

Bath Time – a KidCareCanada DVD –Pilot Study

Background

Knowledge translation

Over recent decades, academia has amassed significant amounts of data and evidence on the effects of nurturing on the physical, emotional, and social development of infants (1). However, little of this information is available in ways that are accessible to new parents. Unless new parents are able to access and integrate the new information, none of the research information generated will be able to affect the well-being of our children. For knowledge translation to occur, the information must be presented in accessible language and style, at the right time, and using the right medium.

One example of knowledge translation in the area of infant-parent interaction is the efforts with respect to Shaken Baby Syndrome. Of particular interest is the work done to develop resources for parents about “The Period of PURPLE Crying”, now seen as a normal part of infant development from age 2 weeks to 3 months during which infants may cry unexpectedly and inconsolably, often in the late afternoon or evening (2). Randomized controlled trials indicate that the information, presented using an 11-page booklet and a 12-minute DVD, appears to improve knowledge and behaviours seen as important to the prevention of SBS (2).

The messages in the DVD, “Bathtime”, developed by KidCareCanada are all based on evidence from the literature. There are four safety tips for safely bathing the baby, and six emotional safety tips to help with developing healthy parent-child attachment and supporting physical, social, and psychological development.

The specific safety messages are

- Hold baby safely
- Test water to ensure it is lukewarm
- Never leave baby alone
- Keep baby warm

The healthy attachment and long-term development messages are:

- Talk to baby – explain what’s happening
- Watch for baby to give cues
- Use a singsong voice
- Give lots of respectful, gentle touching
- Use positive facial expressions
- Enjoy baby

The safety messages result from evidence that infant injuries and deaths that occur during bath time can be the result of the infant slipping from the parent’s grasp (3), being immersed in water that is too hot with resultant scald burns (4) or seizures (5), and being left unattended (6), sometimes in bath seats (6,7). The final message is based on the knowledge that infants can rapidly become hypothermic if their wet skin is left exposed (8).

The messages relating to healthy attachment and long-term development have their origins in the literature concerning language development, brain development and attachment.

- Talking to the baby has been shown to improve language development (9). It also encourages the parent to focus on the baby, and tends to relax both parent and infant.
- Watching for baby to give cues also tends to help the parent focus on the infant, and to respond to and mirror the infant's expressions which are positively related to brain development (10) and long term moral cognition (11),
- Using a singsong voice, that is using long, stretched-out syllables, seems to be associated with an infant's ability to distinguish language, and with improved brain development (12).
- Giving lots of respectful, gentle touching is associated with improved breastfeeding and maternal attachment behaviour (13,14), reactivity to stress (15) as well as physical and mental health across the infant's lifespan (16)
- Using positive facial expressions and mirroring the baby's expressions is correlated with the infant's development self-control and verbal IQ (17).
- Enjoy baby is a message intended to decrease maternal stress which has been shown to correlate with infant illness. Even maternal prenatal anxiety and stress increase the probability of infant illnesses (18).

Goals and Objectives

Long term goal

The long term goal of this project is to translate academic knowledge on healthy child-rearing practices through evidence-based educational messages presented to new parents through accessible media.

Short term goal

The short term goal of this project is to help new parents begin to form healthy attachment with their infants.

Objectives

- To provide "Bath Time" to 72 new parents of infants aged 0 to 3 months in three different modes of delivery, 24 in each of the three modes, with each group being equally divided between Aboriginal and non-Aboriginal parents
- To evaluate the effect of different modes of presentation of the DVD (by MOA, by health care professional in a one-on-one format with a supportive introduction, by health care professional in a group environment with pre- and post-viewing group discussion)
- To assess differences in effect for each mode between Aboriginal and non-Aboriginal parents

Hypotheses

- That the effectiveness of the Bath Time DVD in changing knowledge and behaviour is greater if the DVD is given to the new parent (infant 0 to 3 months) by a health care professional with an introduction to it, than if it is given by a non-professional (such as a medical office assistant) without any introduction
- That the effectiveness of the Bath Time DVD in changing knowledge and behaviour is greater if the DVD is viewed and discussed in a group environment, than if it is given to the new parent by a health care professional with an introduction to it.

- That the effectiveness of the Bath Time DVD does not differ between Aboriginal and non-Aboriginal parents

“Knowledge and behaviour” will be measured by a tested questionnaire eliciting awareness of and self-report of behaviour with respect to four tips on bath safety and six tips on creating attachment. The questionnaire will be given 2 weeks after being given or shown the DVD and again 3 months later.

METHODS

Inclusion Criteria

- Parents of infants 0 to 3 months of age who attend one of the following:
 - One of the participating physicians in Victoria, BC
 - The Sooke Family Resource Society post-natal classes
 - The Aboriginal Early Intervention program in Victoria
 - The Greater Victoria Y program for new parents
 - Public health nurse well-baby visits
 - Duncan community new parent program

Exclusion Criteria

Parents will be excluded if there are extrinsic factors that would affect attachment.

Thus, exclusion criteria are:

- Parents who have had to be separated from their infants for 24 hours or more due to medical issues for either the mother or the infant
- Infant admission to the neonatal intensive care unit
- Infant prematurity (<36 weeks)
- Infant intraventricular haemorrhage

Parents will also be excluded if their understanding of English is not adequate to be able to understand the DVD. Illiteracy is **not** an exclusion criterion.

Study Protocol

There are three different modes of presentation, with 24 subjects recruited by each mode, and subjects even divided between Aboriginal and non-Aboriginal parents for each mode.

1. Doctor’s office, with the DVD provided by the MOA
 - a. Posters will be provided to the doctors’ offices inviting new parents to participate in the study.
 - b. New parents who express interest to the doctor or the MOA will be given a more-detailed description of the study and, if still interested, a consent form to complete.
 - c. Those who consent will be given the DVD to take home with them. Potential participants who do not agree at this point will be able to take home a consent form to discuss with others, and return to pick up the DVD up to two weeks later.
 - d. Those with low literacy level can request that the questionnaire be read to them over the telephone
 - e. The MOA will telephone the contact information for each subject to the study coordinator.

- f. Questionnaires will be mailed two weeks following enrolment.
 - g. If no response is received by two weeks later, a second copy of the questionnaire will be mailed.
 - h. If no response is received by two weeks following that, a telephone call will be made to encourage completion of the questionnaire.
 - i. The second questionnaire will be mailed three months following the initial presentation of the DVD, and a similar follow-up protocol will be followed to encourage completion of the questionnaire.
2. One-on-one presentation by a health care professional
 - a. The health care professional, as part of a public health well-baby visit, will orally invite the new parent to participate. If the new parent expresses interest in the study, the parent will be given a consent form to complete, the DVD. The remainder of Steps f) to i) will be as above.
 3. Group viewing with pre- and post-viewing discussion
 - a. The DVD will be shown to new parent or teen parent classes in which participants are already registered. There will be no requirement to agree to participate before the DVD is shown.
 - b. Following the viewing of the DVD and post-viewing discussion, all viewers will be invited to participate in the follow-up questionnaire portion of the study.
 - c. The study will be described in detail to enable potential participants with low literacy levels to be completely informed prior to agreeing to participate.
 - d. At a meeting of the group two weeks later, the group will have a PowerPoint presentation, with audio taped reading of the questions in the questionnaire, to enable each individual to complete the questionnaire. Response possibilities will be colour-coded to allow for easier completion. Responses will be confidential, and completed questionnaires (or blanks if the potential subject chooses not to participate) will be deposited through a slot in a closed box.

Sample Size calculations

The questionnaires are scored as integer values from 0 to 10 on both knowledge and self-report of behaviour. We anticipate mean scores in the range of 6 to 7 among those who watched the video alone, and scores in the range of 8 to 9 among those who watched the video in a group. Required sample size is less than 8 per group. We anticipate that we will enrol 12 per group in each of the 6 groups (Aboriginal and non-aboriginal, in each of doctor's office, home visit, and group) with up to 30% attrition.

Data Analysis

We will use ANOVA to analyze the difference between groups, and the F-test for significance, with a two-tailed alpha of 0.05 and a power of 0.8.

REFERENCES

1. Golding J. Determinants of child health and development: the contribution of ALSPAC – a personal view of the birth cohort study. *Arch Dis Child* 2010 95(5):319-22
2. Barr RG, Rivara FP, Barr M, Cummings P, Taylor J, Lengua LJ, Meredith-Benitz-E. Effectiveness of educational materials designed to change knowledge and behaviours regarding crying and Shaken-Baby Syndrome in mothers of newborns: a randomized controlled trial. *Pediatrics* 2009; 123(3):972-80
3. Mao SJ, McKenzie LB, Xiang H, Smith GA. Injuries associate with bathtubs and showers among children in the United States. *Pediatrics* 2009; 124(2):541-7

4. Blume-Peytavi U, Cork MJ, Paergemann J, Szczapa J, Vanaclocha F, Gelmetti C. Bathing and cleansing in newborns from day 1 to first year of life: recommendations from a European round table meeting. *J Eur Acad Dermatol Venereol* 2009; 23(7):751-9
5. Incorpora G, Pavone P, Ruggieri M, Cocuzza M, Mazzone L, Parano E, Privitera M. Neonatal onset of hot water reflex seizures in monozygotic twins subsequently manifesting episodes of alternating hemiplegia. *Epilepsy Res* 2008 78(2-3):225-31
6. Byard RW, Donald T. Infant bath seats, drowning and near-drowning. *J Paediatr Child Health* 2004; 40(5-6):305-7
7. Sibert J, John N, Jenkins D, Mann M, Sumner V, Kemp A, Cornall P. Drowning of babies in bath seats: do they provide false reassurance? *Child Care Health Dev* 2005; 31(3):255-9
8. Raman V, Rekha S, Chandrasekhara MK. Effect of bathing on temperature of normal neonates. *Indian Pediatr* 1996; 33(4):340
9. Vouloumanos A, Werker JF. Listening to language at birth: evidence for a bias for speech in neonates. *Dev Sci* 2007; 10(2):159-64
10. Lenzi D, Trentini C, Pantano P, Macaluso E, Iacoboni M, Lenzi GL, Ammaniti M. Neural basis of maternal communication and emotional expression processing during infant preverbal stage. *Cereb Cortex* 2009; 19(5):1124-33
11. Feldman R. Mother-infant synchrony and the development of moral orientation in childhood and adolescence: direct and indirect mechanisms of developmental continuity. *Am J Orthopsychiatry* 2007; 77(4):582-97
12. Lebedeva GC, Kuhl PK. Sing that tune: infants' perception of melody and lyrics and the facilitation of phonetic recognition in songs. *Infant Behav Dev* 2010; May 14 (epub ahead of print)
13. Nyqvist KH, Anderson GC, Bergman N, Cattaneo A, Charpak N, Davanzo R, et al. Toward universal Kangaroo Mother Care: recommendations and report for the First European conference and Seventh International Workshop on Kangaroo Mother Care. *Acta Paediatr* 2010; 99(6):820-6
14. Moore ER, Anderson GC, Bergman N. Early skin-to-skin contact for mothers and their healthy newborn infants. *Cochrane Database Syst Rev* 2007; 3:CD003519
15. Feldman R, Singer M, Zagoory O. Touch attenuates infants' physiological reactivity to stress. *Dev Sci* 2010; 13(2):271-8
16. Fish EW, Shahrokh D, Bagot R, Caldji C, Bredy T, Szyf M, Meaney MJ. Epigenetic programming of stress responses through variations in maternal care. *Ann N Y Acad Sci* 2004; 1036:167-80
17. Feldman R, Greenbaum CW, Yirmiya N. Mother-infant affect synchrony as an antecedent of the emergence of self-control. *Dev Psychol* 1999 35(10):223-31
18. Beijers R, Jansen J, Riksen-Walraven M, de Weerth C. Maternal prenatal anxiety and stress predict infant illnesses and health complaints. *Pediatrics* 2010 126(2):e401-9