

The Impact of Increased Skin-to-Skin Contact With the Mother in Breastfeeding Neonates on Exclusive Breastfeeding at 4 and 8 Weeks Postpartum

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Objective: To evaluate dose of skin-to-skin (STS) contact as a nursing intervention to increase the rate of exclusive breastfeeding after discharge

Design: A descriptive correlational study

Setting: A Level II maternity unit in Ohio

Participants: Women who had a vaginal delivery of a term, well newborn, with intent to exclusively breastfeed

Methods: Newborns were placed STS with their mothers at birth. Mothers were encouraged to maintain frequent STS with their newborns while in the hospital, and kept a log of STS time. A lactation consultant made follow-up phone calls at 4 weeks and 8 weeks postpartum to assess breastfeeding exclusivity. Spearman rho was used to analyze the data.

Results: Duration of STS was not correlated with exclusive breastfeeding at either 4 weeks or 8 weeks postpartum. However, early STS was correlated with exclusive breastfeeding at 4 weeks postpartum.

Keywords: breastfeeding, kangaroo mother care, lactation, human milk

Breastfeeding has been recognized globally as critical to the health of newborns, with significant health benefits for mothers as well (World Health Organization [WHO], 2014). The WHO “actively promotes breastfeeding as the best source for nourishment for infants and young children.” In the United States, the American Academy of Family Physicians (2007), the American Academy of Pediatrics (AAP, 2005), the American College of Nurse-Midwives (2011), and the American College of Obstetricians and Gynecologists (2007) support breastfeeding. One of the Healthy People 2010 goals was to increase the proportion of mothers who breastfeed their babies. It continues to be a goal for *Healthy People 2020* (U.S. Department of

Health and Human Services, 2013). The U.S. Preventive Services Task Force (2008) found that interventions that promote and support breastfeeding increase rates of initiation, duration, and exclusivity of breastfeeding. Skin-to-skin (STS) contact is one such intervention that has been demonstrated to improve breastfeeding success.

STS contact (also known as *kangaroo care*) between a mother and her newborn is not a new concept. Mother-infant separation is a common phenomenon in modern Western culture, but current research increasingly demonstrates that this may not be beneficial to mothers and newborns (Moore, Anderson, Bergman, & Dowswell, 2012). Neonatologists in Bogota, Colombia, discovered in the 1980s that when parents provided kangaroo care to their premature newborns, the survival rate for these babies was comparable to the survival rate for premature babies receiving traditional care in industrialized countries (Charpak, Ruiz-Peláez, Figueroa, & Charpak, 1997). Since then, research has demonstrated significant benefits to the practice of STS

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for all newborns. These benefits include neurobehavioral state organization, motor system modulation (Ferber & Makhoul, 2004), and thermoregulation (Chiu, Anderson, & Burkhammer, 2005).

STS has also been shown enhance breastfeeding initiation, duration, and exclusivity (Bramson et al., 2010; Moore & Anderson, 2007; Puig & Sguassero, 2007). Research findings suggest that early STS significantly increases exclusive breastfeeding at 48 hours and 6 weeks postpartum (Bramson et al., 2010; Thukral, Sankar, Agarwal, Gupta, Deorari, & Paul, 2012). Additional research has demonstrated that STS provides a positive effect on breastfeeding at 1–4 months postpartum (Moore et al., 2012).

The purpose of this study was to evaluate the effect of STS as a hospital-based intervention to promote duration and exclusivity of breastfeeding after discharge. In addition, the number of minutes of STS during hospitalization was collected and analyzed to determine whether there was a correlation to breastfeeding exclusivity at 4 weeks and 8 weeks postpartum.

Methods

Design and Setting

A descriptive correlational study was used to determine the relationship between minutes of STS during hospitalization, and breastfeeding duration and exclusivity at 4 and 8 weeks postpartum. The study was conducted in an urban hospital in the Midwestern United States, with an average of 1,100 births per year.

Participants

After institutional review board approval, a convenience sample of 65 women was recruited from a midwifery practice during the third trimester of pregnancy. Inclusion criteria for participation included intent to exclusively breastfeed and vaginal delivery at term (≥ 37 weeks). Exclusion criteria included maternal age younger than 18 years, non-English-speaking, preterm delivery (less than 37 weeks gestation), 5-minute Apgar < 7 , birth weight less than 5 lb. (2,268 g), newborn admitted to Level II nursery, and medical complications of mother or newborn that contraindicated STS. Those who were excluded from the study were not excluded from participating in STS if appropriate during hospitalization, as this is considered part of routine care.

Procedure

During prenatal care, women who expressed intent to breastfeed were given verbal information by the midwives

regarding the option to participate in the study. Women who expressed interest in participating in the study received a phone call from the principal investigator explaining the study protocol. The study protocol and consent was then mailed through United States Postal Service to the potential subjects. When a subject came to the labor and delivery unit with the anticipation of delivery, she was to notify staff that she was a participant in the STS and breastfeeding study. Each mother received a clipboard with the study consent and data collection materials attached. The informed consent was signed upon admission.

Certified nurse-midwives and nursing staff were instructed by the principal investigator to place the neonate STS at birth, or as soon as possible after birth. Neonates were placed STS after birth and dried with warm blankets. A hat was placed and, if requested by the mother, the neonate was diapered. For the purposes of this study, STS was defined as a neonate with only diaper and hat and placed on mother's bare chest (Moore et al., 2012, p. 2). Mothers were instructed after delivery to spend time STS with their newborns while in the hospital and record minutes of STS on the study log sheet provided. The amount of time to be spent STS was not defined, and mothers were free to spend as much or as little time as they wished, STS with their newborns.

Instruments

Follow-up phone calls were made at 4 weeks and 8 weeks postpartum for telephone assessment of exclusive breastfeeding, using the Index of Breastfeeding Status (IBS). The IBS is an instrument that has been used in several studies for measuring levels of breastfeeding exclusivity (status; Moore & Anderson, 2007; Punthmatharith & Singh, 2005; Shiau, 1997). The IBS measures a single-item indicator containing three major levels of breastfeeding: full, partial, and token (Labbok & Krasovec, 1990; Moore & Anderson, 2007; Shiau, 1997). Each level is ranked from 1 (no breastfeeding) to 8 (exclusive breastfeeding). Each of the three breastfeeding status definitions (full, partial, and token) used in the IBS were developed by the Interagency Group for Action on Breastfeeding, a joint panel of expert breastfeeding researchers (Labbok & Krasovec, 1990), giving the IBS both face and content validity (Moore & Anderson, 2007; Shiau, 1997). Permission was obtained for use of the adapted IBS (Moore & Anderson, 2007). For the purposes of this study, exclusive breastfeeding was defined as, "a newborn receiving only breast milk and no other liquids or solids except for drops or syrups consisting of vitamins, minerals, or medicines" (United States Breastfeeding Committee, 2010).

Results

The data were analyzed using SPSS. Sixty-five women initially enrolled in the study. Thirty-five completed the initial inpatient phase and the 4- and 8-week postpartum follow-up. Thirty participants were excluded from the 4- and 8-week study analysis, for the following reasons: 10 participants delivered by cesarean section, 3 neonates were admitted to the special care nursery, 5 participants did not complete data collection, 2 subjects withdrew from the study, and 10 were lost to follow-up.

Demographics

The mean age of women participating in the study was 26.3 years old ($SD = 4.4$). Sixty-five percent of the participants were married, with 44% having had a previous pregnancy. Of those participants who had a previous pregnancy, 75% had breastfed a prior neonate. Eighty-five percent of participants had some college or higher education, and 88% were nonsmokers.

The mean gestational age of neonates was 39.6 weeks ($SD = 1.0$), and the mean birth weight was 3,436 g ($SD = 464$). Fifty-six percent of the neonates were female, with 95% of neonates rooming-in with their mothers.

Breastfeeding Exclusivity and Dose of Skin-to-Skin Contact

All mothers who participated in the study intended to exclusively breastfeed. Ninety-five percent of neonates immediately went STS after birth, with 77% initiating breastfeeding within 60 minutes. During the postpartum period in the hospital, mothers logged minutes of STS. The mean amount (dose) of STS was 646.5 minutes ($SD = 376.6$), with a range of a minimum of 85 minutes and a maximum of 1,718 minutes. Maternal mean length of stay in the hospital was 1.9 days ($SD = 0.52$) days, whereas the neonates mean length of stay was 2.3 days ($SD = 1.2$).

Formula Supplementation

Nine out of 43 neonates (20%) were supplemented while in the hospital. Reasons for supplementation included poor latch, infant crying and perceived as not satisfied, mother preference, and jaundice. Three neonates were supplemented with formula for jaundice. Twelve out of 43 neonates (28%) required phototherapy for jaundice while hospitalized, resulting in 5 neonates requiring extended length of stay beyond the standard 48 hours.

Postpartum Evaluation of Breastfeeding Exclusivity at 4 and 8 Weeks

Thirty-five mothers completed the 4- and 8-week postpartum follow-up evaluation of breastfeeding exclusivity. Exclusive breastfeeding was reported as a binary variable (yes/no). Exclusive breastfeeding was considered “yes” if the mother reported a 7 or 8 on the IBS. A “no” response was any score equal to or less than 6, indicating partial or no breastfeeding. Seventy-seven percent of neonates ($n = 27$) were exclusively breastfeeding at 4 weeks, and 63% ($n = 22$) were exclusively breastfeeding at 8 weeks postpartum.

Nonparametric analysis using a Spearman rho (ρ) determined statistical dependence between the total amount (i.e., dose) of STS during hospitalization and breastfeeding exclusivity at 4 and 8 weeks postpartum. Total amount of STS was not significantly correlated with breastfeeding exclusivity at either 4 ($\rho = .027, p = .44$) or 8 weeks ($\rho = .126, p = .24$) postpartum. However, there was a significant relationship between time to initiation of STS after birth and exclusive breastfeeding at 4 weeks. The longer it took for a neonate to be placed STS after birth, the lower the incidence of exclusivity of breastfeeding at 4 ($\rho = -.297, p < .04$) and 8 ($\rho = -.282, p < .05$) weeks.

The neonates' length of stay significantly impacted exclusivity of breastfeeding at 4 and 8 weeks postpartum. As neonates length of stay increased, exclusive breastfeeding at 4 ($\rho = -.651, p < .01$) and 8 ($\rho = -.554, p < .01$) weeks decreased (see Table 1 for exclusive breastfeeding and related correlations). In-hospital supplementation with formula impacted exclusivity of breastfeeding at 4 and 8 weeks postpartum. Only 14% of neonates who were supplemented were exclusively breastfeeding at 4 weeks ($p < .001$). At 8 weeks postpartum, no neonates were exclusively breastfeeding if they had received supplementation in the hospital. Phototherapy treatment for jaundice contributed to increased supplementation and length of stay. Forty-four percent of neonates who received phototherapy were exclusively breastfeeding at 4 weeks ($p = .015$), and 33% at 8 weeks ($p = .043$).

Discussion

The purpose of this study was to examine whether there was a dose relationship between number of minutes of STS and breastfeeding exclusivity at 4 and 8 weeks postpartum. After data analysis, no such correlation was found. However, as a plenitude of previous studies has demonstrated, initiation of STS immediately

Table 1. Exclusive Breastfeeding and Related Correlations

Variables	1	2	3	4	5
1. Exclusive breastfeeding 4 weeks	–				
2. Exclusive breastfeeding 8 weeks	.567**	–			
3. Infant length of stay (days)	–.651**	–.554**	–		
4. Minutes to first breastfeeding	–.173	–.292*	.178	–	
5. Minutes to first skin-to-skin	–.297*	–.282	.165	.066	–

* $p < .05$. ** $p < .01$.

after birth is strongly correlated with breastfeeding exclusivity (Bramson et al, 2010; Moore & Anderson, 2007; Puig & Sguassero, 2007). There was also a clear negative correlation between formula supplementation and breastfeeding exclusivity, which has been reported in the literature (AAP, 2005). In this particular study, phototherapy for jaundice contributed to both increased formula supplementation and length of stay, both of which adversely affected breastfeeding exclusivity.

One of the inclusion criteria was intent to exclusively breastfeed. Although this limited the number of subjects, it also removed the confounding variable of intent to supplement with formula. Formula supplementation has repeatedly been shown to have an adverse effect on breastfeeding exclusivity (AAP, 2005).

This study did not address other factors affecting breastfeeding exclusivity, such as peer pressure, family pressure, and return to work or school. The small sample size and self-selection led to a higher number of subjects who were married and had a higher level of education than is representative of the population where this study took place. The lactation consultant who made the follow-up telephone calls did provide lactation support as needed, which could potentially influence duration and exclusivity. Additionally, having women record minutes of STS lent itself to the inaccuracies of self-reporting.

Conclusion and Implications for Nursing Practice

During the course of the study, the nursing and medical staff at this institution embraced the intervention of STS, and it became a routine part of care regardless of feeding intention at this institution. Breastfeeding rates have steadily increased at this facility since the study was completed.

Although this study did not show a correlation between minutes of STS and breastfeeding exclusivity, the act

of placing neonates STS at birth was found to have a positive impact on exclusivity of breastfeeding at 4 and 8 weeks postpartum. In order to meet the *Healthy People 2020* goal of increasing the proportion of mothers that breastfeed their babies (U.S. Department of Health and Human Services, 2013) hospital personnel should routinely place neonates STS at birth.

Opportunities for further research include use of STS and barriers to use during cesarean delivery, and attitudes of nurses and family members toward STS.

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