

Mothers Touching Newborns: A Comparison of Rooming-in versus Minimal Contact

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ABSTRACT: *We compared the maternal behaviors of women who had extended and early contact (rooming-in) with their infants with those who had contact only during feedings. Thirty-one young, unmarried, predominantly black, lower-socioeconomic mothers and their infants were observed in the mother's hospital room for 15 minutes after a morning feeding approximately 18 hours after delivery. A time sample unit checklist was used to record each mother's behavior, looking, talking, and touching directed toward their infants and others, as well as watching television and talking on the telephone. Analyses of variance revealed that the rooming-in mothers looked at, talked to, and touched their infants more, watched less television, and talked less on the telephone than mothers with minimal contact with their infants. These findings suggest that increased postpartum contact with infants leads not only to more interaction, but also to more touching as well as touching in more intimate places (face and head), thus highlighting the value of rooming-in arrangements for mothers and infants. (BIRTH 22:4, December 1995)*

Contact immediately after birth and extended touch between mother and newborn are known to increase maternal affection and facilitate better mother-infant interactions, which in turn lead to more developed social and language skills in the child (1-8). Although some of these studies were criticized for lack of controls and inadequate sample sizes (9), more recent controlled studies support their findings. Most of them, however, examined the influence of only extra minutes

or hours of mother-infant contact rather than the more prolonged contact of rooming-in. The few that examined rooming-in were also limited, focusing exclusively on subsequent parenting behavior (10,11).

The present study addressed specific maternal touching behaviors as they occurred during rooming-in. We were interested in the types of touching that newborns received soon after birth, and whether the extra contact of rooming-in would spontaneously increase or alter these or other behaviors.

In observing maternal handling patterns, Rubin (12) reported that mothers initially used their fingertips to explore their newborns, and after several days they used their palms. Klaus, Kennell, and colleagues (6,13) found a similar pattern, but over a matter of minutes, not days. In particular, they found that during the first 3 minutes mothers maintained fingertip contact most of the time, but by the end of the 10-minute period of observation palmar contact had increased to 62 percent of the total scored time. Other researchers (14-16), however, did not observe this pattern of handling. For example, mothers cradled their infant for the first few minutes after birth, accompanied by palmar massaging (15). Later, they used their fingers to explore the baby's face, hands, and extremities. According to others,

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mothers' initial tendency was to use their fingertips and palms simultaneously, followed by simultaneous use of their arms and trunk in contact with the infant (16).

Although these studies demonstrated benefits of both early, brief contact and more prolonged contact, the ones that focused on touching were conducted after no contact or very brief contact of mothers with their infants. One, for example, assessed maternal contact in the days after birth, but not its effects on touching (8). Another examined maternal touching behavior and reported that early contact increased mothers' caressing but not their caretaking touch (5). Mothers with early contact also cuddled their infants more frequently. Potential self-selection factors may have confounded those findings, however.

We compared early but not extended contact with early plus extended contact in two hospitals located in two cities. The hospitals served the same ethnic and socioeconomic groups but had different mother-infant contact and care practices. We hypothesized that mothers in the hospital that featured early and extended contact (rooming-in) would have more positive mother-infant interactions—more looking, talking, and touching—than mothers who delivered at the hospital that had early but no extended contact (minimal contact).

Materials and Methods

Subjects

The sample consisted of 31 young, unmarried, primiparous mothers who ranged in age from 16 to 22 years (mean 18.9 yrs) and their newborns. Fifteen mothers and infants came from a hospital that allowed rooming-in and 16 from a hospital in another city that allowed only minimal contact. The women from both hospitals were predominantly black and of low socioeconomic status (mean 4.4 on the Hollingshead index). Inclusion criteria were an uncomplicated pregnancy and delivery, and a healthy, full-term newborn based on Obstetric and Postnatal Complications Scale scores (17). The infants averaged 39.5 weeks' gestation, 3330 g birthweight, and an Apgar score of 8. The two groups were similar in maternal demographic and newborn characteristics (Table 1).

Hospital Practices

In the hospital that allowed mothers prolonged skin-to-skin contact with their infants, the newborns were in the same room as their mothers from the moment of delivery until their discharge approximately two days later (mean 45 hrs). In the hospital that allowed mothers only mini-

Table 1. Maternal and Neonatal Characteristics

	Rooming-in (mean)	Minimal Contact (mean)	<i>p</i>
Maternal measures			
Caffeine (%)	100.0	100.0	ns
Alcohol (%)	26.1	24.5	ns
Marijuana (%)	11.5	9.7	ns
Cocaine (%)	0.0	0.0	ns
Depression (BDI) (%)	11.2	11.6	ns
Infant measures			
Obstetric complications*	121.9	119.9	ns
Postnatal complications†	138.1	136.2	ns

p = ns for all measures.

* Obstetric Complications Scale.

† Postnatal Factors Scale.

mal contact with their infants from the time of delivery until their discharge two days later (mean 44 hrs) the newborns were brought into their mothers' rooms every four hours for a brief feeding. They were then returned to a separate nursery, where they remained until the next feeding four hours later. In both hospitals, however, the mothers were given their infants for skin-to-skin contact during the first hour.

Interviews

The mothers were given the Beck Depression Inventory (BDI) (18) because of the high frequency of postpartum depression in this population and the negative effects of a depressed mood on early mother and child interactions. The BDI is a brief, well-validated self-report measure of depression. Its 21 items are scored on a 4-point scale indicating the presence and severity of depressed feelings, behaviors, and symptoms. It contains items such as, "I do not feel sad" and "I am so sad or unhappy that I can't stand it." The BDI is among the most commonly employed instruments in research on nonclinically depressed samples, and it has reasonable psychometric properties.

A history of substance abuse and drug use was collected to ensure equivalence of the two groups. This history covered 22 substances, and was read to the mothers by the researcher. The researcher noted substance(s) that had ever been used by the mother, and whether they were used before pregnancy or during the first, second, or third trimester.

Medical Data

Obstetric complications were quantified using the Obstetric Complications Scale (17), which consists of 41 items obtained from the medical record and rated as

optimal or nonoptimal. The summary score provides an index of the number of optimal conditions present during the gestational period. The higher the score the more optimal the infant's condition.

Postnatal complications were quantified using the Postnatal Factors Scale (17), which consists of 10 items rated as present or absent. A summary score provided an index of the number of complications during the perinatal period.

Postfeeding Interactions

The postfeeding period was chosen as the context for investigating maternal touching behaviors. The mothers were told that we were observing their behaviors and those of their infants. During a pilot study the Maternal Touching Checklist was formulated, based on the most frequently occurring behaviors during a postfeeding period. It consists of 13 items that can be summarized as holding (cradling, rocking); attentiveness-inattentiveness (looking at infant, talking to infant or talking to others, watching television); touching (fingering, palming, kissing, moving limbs, tickling); and the body parts touched (face-head, hands-arms, stomach-chest, feet-legs). Observers, who were psychology graduate students, were blind to the purpose of the study. Interobserver reliability was determined by the simultaneous observation of one-third of the sample. Kappas ranged from 0.62 to 0.94 and averaged 0.81.

The checklist was completed by the observer for 15 minutes after a morning feeding that lasted approximately 15 minutes, within the second 12 hours after delivery at an average of 18 hours postdelivery and approximately 12 hours before discharge. By this time the rooming-in mother-infant couples had been in the same room for approximately 18 hours, whereas the minimal-contact couples had been in the same room for only 5 hours. Close physical contact during that extended period was not determined because of the questionable reliability of maternal report and the prohibitive costs of employing observers for 48-hour continuous observations. The observer sat in the room and checked off the maternal behaviors observed during the 15-minute period, using a time-sample unit coding system with 10-second recording intervals. This system yielded percentages of interaction time based on ninety 10-second intervals. In some instances the percentages were based on fewer intervals due to interruptions by hospital staff, but no differences were noted in the number of interruptions between sites.

Multivariate analyses of variance (MANOVAs) followed by univariate analyses of variance (ANOVAs) were performed on each of the subscales of the mater-

nal touching checklist using rooming-in versus minimal contact as the main factor. Post hoc ANOVAs were performed on each of the behaviors.

Results

All 31 mothers reported caffeine use, 25 percent alcohol use, 10 percent marijuana use, and none cocaine use. No differences in substance use were reported between the groups. Urine screens were also available, ensuring equivalence between groups at least in drug use before delivery. The mothers averaged 11.4 on the BDI (below the clinical risk score), and the two groups did not differ on this measure. The groups were equivalent for delivery analgesia, length of labor, duration of hospital stay, and frequency of visitors. Both groups bottle-fed their infants. No group differences were noted on the holding behavior subscale or the cradling and rocking behaviors (Table 2).

Women averaged 120.4 on the obstetric complications scale and 137.1 on the postnatal factors scale, and the groups did not differ on either scale. The high scores (optimal scores) on these scales were used as the criteria indicating that the mothers had uncomplicated pregnancies and deliveries.

On the attentiveness-inattentiveness subscale the MANOVA revealed a significant main effect for hospital group ($F(2,27) = 11.4, p < 0.01$, Wilk's lambda = 0.55). The univariate tests revealed that rooming-in mothers looked more at their infants, talked more to their infants, talked less with others, watched less television, and talked less on the telephone.

On the touching behaviors subscale the MANOVA yielded a main effect for hospital group ($F(3,27) = 12.8, p < 0.01$, Wilk's lambda = 0.41). Univariate tests suggested that the rooming-in mothers performed significantly more fingering and palming and significantly less moving limbs and tickling behaviors than mothers in the minimal contact group.

On the body parts touched scale the MANOVA revealed a main effect for hospital group ($F(2,27) = 4.0, p < 0.05$, Wilk's lambda = 0.73). Univariate ANOVAs suggested that rooming-in mothers touched the face and head of their infants more often than the minimal-contact group.

Discussion

The rooming-in mothers in this study appeared to behave as if they had experienced several days of contact with their infants. Rubin (12) observed that mothers initially used their fingertips to explore their newborns, and their palms after several days. In this study the rooming-in mothers fingered and palmed their infants

Table 2. Time that Maternal Behaviors Occurred During the Postfeeding Interactions

	<i>Rooming-in (mean)</i>		<i>Minimal Contact (mean)</i>		<i>p</i>
	<i>%</i>	<i>(SD)</i>	<i>%</i>	<i>(SD)</i>	
Holding					
Cradling	56.0	(12.1)	67.0	(13.5)	ns
Rocking	14.3	(4.1)	19.8	(6.3)	ns
Attentiveness					
Looking at infant	64.8	(12.8)	40.4	(10.9)	0.05
Talking to infant	12.6	(3.4)	7.3	(2.1)	0.02
Talking to others	21.7	(6.9)	44.4	(11.2)	0.01
Watching television, talking on telephone	12.7	(2.4)	36.4	(9.7)	0.05
Touching behaviors					
Fingering	11.6	(2.9)	4.7	(1.7)	0.02
Palming	4.6	(2.1)	0.5	(0.1)	0.02
Kissing	0.0	(0.0)	0.0	(0.0)	ns
Moving limbs	3.8	(1.4)	15.7	(3.9)	0.01
Tickling	0.1	(0.0)	1.8	(0.4)	0.05
Body parts touched					
Face, head	8.2	(3.1)	3.4	(0.9)	0.01
Hands, arms	15.7	(5.2)	15.0	(4.9)	ns
Stomach, chest	4.1	(1.2)	1.9	(0.3)	ns
Feet, legs	5.7	(1.7)	1.4	(0.2)	ns

more than the minimal-contact mothers. They also used less arousing tactile stimulation (less moving of limbs, less tickling), perhaps because they had more time to learn their newborns' need for such stimulation. That awareness may have resulted from their looking at their infants longer.

Of interest, the rooming-in mothers touched their infants' face and head more often than the minimal-contact group. Some suggested that although both mothers and fathers can identify a newborn by touching the infant's hands, mothers are more able to do so when touching their newborn's forehead, perhaps because of greater familiarity with the infant's forehead (19). The authors posited that increased contact leads not only to more touching, but to touching in more intimate places, such as the face and head.

Extended touching between mother and newborn facilitates maternal affection and early mother-infant interactions, which in turn are thought to enhance the child's social and language skills (1-8). Although these studies have been criticized (9), they may be replicated, as evidenced by our results.

We cannot determine whether the differences we observed were secondary to care procedures in the first hour or to extended contact during the rooming-in period, because we did not observe the first hour or any hours of extended contact. However, because the first hour of contact was described as being the same

in the two hospitals, but the differences between the hospitals appeared to be related to the variation in rooming-in and minimal contact, we assume that the results relate to the rooming-in contact.

Further research is necessary to determine if these results generalize to other populations. This was not a randomized trial, and the effects may have been due to sampling from different populations in different institutions. The hospitals' different policies and the potentially different attitudes of their staff may have been particularly influential on these young, unmarried primiparous mothers (1). In addition, follow-up research could indicate longer-term effects of extra early contact.

As future studies report similar findings, they suggest that hospital policies and programs should be modified to include rooming-in. The implications of our results suggest that progressive changes are required in clinical practice. The traditional postpartum practices of four-hourly feedings and mother-infant separation clearly still exist, even though scientific research continually documents their negative effects.

Although more supportive staff may be required for mothers in a rooming-in arrangement, the costs are balanced by the mothers providing more care for their newborns. The importance of maximum mother-infant contact is highlighted by shorter and shorter hospital stays, during which mothers and fathers have less time

to become acquainted and comfortable with their infants. The data on more intimate touching by the rooming-in mothers in this study suggest that they have become more familiar and more comfortable with their infants.

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