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Interruptions to Breastfeeding Dyads in an LDRP Unit

Abstract

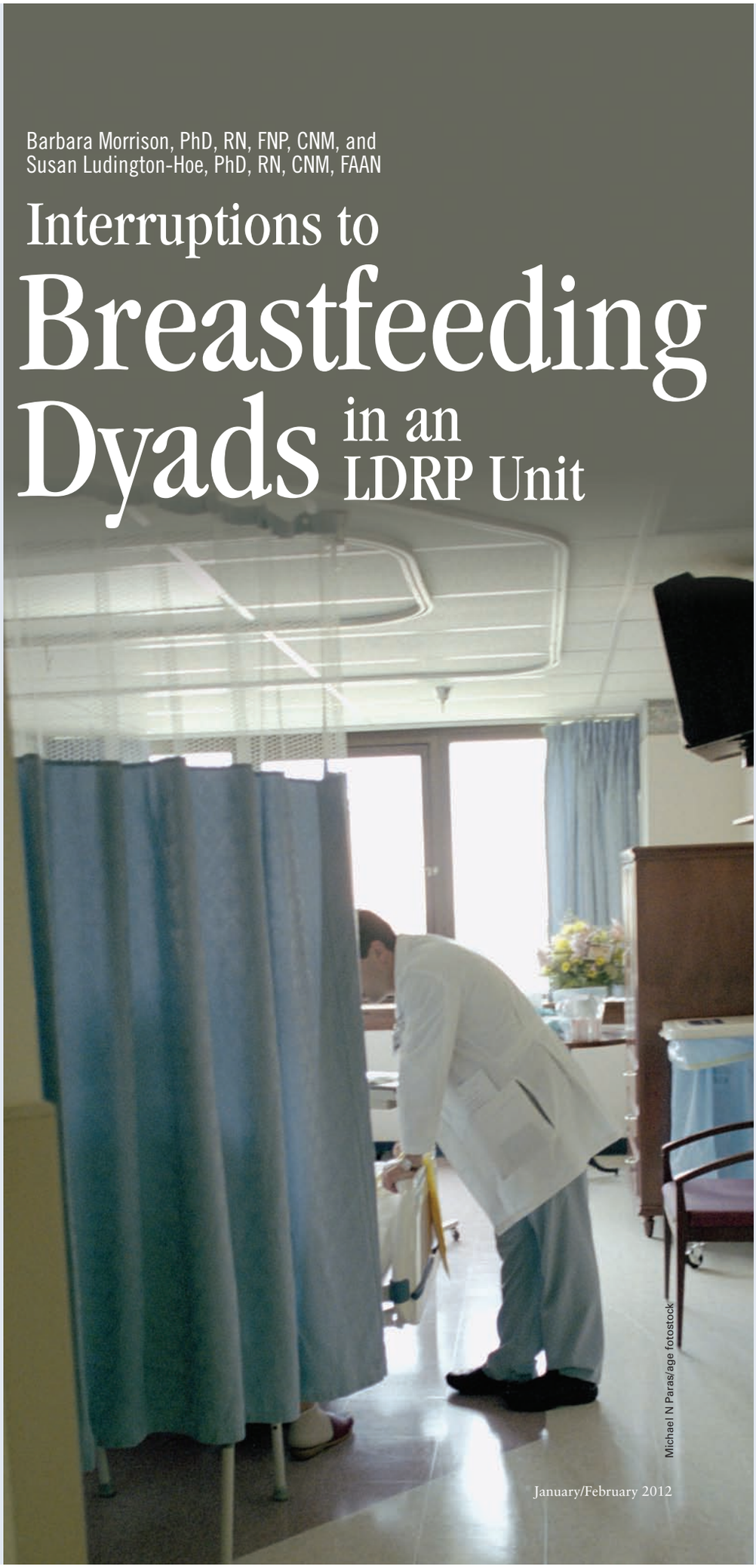
Purpose: The critical period for establishing breastfeeding (BF) is during the first days after birth. However, some routine maternity unit care practices may be experienced as interruptions interfering with BF opportunities and satisfaction. Therefore, we wanted to describe the frequency and duration of interruptions; amount of time alone; number, length, success of, and satisfaction with BF sessions; and maternal perceptions of the influence of interruptions on BF experiences in an LDR unit on postpartum day 1 (PD1).

Study Design and Methods: For 12 hours on PD1 we continuously observed the door to the rooms of 30 mother–newborn dyads in a community hospital birthing center. We recorded duration of visit by each person entering the room. Length of BF and maternal perception of success and satisfaction were measured after each feeding and at the end of the day using visual analog scales.

Results: One thousand five hundred ninety-three interruptions (53 ± 13.4/dyad, range 27-85) and 703 episodes of time alone (23 ± 5.5/dyad, range 11-32) occurred across 360 hours of observation. Duration of interruptions and time alone were 18.5 ± 34.5 and 15.4 ± 17.3 minutes, respectively. However, median duration of interruptions was 5 minutes and of time alone 10 minutes. One hundred thirty-eight BF sessions were recorded (2-9 sessions) and lasted 25 ±14.98 minutes. Perceived maternal success and satisfaction with BFs were moderate, and interruptions only marginally interfered with BF opportunities.

Clinical Implications: Too many interruptions occur and mothers perceive them as interfering with BF. Therefore, interruptions need to be minimized.

Key Words:
Breastfeeding; Health Facility Environment; Interruptions; Postpartum Period.



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Breastfeeding is a complex, interactive process, and initiation is extremely time sensitive, requiring frequent practice and significant support during the first hours and days following birth (Shealy, Li, Benton-Davis & Grummer-Strawn, 2005). Maternity care experienced during postpartum hospitalization exerts unique influences on the establishment and continuation of breastfeeding (BF), and the influences can have lasting effects (Shealy et al.). However, mothers receive support and BF encouragement from nurses and lactation consultants for only 1 or 2 days, and routine hospital practices during postpartum stays are known to affect the successful initiation and establishment of BF (Gill, 2001; Mozingo, Davis, Droppleman & Merideth, 2000). Interruptions to the mother and newborn during their postpartum stay may be an institutional practice that influences BF, but nothing is known about the number of interruptions mothers experience during postpartum day 1 (PD1) in a labor/delivery/recovery/postpartum (LDRP) unit.

Multiple studies and reports have identified hospital policies and practices as barriers to BF (Asole, Spinelli, Antinucci, & Di Lallo, 2009; Manganaro et al., 2008). Some of the barriers are scheduled feedings, supplementation after BF attempts and at night, encouragement of pacifier use, dissemination of discharge formula gift packs, and staff disruptions during BF for lab tests, physical assessments and other care requirements (DiGirolamo et al., 2008; Martell, 2003). Additionally, mothers have reported feeling rushed with feedings because they were uncertain as to when the next person(s) would enter the room, disrupting the privacy and relaxation mothers desired during BFs (Ekstrom, Widstrom, & Nissen, 2006; Mozingo et al., 2000). Thus, the environment itself (the "normal" activities of the postpartum unit) could be a barrier to BF (DiGirolamo, Grummer-Strawn & Fein, 2001; Martell, 2003).

Effects of patterns of care on patient outcomes have been studied in settings other than postpartum units. Classic studies from the neonatal intensive care units (NICUs) demonstrated that interruptions to the infant were numerous, lengthy, and most frequently caused by nurses (Blackburn, 1982; Duxbury, Henly, Broz, Armstrong, & Wachdorf, 1984). Study results led to major practice changes to minimize interruptions and to promote rest and sleep in neonates (Blackburn, 1998).

Interruptions to sleep in intensive care and other hospital units have been studied for more than 45 years (Redecker, 2000) with findings indicating that sleep in any hospital environment is neither refreshing nor restorative. Noise (Parthasarathy & Tobin, 2004) and patient care activities (Tamburri, DiBrienza, Zozula, & Redecker, 2004) are top causes of sleep disturbance. Even postpartum mothers do not get restorative sleep because of interference from the environment and nighttime nursing care activities (Lentz & Killien, 1991). Although multiple studies suggest interruptions significantly impact patients at night, little is known about interruptions during the day, even though care interactions, noise, and other sleep-disturbing events are believed to occur more frequently during daytime (Tamburri et al., 2004).

Only one systematic study of interruptions to the BF dyad has been reported (Morrison, Ludington-Hoe, & Anderson, 2006). An average of 54 interruptions (range 35-73) occurred between 8 a.m. and 8 p.m. on PD1 in a tertiary university teaching hospital single-bed postpartum unit, leaving mothers with very little time to conduct full and relaxed BF sessions (Morrison et al.). Mothers perceived the interruptions as a hindrance to BF. Even though rooming-in was strongly encouraged, newborns spent considerable time in the nursery. Encouragement of BF came from nursing staff, some of whom were certified lactation consultants. In the teaching hospital, mothers had multiple contacts with medical students, residents, and attending physicians, and frequently had nursing students and their instructors providing care. By contrast, in community hospital LDRP units, mothers are admitted to rooms where they give birth and remain until discharge. Newborns commonly room-in 24 hours per day. The nursing staff is cross-trained in labor/delivery, postpartum, and newborn care. Community hospitals rarely have medical and nursing students, residents, and fellows caring for patients. Given the differences between facilities, fewer interruptions were expected to occur in the LDRP birthing center. Therefore, the purpose of this study was to describe frequency and duration of interruptions and time alone in an LDRP unit, the number and length of BF sessions, maternal perceptions of success and satisfaction with BF and the influence of interruptions on experiences throughout PD1.

Methods

Design

For this basic descriptive study we continuously observed a mother's hospital room door for 12 consecutive hours (from 8 a.m. to 8 p.m.) on PD1 to document frequency and duration of interruptions to the mother–infant dyad. The Level 1 (normal newborn nursery only) birth center located in the northern Midwest United States had eight LDRP rooms and averaged 760 births per year. Two nurse–midwifery practices attended 60% to 70% of the births. Twenty-four registered nurses (RNs) with a mean of 18 years of experience provided patient care and BF support. One RN cared for three mother–infant dyads per day. Staff and visitors had unlimited access to mothers throughout the study. Approval for the study was obtained from the University and hospital Institutional Review Boards.

A convenience sample of mothers expressing intent to BF upon admission to the birth center was recruited for the study. Mothers of all races and ethnicities who met the following inclusion criteria were eligible: (a) declared intent to breastfeed at time of admission; (b) were at least 18 years of age; (c) spoke English; (d) had an uncomplicated pregnancy with vaginal singleton birth; (e) had a term birth (38-42 weeks gestation); and (f) had a healthy newborn who was rooming-in.

Instruments were developed by the primary investigator. Content validity was confirmed by review of the literature and review by three maternal–child nurse experts.

Box 1: Definitions of Variables.

Interruption: Each person (including the father) entering the mother's room and any incoming phone call. All interruptions were recorded regardless of the purpose for or maternal perception of the interruption.
Total number of interruptions: Number of people entering room + number of incoming phone calls
Duration of an interruption: Number of seconds from time a person entered room until that person left.
Time alone: Number of minutes mother plus father of baby plus infant, or any combination thereof, were in the room alone.
Breastfeeding (BF) session: Placement of the infant at the breast.
Number of BF: Actual number of times a mother recorded a BF session.
Duration of BF session duration: Calculated from the starting and finishing times of each BF session.
Perceived BF success: Maternal response on a VAS to "How would you rate the success of this BF session" (line anchors "not successful" and "very successful").
Perceived BF satisfaction: Maternal response on a VAS to "How satisfied were you with this BF session" (line anchors "not satisfied" and "very satisfied").
Maternal perceptions of PD1 experiences: Responses on the "End of Day Satisfaction Questionnaire" (see Table 1).

"The Data Collection Form" was a grid on which time and duration of each interruption was recorded. Definitions of the variables are in Box 1. Starting and ending times of each BF session were recorded by mothers on the "Breastfeeding Success and Satisfaction Log." At the end of each BF session mothers marked 10 centimeter visual analog scales (VASs) to indicate their perception of *breastfeeding success and breastfeeding satisfaction*.

To describe *maternal perceptions of satisfaction with PD1 experiences* mothers completed an "End of Day Satisfaction Questionnaire" that consisted of seven VASs seeking mothers' appraisal of maternal–infant interactions and time together, and the influence of interruptions (Table 1). VAS scores were obtained using a clear plastic ruler marked in 1-cm increments. Scores could range between 0 and 10 cm with higher scores indicating greater success or greater satisfaction for all of the VASs.

After obtaining written consent, we took our place in a chair opposite the mother's door from 8 a.m. to 8 p.m. Each data collector observed a room for only 4 to 6 hours to prevent fatigue and decreased interrater reliability. Interrater reliability between the six data collectors was 95% as established by percent agreement, and was maintained by retesting after every fifth subject. Each and every time a person (or persons together) entered the room, a notation was made on the recording form as to the time the interruption began, and a stopwatch (Ultrak 495, Gardena, CA) was started to measure interruption duration. When the person left the room, the stopwatch was stopped and duration of the interruption was recorded in seconds. At 8 p.m. the data collector collected all instruments, thanked mother for participating in the study, and gave her a receiving blanket in gratitude for her time and effort.

Time alone was calculated by reviewing the interruption data and noting when no one but family (mother, baby, significant other) was in the room. Measures of central tendency were calculated for all continuous data, including VAS data from the "BF Success" and "BF Satisfaction" scales and "End of Day Satisfaction Questionnaire" scales. Correlations were calculated between key variables such as frequency of interruptions, episodes of time alone, BF frequency, BF success and BF satisfaction.

Results

Thirty-three mothers consented to participate; complete data sets were obtained from 30 dyads (2 dyads went home before completion of data collection, a third dyad was withdrawn when a unit appraisal mandated cessation of the study for that day). The mean age of the mothers was 30.3 ± 4.9 years (range = 20-40). Demographic characteristics of the sample are presented in Table 2. Thirteen mothers gave birth to their first child, whereas 17 mothers gave birth to their second or subsequent child. All of the multiparous mothers had BF experience.

Each dyad provided 12 hours of data, yielding 1,596 interruptions over 360 hours of observation. Interruptions, time alone and BF session results are reported in

Table 1: "End of Day Questionnaire" Items with Anchors and Mean Score of Mothers' Responses.

Question	Left Anchor	Right Anchor	Mean ± SD	Range
1. How satisfied are you with the interactions between you and your baby today?	Not satisfied	Very satisfied	8.5 ± 1.4	4.6-10.0
2. How satisfied are you with the BF experiences you had today?	Not satisfied	Very satisfied	7.0 ± 2.3	1.0-10.0
3. Did you and your baby have enough time together today?	Too little time	Enough time	8.7 ± 1.5	5.0-10.0
4. Did you and your baby have enough uninterrupted/alone time?	Too little time	Enough time	6.6 ± 2.6	1.2-10.0
5. How much did the interruptions interfere with your BF opportunities?	No interference	Interfered a lot	6.0 ± 2.4	0.0-8.9
6. How much did the interruptions bother you?	No bother	Very bothersome	6.1 ± 2.8	0.0-9.7
7. How much did you mind doing the maternal log?	Not at all	Very much	2.62 ± 2.28	1.1-10.0

Table 3. The number of interruptions per mother–newborn dyad ranged from a low of 27 to a high of 85 across the 12 hours. The mean *duration of interruptions* was 17.4 ± 30.9 minutes. *Duration of interruptions* ranged from 2 seconds to 335 minutes (a visitor who stayed 5.6 hours). But, half of the interruptions (798) were very short, lasting 4 minutes or less, while 29% (461) of the interruptions lasted 1 minute or less.

Mothers and their families experienced 11 to 32 episodes of *time alone*. The mean duration of episodes of time alone was 15.8 ± 19.4 minutes, but 50% (353) of the episodes lasted 10 minutes or less, while 64% (450) of the episodes of time alone were 15 minutes or less.

One hundred thirty-eight BFs occurred across the sample during the observation period. Twenty-five mother–newborn dyads accomplished at least four feedings, 14 dyads breastfed five times or more. Two dyads attempted to BF only twice. Breastfeeding frequency was negatively correlated with frequency of interruptions (r = -.36, p = .05). There was no correlation between BF frequency and episodes of time alone.

Start and end times were available for 129 of the 138 BF sessions. Mean *duration* of BF sessions 1-4 was 25.68 ± 16.70 minutes and ranged from 2 to 120 minutes. The median length of all BF sessions was 20 minutes. However, for each of the first four BF sessions three to eight mother–newborn dyads breastfed for less than 15 minutes.

Correlations of *perceived BF success* scores and *perceived BF satisfaction* scores indicated the variables were measuring the same thing; therefore, a new variable, *perceived BF success and satisfaction* (BFSS), was calculated by adding each participant's perceived BF success and perceived BF satisfaction together and dividing by two. Mean BFSS scores for BF sessions 1-4, the sessions completed by a majority of the dyads, ranged from 6.23 to 6.60 on a 10-cm VAS (Table 4), the higher the score the more mothers perceived the feeding to be successful and satisfying. Paired sample t-tests indicated there were no significant differences among the mean BFSS scores across feedings. Moderate correlations existed between BFSS responses for sessions 1 and 2 (r = .68, p = .000), sessions 1 and 3 (r = .49, p = .009) and session 3 and 4 (r = .65, p = .001). Additionally, BFSS for the fourth feeding was significantly and negatively correlated with frequency of interruptions (r = 1.54, p = .007).

Scores from the "End of Day Questionnaire" (EOD) are reported in Table 1 and ranged from 6.1 to 8.7 on 10 cm VASs. The score for *enough **alone** time with baby* (EOD 4, M = 6.60) was significantly lower than the score for *enough time together with baby* (EOD 3, M = 8.68, p < 0.000; r = .45, p = .03). Interruptions appeared to negatively influence maternal perceptions of interactions with baby and BF opportunities (EOD 5 & 6), though there were no significant correlations between *frequency of interruptions* and EOD 1-6. However, there were significant correlations between maternal perception of time alone with the infant (EOD 4) and satisfaction with BF experiences (EOD 3; r = .41, p = .03), interference of interruptions with BF (EOD 5; r = .623, p < .000) and perceptions of how bothersome the interruptions were (EOD 6; r = .67, p < .000). Finally, mothers did not appear to mind completing the maternal logs (2.62 ± 2.28; EOD 7).

Validity and reliability were calculated for the BFSS VAS and EOD developed by the primary author. Concurrent validity between BFSS for each BF session and the End of Day Questionnaire #2, "How satisfied are you with the BF experiences you had today?" ranged

Table 2: Demographic Variables Describing the 30 Participants.

Demographic variable	Category	Frequency	Percentage
Race	Black	1	3.3
	White	29	96.7
Employment status	Full-time	14	46.7
	Part-time	4	13.3
	Unemployed	11	36.7
	Student	1	3.3
Education	12 years	5	16.7
	13-15 years	9	30.0
	16 or more years	16	53.3
Marital status	Married	23	76.6
	Living with FOB*	5	16.7
	Single	2	6.7
Previous live births	Zero	13	43.3
	One or more	17	56.7
Gender of infant	Female	15	50.0
	Male	15	50.0

*FOB = Father of baby

Table 3: Mean Frequency and Duration (in minutes) of Interruptions, Episodes of Time Alone and Breastfeeding Sessions From 8 A.M. to 8 P.M. on PD1 for All 30 Mother-Newborn Dyads.

Experience	*N*	Mean/ dyad	Median/ dyad	Range
Number of *interruptions*	1596	53.2 ± 13.4		27-85
Duration of all *interruptions* in minutes (min)	1596	19.1 ± 36.6 min	3.9	.03-335
Duration of *interruptions* ≤ 200 min (9 outliers removed)	1584	17.4 ± 30.9 min	3.7	.03-200
Number of *episodes of time alone*	705	23.4 ± 5.5		11-32
Duration of all *episodes of time alone*	705	15.8 ± .4 min	10.0	1-216
Number of *BF sessions*	139	4.6 ± 1.5		2-9
Duration of all *BF sessions*	129	25.6 ± 17.2 min	20.0	5-120

Table 4: Mean Duration of the First Four Breastfeeding (BF) Session That Were Completed by a Majority of the Mothers, Mean BF Success/Satisfaction Scores for BF Sessions 1-4, and Correlation of BFSS Scores with Question 2, General BF Satisfaction, in the End of Day Questionnaire.

	Duration of BF Session			BFSS			Correlation
BF	*N*	Mean ± S.D.	Range	*N*	Mean ± S.D.	Range	*r* (*p*)
1	27	26.41 min ± 23.98	5–120 min	28	6.39 ± 3.04	0.35-10.00	.42 (.04)
2	28	24.00 min ± 13.55	2-60 min	28	6.41 ± 3.26	0.10-10.00	.58 (.002)
3	24	26.83 min ± 16.30	10-74 min	28	6.23 ± 3.41	0.00-10.00	.30 (.15)
4	23	25.48 min ± 12.98	5-46 min	24	6.60 ± 3.53	0.00-20.00	.37 (.08)

from $r = .58$ ($p = .002$) for BF session 2 to $r = .30$ ($p = .15$) for BF session 3 (see Table 4). Divergent validity was confirmed as there were no significant correlations between BFSS for session 1-4 and questions 1, 3-7 on the End of Day Questionnaire (Table 1) and maternal age or race. Reliability for BFSS BF sessions 1-4 was $\alpha = .75$. Reliability for questions 1-6 of the EOD was $\alpha = .78$.

Clinical Implications

Because interruptions may interfere with BF initiation, the doors of mothers in an LDRP unit were continuously observed from 8 a.m. to 8 p.m. on PD1, yielding 1,596 interruptions over 360 hours of observation. Mothers in the community hospital LDRP unit experienced an excessive number of interruptions, and the interruptions were lengthy and occurred erratically. More interruptions were attributable to nursing staff than any other source, an expected finding as nurses provide support and care throughout the day. These findings are similar to those reported on a postpartum unit in a tertiary care university hospital (Morrison et al., 2006), except more interruptions were due to family and friend visitors, telephone calls, nursing staff, and housekeeping in the LDRP birth center. It is acknowledged that some of the interruptions may have had a positive effect for the mother–newborn dyads, such as support and buffering by the fathers of the baby or significant others, and nurses teaching newborn care or supporting BF. However, the purpose of this project was to identify the frequency of persons entering the mother's room on PD1 without judging the interruption as positive or negative.

The majority of *time alone* episodes lasted 10 minutes or less, even though the average was 22 minutes. Ten to 22 minutes was not enough time to complete a BF session according to data provided by mothers. Breastfeedings commonly require at least 15 to 20 minutes, if the infant latches on immediately and nurses well (Lawrence & Lawrence, 2005); however, newborns frequently take additional time to appropriately latch, requiring longer feeding times. A majority of the newborns breastfed four times during the 12 hours of observation, thus meeting the lower limit for suggest number of feedings in that period of time (8-12 feedings/24 hours; American Academy of Pediatrics [AAP], 2005). Frequent feedings provide the best breast and hormonal stimulation for establishing milk supply. But, several mothers reported only two or three BFs or fed for only 5 to 10 minutes per feeding during the 12 hours of observation. Infants receiving only infrequent or short BFs in 12 hours may not receive sufficient nutrition and the breasts are poorly primed for adequate milk supply. Thus, mothers need substantial opportunities for time alone to have the privacy and relaxation required to establish BF. Indeed, BF frequency was moderately, negatively correlated with frequency of interruptions suggesting mothers needed more alone time. Further studies of the impact of interruptions and little time alone on objective and precise measures of BF performance, nursing BF support, and infant nutrition are needed.

VAS scores of *maternal perceptions of BF success/satisfaction* (BFSS) indicated mothers regarded the sessions as moderately successful/satisfying, even with more than four interruptions per hour. Twenty-four dyads completed four BF sessions and for 11 dyads the fourth feeding was the last BF during the observation period. Although perceptions of BFSS were moderately high, by the fourth BF the frequent interruptions were affecting maternal perceptions of their BF experiences. Further studies are needed to clearly determine the role of interruptions on BFSS and to determine other correlates of change in BFSS. No studies of maternal perceptions of BF success and satisfaction on PD1 could be found.

Maternal perceptions of satisfaction with PD1 experiences were mixed. Mothers were highly satisfied with their interactions with their babies and the time the two of them had together. Additionally, mothers were moderately satisfied with their BF experiences and having enough time alone with their babies, but indicated interruptions somewhat interfered with BF and were somewhat bothersome. Time alone with their infants seemed to most influence maternal perceptions of PD1 experiences. Although all the levels of satisfaction were above the 60th percentile, indicating more satisfaction than expected given the high number of interruptions, the high satisfaction scores may reflect naiveté on the part of mothers regarding what to expect on PD1 (Rudman & Waldenstrom, 2007) and what is considered best care (Martell, 2003).

Data indicate that in both a community hospital LDRP unit and in a tertiary care university hospital postpartum unit the number of interruptions was consistently high. Although results presented here are not generalizable, interruptions may be a concern in birthing and postpartum units regardless of the type of hospital (Fleischman & Lanciers, 2011). Nursing staff should be attuned to the need for facilitation of BF experiences in the first few days, and should be encouraged to maintain control over the number

and duration of interruptions to the BF dyad. Strategies to minimize interruptions are presented in Box 2. Because mothers perceived the interruptions as bothersome and interfering with BF opportunities, management of interruptions is generic to establishing successful and satisfying BFs. Mothers probably have not complained about the frequent interruptions because interruptions are part of the "taken-for-granted context" of hospital stays in general and of PD1 in particular. Also, nurses need to be aware of the number of BFs occurring during their shift. Mothers who provided only two or three BF between 8 a.m. and 8 p.m. are not receiving the supervised BF practice they need nor are the mothers adequately stimulating their breasts and the hormones connected with BF to establish a good milk supply. ✣

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Box 2: Strategies to Decrease Interruptions and Increase Opportunities for Breastfeeding.

During prenatal visits, childbirth classes and birthing center tours discuss:

- Purposes of postpartum period: rest and recovery, bonding, breastfeeding
- Kangaroo (skin-to-skin) care (KC) as frequently and as long as possible
- Breastfeeding on demand, at least every 2-3 hours
- Limited visitors and limited duration of visits (i.e. 15 minutes) to allow for privacy and family time

During postpartum, support and encourage:

- Mothers to be **healthy**, capable individuals who can care for themselves
- Parents to be **primary caregivers** for their newborn
- Maternal and paternal awareness of interruptions and their impact on the family's desired outcomes
- Using door signs or lights to signal time alone periods for Kangaroo Care, breastfeeding sessions and rest
- Clustering care to minimize interruptions, mothers to use call bell when they need assistance
- Planning care activities with mother so she can predict quiet periods
- Instituting daily "nap/quiet" time—no visitors nor staff go into the room
- Placing information on website to inform public of privacy and rest needs during postpartum

Collaboration with administration in the following ways:

- Understanding most new mothers are healthy and competent
- Minimizing hourly rounds
- Discontinuing 24/7 visiting hours because they interfere with new family's need for rest, frequent breastfeeding opportunities, and bonding

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