for interaction?
- Do parents intend to implement what they learned from the program? According to NICU nurse observations, did parents change behavior?
- Do parents implement the program strategies 1-2 weeks later?

Method

Setting

- Level IV Neonatal Intensive Care Unit (NICU) in Baltimore, MD

Participants

Table 1. Adult Demographics (n = 38)			Table 2. Infant Demographics		
		% sample			% sample
Relation to baby	Mother	65	Gender	Female	50
	Father	19		Male	50
	Other	16	Length of Stay in NICU	≤7 days	38
Highest education	Less than HS	11		1-4 weeks	46
	HS diploma	16		1-2 months	5
	Some college/ trade school	13		≥2 months	11
	AA/BA/BS	37	First Born	Yes	63
	Post-graduate degree	24		No	37
Race/ ethnicity	Black	40	Birth Weight	≤1000g	13
	White	42		1001-1500g	40
	Other	16		1501-2000g	26
				2001-2500g	11
				≥ 2500g	11

Method

Participants (cont.)

- Ten of the 38 parents participated in semi-structured interviews
- 37 NICU nurses participated in online questionnaires

Procedure

- 60-minute interactive sessions in NICU family lounge.
 - Facilitated by trained staff from *Port Discovery Children's Museum*.
 - Post-session, each family received a bag of materials, including a songbook, picture books, instruments, and toys to use with their baby.
- Participants completed a pre-session and post-session survey. Interested families completed a semi-structured interview 1-2 weeks post-session.
- All NICU nurses invited to participate in an online survey.



Measures

- Pre session:
 - Frequency talking, reading, singing, and reciting nursery rhymes in the **past week** (*Never to multiple times/ day*).
 - Understanding baby's overstimulation cues/ readiness for interaction signals (*Strongly Agree to Strongly Disagree*).
- Post session:
 - Intended frequency talking, reading, singing, and reciting nursery rhymes in the **coming week** (*Never to multiple times/ day*).
 - Confidence reading baby's cues/ program taught about readiness for interaction signals (*Strongly Agree to Strongly Disagree*).
- Semi-structured interview (**1-2 weeks later**)
 - Experience trying Goslings strategies in NICU room/home (e.g. frequency, favorite/least favorite activities, etc.).
- Nurse survey (online)
 - Nurses reported any observed behavioral changes (i.e. more appropriate parent-infant interaction) among participants.

Results

Table 3. How Often Do Parents Interact/Intend to Interact with Their Infants?

Activities	Pre-Test M	Post-Test M
Talk	4.68	4.88**
Read	1.68	4.00**
Recite Nursery Rhymes	1.85	4.15**
Sing	2.56	4.21**

Note. 1 = not at all, 2 = 1-3/week, 3 = 4-6/week, 4 = every day, 5 = several times a day;
* $p < .05$; ** $p < .001$

Table 4. Do Parents Think the Goslings Program has Increased Their Knowledge of Infant Signals of Readiness for Interaction?

Knowledge & Confidence	Pre-Test M	Post-Test M
Cues	4.00	4.73**
Signals	3.59	4.81**

Note. 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree

** $p < .001$

Presented at the NAEYC Annual Conference. November 2018. Washington, D.C.

Please contact Lshanty1@umbc.edu with questions.

Results (cont.)

- 100% likely/extremely likely to recommend this program to other parents of children in the NICU & recommended that the NICU offer this program again
- Majority of nurse participants reported observing positive behavior change among participants (i.e. more developmentally appropriate interaction; use of Goslings toys/strategies)

Table 5. Parent interview themes

Theme	Examples
Engagement/ Intention to engage in specific developmentally appropriate activities	Talking, reading, singing, nursery rhymes; use of specific Goslings materials; responsiveness to cues of overstimulation
Identified barriers to interaction	Child's medical status, sensory sensitivity, baby asleep most of time, infant's age, NICU isolettes, wires and medical equipment, nurses/doctors
Building from current parental strengths	Affirmation of previous actions/beliefs, new information
General comments on Goslings program	Enjoyed interactive nature of program & opportunity to connect with other NICU parents

"You get to meet other families that may be going through something with their baby and you have a chance to talk about it."

"[I learned] different ways to use toys/songs depending on the kind of day the baby is having."

"[I liked] understanding effects of different stimuli and learning the importance of voice, touch, [and] affection on baby's health."

Conclusion/ Implications

- Consistent with Year 1 of evaluation/ implementation ($n = 66$), very positive response to program.
- Pre-post increase in intention to engage in early literacy activities (supported by nurse observations).
- Pre-post increase in knowledge/confidence interpreting infant readiness signals.
- Majority of interviewed parents reported engaging in 1+ early literacy activity (talking and singing most popular).
 - Some report of barriers to engagement but excitement to use strategies in the future.
 - Interactive nature of sessions and opportunity to connect with other NICU parents were important components to parents.

Acknowledgements: PNC Grow Up Great, University of Maryland Medical Center NICU staff & families, Port Discovery Children's Museum staff, Mother Goose on the Loose, LLC