

Table 1. Immediate Kangaroo Care with Full-term

Citation	Description	Conditions	Results
Sosa, Kennell, Klaus, & Urrutia, 1976	<p>Three randomized controlled trials of KC in BF position in two different hospitals (two in Roosevelt, one in Soc. Sec.Hosp).</p> <ol style="list-style-type: none"> 1) Exp- Given KC on del. Table (Roosevelt) 2) Control 1- Separated immed. after delivery for 12 hrs. (Roosevelt) 3) Control 2- Separated immed. after del. for 24 hrs. (Soc. Sec.) 	<p>Mothers placed their infants in KC on DR, possibly before placental delivery & episiotomy, then had 45 min of KC after episiotomy repair in a private room and were encouraged to BF underneath a heat panel. Control mothers were immediately separated from newborn and first recd infant at either 12 or 24 hr post-birth. Home visits made at 35 days, and 3,6,9,12 months of age to determine duration of BF, illness, growth & development & mortality. Had two groups of infants in one hospital and a group in other hospital.</p>	<p>KC moms BF nearly 50% longer than controls. KC infants in all three cohorts had fewer infections and infants in Social Security hospital gained more weight at 6 mos. and 12 mos. than controls.</p>
<p>Carlsson, S.G., Fagerberg, H., Horneman, G., Hwang, C., Larsson, K., Rodholm, M., Schaller, J., Danielsson, & Gundewall, C. (1978) Carlsson SG, Larsson K, Schaller J, (1980)</p>	<p>RCT w/ 3 groups</p> <p>A: Extended contact(KC for 60 min immed. After delivery) and new routine (nurse concerned with advising and supporting mom). (n = 20)</p> <p>B: Extended contact & old routine (nurse concerned with nursing of newborn) (n = 22)</p> <p>C: Limited contact (mom holds baby for maximum of 5 mins immed. After birth) & old routine. (n = 20)</p> <p>Data collection Observation of maternal-baby contact behavior made on days 2 and 4 during a feeding, observed 15 sec/minute from first suck through 2 minutes after feeding ended.</p>	<p>Old routine: Staff had primary care responsibilities for babies, focus on feeding the NB.</p> <p>New routine: Mothers had primary responsibility for taking care of baby, extra contact with NB between meals. Nurses provided advise & support.</p> <p>Extended contact: Mother kept naked baby in her bed for 1 hr immediately after birth; placed in BF position on baby or at side touching breast. Then treated same as limited contact group.</p> <p>Limited contact: Held infant for maximum of 5 minutes immediately after birth in DR, then placed in crib at mother's bedside for 4 hours until moved to room.</p>	<p>No significant differences found between groups A & B.</p> <p>Groups A&B significantly different from group C in quality but not in quantity of feeding during both observatons</p> <p>Mothers in groups A&B showed more contact behaviors (rubs & pets child, rocks infant, touches infant's bare skin & clothes, holds infant in arms &/or against body m infant lying in lap) & fewer noncontact behaviors (no physical contact between mother & NB; .NB lying aside mother both in horizontal position) than mothers in group C.</p>
<p>Carlsson, , Fagerberg, H., Horneman, G., Hwang, C., Larsson, K.,</p>	<p>RCT Same study conditions as above Data collection</p>	<p>As above</p>	<p>No group differences were found 6 weeks after delivery, neither associated amount of contact between mother & NB, nor related to variations in</p>

Rodholm, M., Schaller, J., Danielsson, & Gundewall, C. (1979) Carlsson SG, Larsson K, Schaller J, (1980)	Observation of maternal-baby contact behavior during feeding made in the home during 6-week follow-up visit. Mothers also interviewed about aspects of the maternal-NB relationship.		ward routine. Interviews also failed to reveal any systematic group differences.
Schaller, Carlsson,& Larsson, 1979	RCT w/ 3 groups A: Extended contact (KC for 60 min immed. After delivery) and new routine (nurse concerned with advising and supporting mom). (n = 15) B: Extended contact & old routine (nurse concerned with nursing of newborn) (n = 17) C: Limited contact (mom holds baby for maximum of 5 mins immed. After birth) & old routine. (n = 14) Data Collection: observed when breast or bottle feeding on 2 nd , 4 th , 42 nd day postpartum. Behav. Recorded for each 15 sec. Period starting when nipple in mouth and ending two minutes after nipple out of mouth.	Same as Carlsson et al. above. Looked at proximal, distal, and proximo-distal nursing behaviors. On 2 nd and 4 th day, all moms breastfed, so behav for 1 st week are reported. On 42 nd day, 13 moms (4 in grp A, 5 in grp B, 4 in grp C) bottlefed	Week 1: Grp A * B had sig. More (54 vs 34) proximal behav than grp C. No other findings were significant.. Extended contact between mom and newborn upon delivery exclusively influences proximal contact behaviors. Proximal contact behaviors were : rubs/pats child to make it burp, kisses, face-to-face contact, touches infant's bare skin, pats clothed parts of body, and adjusts infant's clothing.
Hwang, C. (1981)	RCT Same study conditions as above. Groups configured as in Schaller, Carlsson and Larsson, 1979 for analysis.. This was secondary analysis of Carlsson's et al.'s (1978, 1979) data set.		During first week the most pronounced effect of early postpartum contact was the amount of physical contact exhibited during feeding periods & feeding pauses by mothers in group A & B as compared to group C regardless of whether the NB's eyes were open or closed. No statistically significant differences between groups A & B and group C during feeding periods or feeding pauses were found at 6-weeks postpartum. No differences were found in maternal behavior before, during, & after NB fretting & crying between groups. NBs in group C fretted & cried more and for longer periods without interruption
Anisfeld & Lipper,	QuasiExperimental	KC= immediately after birth for 45-60 min.	Affectionate behaviors of mom observed. KC moms

(1983).	One day all moms assigned to KC; next day all moms assigned to control. KC = 29; C = Data collected at 48 hrs post-birth, observed for 15 sec each min for 15 minutes during feeding.	C=taken to warmer, then to nursery. Taken to mom for feeds q 3-4Hrs.	had higher -affection contact scores, -smiled more, -vocalized more -inspected more -attempted to elicit responses from baby more Sig interaction between KC and social support
Widstrom, A. M., Ransjo-Arvidson, A. B., Christensson, K., Matthiesen, A. S., Winberg, J., & Uvnas-Moberg, K. (1987).	RCT N=21 Random assignment into gastric suction or not. 21 fullterms all routinely placed into KC after drying after delivery.	All infants in KC after drying & gastric suction was routine in 1 st 10 min. post-birth. Tx. was NOT doing the gastric suction.	Gastric suctioning disrupted normal prefeeding behavior (root and suck begin 15 min after birth, find nipples and sucks 55 min after birth).
Righard, L., & Alade, M.O. (1990).	Comparative Survey N=80 Naturally fell into 1 of 2 groups: 1) KC separation = 34 full-term Started immediately after birth for 15-20 minutes, taken to nursery and bathed & returned to mom for holding. 2) KC Contact = 38 full-term KC continued for at least 1 hr. or until BF over.	KC separation = laid on mother's belly for 20 min. immediately after delivery and were then removed KC contact = those who stayed nude on belly and chest for at least 1 hour	BF behavior: The KC contact infants began crawling to the breast at 20 min, began rooting, and at mean 50 min after birth most were sucking at breast. Sucking technique: More KC contact infants (24/38 vs 7/34) had correct sucking technique
Widstrom, A. M., Wahlberg, V., Matthiesen, A. S., Eneroth, P. Uvnas-Moberg, K., Werner, S., & Winberg, J. (1990).	RCT All fullterms placed in KC immediately after birth and stayed there for 45 min. as routine care. KCBF=32 KC=25 Looking at effects of early suckling at 30 min post del. Or routine suckling at a median of 8.8 hrs post del.	One group (KCBF) placed at breast within 30 min of delivery. Other group placed into KC without being put to breast until 8.8 hrs after del. Fed later on PP ward.	KCBF: all infants who had touched or licked areola/nipple, stayed with mother more, moms talked to infants more, and lower median gastrin levels before and after BF. Gastrin levels did not change during feeds.
Johanson, R.B., Spencer, S.A., Rolfe, P., Jones, P., & Malla, D.S. (1992).	Two studies: #1 is prospective observation of 500 infants for temperature. #2 is randomized controlled trial with 300 infants who were delivered during 3 wks in maternity hospital (22% were LBW; 11%	Study #1: 7/500 infants were well dried & well wrapped – others not well dried, washed freq, left uncovered. Anything used to dry infant was used as blanket, no attn paid to covering head and temp not routinely	Study #1: 85% had temp <36; 34% <35, 7%<34 at 2 hrs; 49% <36, 14% <35, & 3%<34 at 24 hrs. Study #2: KC as effective as oil massage or swaddling in keeping babies warm.

	<p>were preterm). Infants, after delivery, were dried and assigned to groups to assess temp. Grp 1: KC or wrapped and held (n=98); Grp 2: traditional (mustard oil massage 90 cm below radian warmer then swaddled (n=100); Grp 3: Plastic swaddled and blankets (n=99). Full-term and Preemies were analyzed as one group. Rectal temp taken at 30 min, 2 hrs, 24 hrs postbirth for both studies. Many methodological flaws. Kangaroo Care may or may not have been given after delivery.</p>	<p>checked.</p> <p>Study #2: KC=beginning immediately after birth when infant put to breast under mom's clothing on her chest. or possibly under swaddling and kept against mother's breast. Not under warmer.</p> <p>Oil massage: 90 cm below radian warmer for whole body and head, and finished within 10 min of delivery then swaddled. Not under warmer.</p> <p>Plastic Swaddler: baby in cheap plastic bag and then in blanket. Not under warmer.</p>	<p>No sig. difference between treatments and all 3 grps were effective in preventing hypothermia..</p>
Matthiesen, (2001).	<p>Descriptive observational 10 fullterm infants not exposed to maternal analgesia put immediately into mother's arms, dried, and put into KC on mother's chest.</p>	<p>2 hr. video recording watching for hand, finger, tongue, and mouth movements scored q 30 sec. Maternal blood taken q 15min.</p>	<p>Babies had very coordinated pattern of preparing the breast for the 1st feed. Used hands to explore and stimulate breast prior to the feed. All hand movements stopped while sucking. Periods of hand movement or sucking increased maternal oxytocin levels. First lick occurred at 27 min. And first sucking occurred at 80 min.</p>
Ransjo-Arvidson, A. B., Matthiesen, A. S. (2001).	<p>Descriptive comparative study. 28 fullterms receiving KC post birth assigned to 1 of 3 groups depending on maternal analgesia during L & D: Group 1= no analgesia Group 2= pudendal block Group 3= more than 1 type of analgesia.</p>	<p>2 hr. video recording watching for hand and mouth behaviors q 30 sec.</p>	<p>All groups had finger and hand movements, less frequent in groups 2 & 3: touched nipple less, fewer licking movements, sucked less on breast, none sucked within first 2 hrs. of life. Group 3 had less hand-to-mouth movements. Analgesia babies had higher temps and cried more.</p>

Table 2: Very Early KC – within first 30 minutes postbirth, after cord cut

Citation	Description	Conditions	Results
DeChateau & Wiberg (1977a). Move to <i>Breastfeeding Outcomes</i> section???	RCT Moms randomly assigned KC or routine care groups. Observed moms position (sitting, lying, or KCBF), holding of infant, encompassing of infant and infant crying.	KC=22: Primips got baby on abdomen at 6-10 min and five min later moved to breast and kept there for 10-15 min; Routine care= 20 primips and 20 multips who got swaddled baby at mothers bedside for first two hours, then in observation nursery, fed q 4 hours, and in last half of week went to mother's room. At 36 hours post-birth during BF, baby in crib moved next to mom and observed every 15 seconds for 15 minutes.	KCers held infant and sat up more than others and had behavior much more like multips. Routine care infants cried more frequently and behavior of mothers of boys differenced more than behavior of mothers of girls.
De Chateau & Wiberg, (1977b).	RCT- see 1977a. KCBF.		When evaluated at 3 months of age, KC moms spent more time kissing and looking en face. Infants smiled more often and cried less frequently. A greater proportion of KCers were BF at three months. The influence of extra contact was more pronounced in boy-mother than girl-mother pairs.
De Chateau & Wiberg, (1984).	RCT- see 1977a. KCBF.		At one year, they conducted PE of kid, and KC moms held and touched infant more frequently and more often talked positively to their infant than did routine care moms. Fewer KCers returned to work, and more KC babies slept in room of their own. On Gesell, KCers were ahead of others on social, linguistic, fine and gross motor indices.

Curry (1979; 1982)	Randomized controlled trial. Tennessee Self Concept Scale given after recruited prenatally. KC: Dried nude infant put on moms chest in DR with blanket over back. Control infants:	Control=11, KC=9 KC for 17-49 min just once (M=36.33 min). Took temp q 5 min for 15 min during KC Control moms held wrapped infant for 34.9 min (15-44 min) & observed for 15 min. Took axillary temp& they stayed warm. Used de Chateau's tool of attachment behaviors.	NO diff in any attachment behavior between groups at 36 hr or 3 months, or in prenatal and 3 month self-concept scores No temperature results reported in either article.
Gardner (1979).	QuasiExperimental Infants of NSVD were dried, and given routine care, eye instillation, ID bands, weighing and footprinting. Then group tx. began according to mom's desire to hold in KC or not.	10 given to mom for 15 min. of KC and covered with warm blanket. 9 were wrapped in one cotton and one plastic blanket, held briefly by parent and put under radiant warmer. Rectal temps taken 2 and 15 min. after birth.	KC infants had less drop in temp (1.1degree C) from 2-15 minutes than control (1.5 degrees C).
Fardig, J.A. (1980).	RCT A comparison of skin-to-skin contact and radiant heaters in promoting neonatal thermoregulation	Group 1 with 17 infants: KC after initial nursing care under radiant warmer. Group 2 with 17 infants: immediate KC (never under radiant warmer). Control= 17: had no skin contact at all. Measures taken every 3 minutes for 45 minutes. Rectal temps at 21 and 45 min post-birth.	More controls had skin and rectal temps below NTZ at 21 and 45 min post-birth.
Svejda, Campos, & Emde (1980).	Randomized controlled trial. Extra contact or routine care. KC (n=15) for 15 min after episiotomy repair and then gowned moms had nude infant with them for 45 min when in own room. Then 90 min of wrapped contact at each feeding for breastfeeding. Control (n=15), 1-5 min of contact at delivery with wrapped infant and 30 min at each feed starting 4-6 hrs after	Skin-to-skin contact on the delivery table 25 min after birth for 15 min. then moved to recovery where mothers were gowned and kept nude infant next to them in the bed for an additional 45 min. of contact and then infant was taken to nursery. Had infants for 90 mins at each feed. Extra contact mothers looked at wrapped infant in crib while in DR x5 min before baby transferred to	In the first 36 hrs, extra contact moms had 10 additional hours of contact as compared to 15 gowned mothers who looked at baby in a crib while still in the DR, held the wrapped infant briefly before going to nursery. No differences in maternal behavior between groups or between situations were seen.

	delivery.	nursery. Infant was brought for BF every 4 hours and had brief contact x30 mins at each feed. Infants brought to mother every 4hrs for 30 min. feeding. Mothers were videotaped 36 hours after delivery for a 10 min interaction and a 15 min BF. 28 affectionate maternal behaviors were scored at 15 sec intervals during interaction and during feeding.	
Craig, Tyson, Samson, & Lasky (1982).	Healthy term infants randomly assigned to KC or routine care.	KC=23: placed skin-to-skin on chest covered by blanket and then wrapped for move to recovery room and then returned to skin-to-skin on mother for approx 1 hr. Routine care=26: infant wrapped, given to mom for 10 minutes then taken to nursery. Home visits made one month after delivery and mothers interviewed regarding experience of pregnancy, delivery, and first PP months and Broussard Maternal Perception of Infant and IBR.	Moms in both groups perceived infants as less difficult than average infant and no differences between groups seen with one hour of contact, in either male or female infants.
Newport (1984).	Randomized controlled trial. Infants delivered to nurse for eye treatment and temp taken, then routine care (n=39) shown to mom and put in warmer bed.	EC (n=37) placed skin to skin on mom's chest and covered with warm cotton blanket for 15 min. Temp taken 15 min after beginning KC which lasted 15 minutes only.	No sig diff; Temp at admission to newborn nursery and two in nursery no sign diff. No tachycardia, no tacyhypnea, no sig diff. No sig diff in weight loss, and diarrhea and ketonuria did not occur in any infant.
Vaughans (1990).	Quasi-experimental (no randomization) Newborns dried and placed under radiant warmer (n=9) immediately after birth were compared to 11 other	KC continued for 10 minutes as did placement under radian warmer.	After 10 minutes, no sig. diff. in axillary temperatures.

	fullterms who were dried, covered with warm blanket and put into KC immediately after birth. Took axillary temp once ten ;min after KC or control began.		
Christensson, Siles, Moreno, Belaustequi, De la Fuente, Llargercrantz, Puyol, & Winberg (1992).	RCT Randomized two groups 25 KC vs 25 cot care that began for 90 minutes at 5-12 minutes after delivery and prior to transfer to recovery room.	Immediately after birth, both groups were wrapped in cotton cloth, head covered, and placed prone on mother's abdomen. Then cord was cut and nurse did care and electrodes attached and then returned to mom at 8-11 minutes postbirth. All infants had two thick terry towels placed over them in KC or in cot and transferred to recovery 25 minutes postbirth where observations continued until 90 min postbirth.	KC group: higher temps than cot infants; respiratory rate was lower, blood glucose was higher, change in base excess was twice as high, indicating that KC babies did better . Cot babies cried longer and more often than KC group infants.
Christensson, Cabrera, Christensson, Uvans-Moberg, & Winberg (1995).	RCT Assessed effects of separation on infant crying and temperature. Fullterm babies randomized into 3 groups.	Group1: 15 babies got KC for 90 minutes Group 2: 14 received cot for 90 minutes Group 3: 16 infants were in the cot for first 45 minutes and then KC for 45 minutes. Cots were beside the mother's bed and fathers were present at the bedside. Cholecystokinin and oxytocin were examined as measures of comfort provided by body contact with the mother. Cries were audiotaped and spectrographically analyzed.	Expectations of changes in peripheral levels of chole and oxytocin did not materialize. Mean temperatures were within normal limits for all groups at 90 minutes postbirth, and sig higher in the KC and cot+KC groups than in the cot group, indicating that warming occurs during KC . KC infants had only one short cry episode in the 90 minute period; cots cried for 7-42 second/5 minutes observation period; the cot and KC infants cried more in the first 45 minutes and less crying when in KC. Total crying time was significantly less for the KC group and highest for the cot group.
Christensson, (1996).	Randomized controlled trial. 45 Cesarean section newborns	Fathers began KC at 21 minutes post birth and continued for 90 min.	Axillary temp increased more rapidly in the KC group as compared to

	<p>randomized into 3 groups:</p> <ol style="list-style-type: none"> 1) KC (N=15) 2) Cot (N=15) 3) Incubator (N=14) 	<p>Infants in cot and incubator for first 90 minutes while father sat next to the cot/incubator. Axillary, interscapular and thigh temperatures were measured every fifteen min.</p>	<p>others.</p> <p>KC compared to cot infants: KCers became warmer at 90 minutes and thereafter than the cot group.</p> <p>No significant difference was seen in temp increase between KC and incubator groups, but at 24 hours of life KC infants were sig warmer than incubator infants.</p> <p>No difference in catecholamines, blood gases or glycerol levels at birth and 120 min after birth.</p> <p>KC group had significant increase in blood glucose from birth to 120 minutes despite lack of feeding that was not seen in incubator and cot groups.</p>
<p>Michelsson, Christensson, Rothganger, & Winberg (1996).</p>	<p>RCT</p> <p>29 full-term infants were randomly assigned and 21 provided an adequate number of cry episodes, yielding 12 cot and 9 Kangaroo care infants in final analysis.</p> <p>KC began at 5-14 min. post-birth and all infants covered by 2 thick terry towels.</p>	<p>KC got KC for 90 min. beginning 5-14 minutes after birth.</p> <p>Cot infants were swaddled in two terry cloth towels at maternal bedside until 90 minutes post-birth.</p>	<p>Cot babies cried 10 times more than KC babies and the cry duration was 0.8-0.9 seconds with a melody contour that was flat or slightly rising-falling, symbolizing a discomfort cry elicited mainly by separation from the mother.</p>
<p>Durand et al., (1997).</p>	<p>An ex post facto study of 25 subjects in each group *(depending on whether mom wanted to BF or not).</p>	<p>KC group: starting KC within 30 minutes of birth after initial assessment under radiant warmer at mothers bedside. Placed in KC and exclusively BF in KC and kept in KC for 2 hours, recd no additional oral intake and had score of 5 or more on LATCH.</p> <p>Control group: were taken to nursery, put under radiant warmer and recd 15 ml D5W and 15 ml of formula and</p>	<p>All infants had blood glucose WNL but formula infants increased BG by 3mg/dl and KCers dropped by 14 mg/dl., and all KCers had temp WNL, but 2/25 control did not have temp WNL at 2 hours after birth. KCers had higher mean temp than controls.</p>

		stayed in nursery for 2 hours.	
Gomez Papi, Baiges Nogues, Batiste Fernandez, March Gutierrez, Neito Jurado, Closa Monasterolo, (1998).	Descriptive observational study. Kangaroo method in delivery room for full-term babies in KCBF position.	533 normal full-terms were given KC as soon as dried and for next two hours.	Temperature of infant was related to duration of KC; 96% had axillary temp >36; 98.5% of infants stayed awake with KC; KC infants who breastfed during KC stayed longer in KC. If infant had more than 50 min. of KC, he had 8 times more probability of breastfeeding spontaneously. Moms tolerated it well though they were tired.
Mazurek, Mikiel-Kostyra, Mazur, Wieczorek, Radwaska, Pachuta-Wegier, (1999).	RCT of full-term newborns with 6 in each group.	Group 1 received KC as soon as basic immediate care was completed. Group 2 babies were swaddled & laid beside their mothers. Group 3 infants were swaddled and separated from their mothers for 75 minutes after birth. Serial data was collected throughout the 1 st 75 minutes after birth.	Skin temperature, blood glucose, heart rate, respiratory rate & crying time were significantly more favorable for infants in the KC group than any other. During KC skin temperature was increasing, blood glucose was higher than in any other group & the duration in crying time was shorter & with fewer episodes than in other groups. KC is optimal for newborn adaptation after birth and protects against hypothermia & hypoglycemia.
Chwo & Huang, 2002	RCT KC n = 24 Control n=25	KC infants received 60 minutes skin-to-skin contact with mothers after NB care.	Mean body temperature of KC group significantly higher than control group No differences in heart rate & O2 saturation between groups. All were WNL KC group had more quiet sleep and alert inactivity than the control group. Control group had more drowsiness and crying state than the KC group.

			Extent of maternal birth-related fatigue was significantly different between KC and control group.
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Table 3: Early Kangaroo Care (30 min-24hours)

Citation	Description	Conditions	Results
Hales, Kennell & Sosa (1976) and Hales,Lozoff, Sosa, & Kennell (1977).	RCT of three groups. KC (n=20) Delayed Contact (n=20) Control (n=20) 15 sec. observations made q 1 min x 15 min of maternal behavior made at 36 hrs post-birth, watched through window during BF, talking to and caring for babies.	Early contact/immed. KC group given babies while on del. table during episiotomy repair and then taken to private room where they lay skin-to-skin with nude infants under heat panel for 45 minutes. Delayed contact mothers had early KC but it started 12 hours after delivery. Control moms glanced at baby after birth, then to nursery and returned to mom 12 hours later, wrapped up. All babies stayed with moms from 9-5 each day and were BF for the two-day hospital stay.	Those with early contact had sign more affectionate behav than controls, delayed contact had an intermediate amount of affection behavior. The determinant of significantly increased affectionate behaviors was the KC contact.
Kontos, (1978).	QuasiExp Moms self-selected into rooming-in or not. Then moms assigned alternately to either extended contact or control. Group I: KC extended contact with no rooming-in (N=12). Group II: No extended contact and rooming-in (N=12). Group III: Extended contact and rooming-in (N=12). Group IV: No extended contact and no rooming-in (N=12).	EC group: Mothers given baby 30-45 minutes after birth, was undressed and had skin-to-skin care for 45 minutes. First half hour in KC on chest under heated blankets. For second half hour baby moved to one side underneath a blanket. Then contact for 30-60 minutes q 3-4 for feeding. Control group: shortholding wrapped baby immed after delivery separation and brief contact at 6-12 hrs postbirth. Moved into rooming in at 24 hours post-birth Group 3: EC within 45 minutes and rooming in after 24 hours, Group 4: routine care after birth for 5-6 PP days. A checklist of maternal attachment behavior observed at 28-32 days post birth and 86-92 days post-birth. Observed for 5 seconds every 30 seconds x10 min. during non-caretaking free playtime.	EC moms had sig more attachment behaviors, as did rooming in moms.
McClellan & Cagianca (1980).	RCT. Random assignment of 40 multips of repeat c/s middle income. 1) Study group 2) Control	EC group got 1 hr of KC (placed on mother's chest for skin-to-skin contact in recovery, and in other contacts they alternated between KC and visual contact) in recovery room, then continuous rooming-in or routine care.	At 36 hrs, holding touching, looking scores increased for KC. At one month, KC group score remained sig increased.

	Attachment behaviors and NPI (Neonatal Perception Inventory) observed at 36 hrs. and 1 month post-birth.	Then routine care – which was continuous rooming-in; routine care group got no contact for 12 hrs, then rooming in.	
Villalon & Alvarez, (1993).	RCT into two groups. 119 fullterm newborns (59KC; 60 control) were randomized into the two groups. KC in DR for 4 hrs. during recovery.	KCers started KC 2-4 post-birth. Controls infants remained in observation nursery for first 4 hrs after birth. Then infants were given to their mothers in the postpartum ward. Measured type of feeding at 24 hrs post-birth, at discharge and at 14 days post-birth.	More KCers were breastfeeding at all three times than controls, and maternal self confidence was greater for KC mothers than controls at discharge and at 14 days post-birth.
Meyer & Anderson, (1999).	Case Study. KC in a clinical setting with full-term infants having breastfeeding difficulties	One full-term who wasn't BF @ 20hrs post-birth got 60 min KC before next feeding. Two others infants at 18 and 40 hrs post-birth when given KC "for about 1 hr".	Spontaneously sought and latched on.
Shiau, 2000.	RCT 58 fullterm moms 52 moms provided full data set of Index of Breastfeeding Status (a measure of exclusivity of BF) on Days 7,14,28,42,90,180, and 365 days postbirth.	started KC within 4 hours of birth and gave it for 8 hr/day for 3 consecutive days(Days 0,1,2). Controls had no KC and no rooming-in in Taiwan hospital	KC infants had better breastfeeding status, breast fed longer (91.1 vs 24.8 days), and more were BF at 1 year (4 vs. 0).
Punthmatharith, & Anderson. (2001).	Randomized controlled trial 196 full-term newborns (97 KC, 99 control) of early KC in Thailand. Effects on maternal feelings, maternal-infant interaction, and breastfeeding success.	KC 60 min. post-birth and continued ad lib for two days or until discharge. Control moms held swaddled infant adlib.	On day 2 post-birth, no sig diff in MIBQ, IBS, H&H lactation Scale. Bonding Observation Check List was sig between groups. One month post-birth KC had high Attention and Connection to Infant (a subscale of Mat-Inf Bonding Questionnaire). No sig diff in BF successes. KC might have weak effect on Mat-Inf bonding.

Table 4: Intermediate KC (24hr-discharge)

Citation	Description	Conditions	Results
Karlsson (1996).	Descriptive study of 9 healthy term neonates placed in KC on recumbent mother's chest.	Neonates placed in KC on mother's chest for 70 min. Infants back and extremities were covered with double layer of terry cloth toweling. Measurements taken at 10 and 70 min. Multiple skin and rectal temps. of the infant and mothers chest temp. were taken.	Rectal temps increased by 0.7°C, going up to 37°C, during KC. Heat was gained from areas in contact with mother's skin; heat loss from un-protected heads was high, but dry heat loss during KC was similar to dry heat loss in an incubator. Overall, there was reduced heat loss in infants during KC, allowing heat to be conserved. Mothers conduct heat to infant.
Shiau & Anderson, (1997).	RCT. 4 hours after birth randomly assigned full-term infants to KC or control.	KC (n=29) or Control (n=29). KC started on PP day 1 and was given for 8 hours on DAYs 1,2,3 vs. routine nursery care in which went to mothers for feeds q 4.	KC moms had less maternal state anxiety, less breast engorgement, and better BF status. No diff in breastmilk maturation.
Gray, Watts, & Blass, 2000	RCT 2 grp.30 newborns held in KC (n=15) or left in crib for heel stick at (n=15) at 33-55 hours of age when tested. Heel stick was stopped at 3 min & for 27/30 infants blood collected before end of 3 min. Two min before stick, video and HR q 10 sec,	KC for 10-15 min so couple could relax with two blankets across back	KC cried 1-2 second, control cried mean of 32 seconds. KC grimace was 1-2 second; control grimace was 30 second. Crying and grimace reduced by 82% & 65% from control levels. HR also reduced, and the 'explosive rise' in HR that accompanies pain was prevented. KC HR rose 8-10 bpm; control HR rose 36-38 bpm so it was >160.

Table 5: Late KC – after discharge

Citation	Description	Conditions	Results

Table 6: Hypothermia

Citation	Description	Conditions	Results

Table 7: Breastfeeding Outcomes

Citation	Description	Conditions	Results
DeChateau & Wiberg (1977a). Move to <i>Breastfeeding Outcomes</i> section???	RCT Moms randomly assigned KC or routine care groups. Observed moms position (sitting, lying, or KCBF), holding of infant, encompassing of infant and infant crying.	KC=22: Primips got baby on abdomen at 6-10 min and five min later moved to breast and kept there for 10-15 min; Routine care= 20 primips and 20 multips who got swaddled baby at mothers bedside for first two hours, then in observation nursery, fed q 4 hours, and in last half of week went to mother's room. At 36 hours post-birth during BF, baby in crib moved next to mom and observed every 15 seconds for 15 minutes.	KCers held infant and sat up more than others and had behavior much more like multips. Routine care infants cried more frequently and behavior of mothers of boys differenced more than behavior of mothers of girls.
De Chateau & Wiberg, (1977b).	RCT- see 1977a. KCBF.		When evaluated at 3 months of age, KC moms spent more time kissing and looking en face. Infants smiled more often and cried less frequently. A greater proportion of KCers were BF at three months. The influence of extra contact was more pronounced in boy-mother than girl-mother pairs.
De Chateau & Wiberg, (1984).	RCT- see 1977a. KCBF.		At one year, they conducted PE of kid, and KC moms held and touched infant more frequently and more often talked positively to their infant than did routine care moms. Fewer KCers returned to work, and more KC babies slept in room of their own. On Gesell, KCers were ahead of others on social, linguistic, fine and gross motor indices.
Mikiel-Kostyra, K. & Mazur, J. (1998).	Surveyed 427 hospitals in Poland in 1995, collecting factors related to BF initiation during hospitalization for 11,750 newborns.	KC in the first 2 hrs after birth and rooming in were examined for their influence on breastfeeding initiation in normal and low birth weight infants. Exclusive BF during maternity stay was analyzed.	The lack of skin-to-skin contact in the first 2 hrs. after birth was associated with artificial feeding. The risk of artificial in the population when STS contact was not given was 60.9%. When KC in the first 2 hours after birth and rooming in were examined, both were found to be independent prognostic factors of BF initiation (KC odds ratio = 3.4; rooming-in odds ration= 5.5 as

			<p>expected because rooming-in continued for up to 2 days & KC was only 2 hours long) and were more evident for low birth weight infants than normal birth weight infants (Mikiel-Kostyra & Mazur, 2000). With exclusive BF, KC in the first 2 hours after birth was not a contributor Mazur & Mikiel-Kostyra, 2000).</p>
Gomez Papi, et al. (1998).	<p>Descriptive observational study. Kangaroo method in delivery room for full-term babies in KCBF position.</p>	<p>533 normal full-terms were given KC as soon as dried and for next two hours.</p>	<p>Temperature of infant was related to duration of KC; 96% had axillary temp >36; 98.5% of infants stayed awake with KC; KC infants who breastfed during KC stayed longer in KC.</p> <p>If infant had more than 50 min. of KC, he had 8 times more probability of breastfeeding spontaneously. Moms tolerated it well though they were tired.</p>
Mikiel-Kostyra, Boltruszko, Mazur, Zielenska. (2001).	<p>A prospective study. 1250 infants followed until 3 years of age. Regression analysis included.</p>	<p>KC after birth occurred for varying durations with the maximum being 2 hrs.</p>	<p>KC significantly increased the mean exclusive BF duration by 0.4 months and overall BF by 1.4 months. Infants who had KC after birth exclusively BF 1.2 months longer and were weaned 1.7 months later than infants who had less than 30 min. of KC.</p> <p>KC was a significant and independent factor for exclusive BF continuation.</p>