



**Karolinska
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Institutionen för kvinnors och barns hälsa

PARENT-INFANT SKIN-TO-SKIN CONTACT STUDIES

Parent-Infant Interaction and Oxytocin Levels During Skin-to-Skin Contact after Cesarean Section and Mother-Infant Skin-to-Skin Contact as Treatment for Breastfeeding Problems

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ABSTRACT

The overall aim of this thesis was to investigate the impact of early skin-to-skin contact on maternal, paternal and infant interaction immediately after Cesarean section and personality profile in mothers. Furthermore, it was to study skin-to-skin contact between mothers and infants as a method to solve severe latch-on breastfeeding problems, even weeks after birth.

Methods: (I-III) Thirty-seven healthy infants born to primiparas were randomized to 25 minutes of skin-to-skin contact with either their fathers or mothers after five minutes of skin-to-skin contact with their mothers after birth or a group. The interaction of newborns was recorded on a videotape. Interaction behaviours were compared between the skin-to-skin groups and their controls. Blood samples were taken for analysis of oxytocin with radio-immuno-assay in both mothers and fathers every five minutes for the first 45 minutes after birth and then every 15 minutes, up to two hours after childbirth. The mothers were asked to fill in the Karolinska Scale of Personality (KSP).

(IV) 103 healthy mother-infant pairs with severe latch-on problems were randomly assigned to breastfeeding during skin-to-skin contact (SSC-group) or not (control group) after screening for eligibility. Breastfeeding counselling was given to both groups according to a professional standardised model. Mothers completed a self-rating instrument Breastfeeding Emotional Scale (BES) before and after the breastfeeding session mothers were followed up to four months.

Results: Infants' soliciting sounds increased over time ($p=0.032$). Fathers in skin-to-skin contact performed more soliciting responses than control fathers ($p=0.010$) (I). Infants in skin-to-skin contact with mothers cried significantly more than infants in skin-to-skin contact with fathers ($p=0.002$) and girls cried more than boys in skin-to-skin-contact with either parent ($p=0.02$). Mothers touched girls less than boys ($p=0.038$). Fathers directed less speech towards girls compared to boys ($p=0.042$) (II). Girls initiated breastfeeding behaviour earlier than boys in skin-to-skin-contact with either parent ($p=0.027$). Infants started to breastfeed significantly earlier if they had uninterrupted skin-to-skin contact with mothers during the first 5-30 minutes ($p=0.018$) (II). Both mothers ($p<0.001$) and fathers (0.008) showed a slight rise in oxytocin levels after birth irrespective of being in skin-to-skin contact with the infant or not. In mothers, oxytocin infusion alone caused lower scores in detachment ($p=0.045$) and also in somatic anxiety ($p=0.017$). In contrast, skin-to-skin contact mothers with oxytocin infusion showed higher scores on somatic anxiety than their controls ($p=0.022$) (III). The infants with latch-on problems began to breastfeed after significantly shorter time than infants in the control group, ($p=0.020$) and had more positive breastfeeding experiences according to the BES after the intervention than mothers in the control group ($p=0.022$) (IV).

Conclusion:

Skin-to-skin contact immediately after a caesarean section enhances parental-infant interaction, but we did not find differences in mean oxytocin levels between groups in skin-to-skin contact or not. The plasma oxytocin levels in both mothers and fathers showed a slight rise lasting for 60 minutes after birth irrespective of being in skin to skin contact with the infants or not. These data suggest that there might be a period immediately after birth, when both mothers and fathers have high oxytocin levels, which might facilitate bonding to the newborn.

Oxytocin infusion may have a potentiated effect on maternal plasma oxytocin levels when in skin-to-skin contact and may contribute to lower self-reported scores on the detachment scale and the somatic anxiety scale in KSP two days post partum. Uninterrupted skin-to-skin contact with the mother accelerates the time point for the infants' first breastfeeding after birth and skin-to-skin contact can help infants to restore their innate breastfeeding program and achieve satisfactory breastfeeding, even months after birth.

Key words: skin-to-skin contact, caesarean section, parent-infant interaction, sex-differences, breastfeeding, latch-on problems, oxytocin, personality