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Influences of a dedicated parental training program on parent–child interaction in preterm infants

Alina Steinhardt [b], Patricia Hinner [a], Thomas Kühn [b], Charles C. Roehr [c,d], Mario Rüdiger [a], Jörg Reichert [a,*]

[a] Neonatologie & Pädiatrische Intensivmedizin am Universitätsklinikum Dresden, Germany
[b] Mutter-Kind Zentrum am Vivantes Klinikum Berlin-Neukölln, Germany
[c] Neonatal Services, John Radcliffe Hospital, Oxford University Hospitals, Oxford, UK
[d] The Ritchie Centre, Monash Institute of Medical Research, Melbourne, Australia

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ABSTRACT

Objective: To investigate influences on the interaction between preterm infants and their parents by a dedicated parental training program on the care of preterm infants.
Methods: Standardized scenarios of mother–child interactions (50 mother–child dyads of very low birth weight infants (VLBWI), birth weight < 1500 g) were videotaped in two perinatal centers (PC-A, PC-B). The videos were reviewed and scored using a standardized instrument. In both centers, parents were integrated in the daily care by pediatric nurses, while additionally PC-A had a structured parental training program.
Results: PC-A and PC-B were comparable regarding patient spectrum and number of admissions of VLBWIs/year. Both centers had similar care values with respect to the "baby friendly" initiative. No significant differences were seen in characteristics of patients (gestational age, birth weight, postnatal age) and mothers (age, parity, marital status, professions). However, in scoring the mother–child interactions significant differences were observed: In contrast to PC-B the recorded behavior in mother–child dyads of PC-A was significantly more often scored as interaction-oriented.
Conclusion: A dedicated, structured, and actively encouraging training program for parents of preterm infants was found to be more strongly correlated toward neurodevelopmental enhancing mother–child-interactions than an approach of merely integrating parents into daily care routine.

1. Background

Attachment develops during the first year of life as a result of repeated interactions between an infant and its parent or constant caregiver; if the caregiver responds appropriately to signals from the infant (baby-signs) it will develop a sense of safety — an important prerequisite not only for attachment but also for the life-long learning process [1,2].

Term-born infants develop a capacity for social interaction within the first weeks of life. They are capable of sending distinguishable signals and to express rhythmical behavior, which allows contextual interpretation and distinct responses to stimulation [3]. Infantile features (concept of "cuteness") trigger parental ministration [4]. Parental contribution to parent–child interaction has been described as "intuitive parental behavior", defined as assimilation in gesture, mimic, and speech to the temporal demands of the child [5]. To develop a stable parent–child attachment the child has to interact actively with the parent. Conversely, parents have to recognize signals adequately and react to the child's cues with high sensitivity and responsiveness [6].

In preterm infant's development of infant–parent attachment is often disturbed for different reasons [7]. Medical treatment of premature infants is associated with the separation of mother and child immediately after birth. Due to the premature cessation of pregnancy parents are often not adequately prepared for their new role [8] and thus, are at an increased risk for experiencing anxiety, stress, grief and depression [9]. Furthermore, the need for intensive medical treatment of an infant has a negative impact on the caregiver's natural progression into parenthood and the establishment of a stable parent–child attachment [10–13]. The perceived fragility of the infant amplifies the emotional distance and reservation in parents [14,15]. While parental anxiety is not necessarily related to a child's condition [16] it can disturb the infant's neurological development [17,18]. A disturbed parent–child bond may furthermore impair the child's cognitive, social and emotional development [19,20]. Finally, prematurity is associated with a restricted ability to interact with the environment. Preterm infants do not only have a limited repertoire of comprehensible signals, but are also challenged by irritable, distracting and painful stimuli from caretakers which reduces the infants' level of responsiveness to external stimuli [21,22].

* Corresponding author at: University Hospital Carl Gustav Carus at the TU Dresden University Paediatric Clinic Department of Neonatology and Paediatric Intensive Care Fetscherstraße 74, 01307 Dresden, Germany. Tel.: +49 351 4582857; fax: +49 451 4585358.
E-mail address: joerg.reichert@uniklinikum-dresden.de (J. Reichert).

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Early inclusion of the parents became an essential part of medical care of preterm infants [23–25] because early positive experience of parent–child interaction is the foundation for optimal neurodevelopment and may reduce the need of subsequent hospitalization [26,27]. Studies suggest that the effect of early parental interaction can be even improved by add-on programs, which focus on specific parental education to enhance the recognition of an infant's subtle signs, and toward being receptive for their limited capacity to respond to stress by giving comprehensive tutorials by specially trained staff [28–31]. Whereas some of the interventions have been tested, there are no data available on whether early teaching programs do have an effect on early mother–child interaction.

The present study was performed to investigate the interaction of mother and child in two neonatal intensive care units (NICUs) that had an early parental involvement policy. Additionally, in one of both NICUs parents received a complex intervention-training program. It was hypothesized that the early intervention program results in detectable differences in the mother–child interaction as measures for maternal–infant attachment.

2. Methods

As parental training programs depend on an entire team culture, it did not seem prudent to compare two different approaches in a single center. The present study was therefore performed as a comparison between two perinatal centers (PC-A, PC-B). Both provided the highest level of perinatal care, were comparable with respect to the number of caretakers per child (as by August 2012), and had a separate NICU as well as a special care baby unit (SCBU). In 2012, PC-A cared for 139 VLBWI and PC-B for 128, respectively. Both units had a policy of early integration of parents into neonatal care.

2.1. Intervention

In both units all parents were trained in infant care by daily staff through integrating them in the ward routine. The training itself was based on the most recent standards of care. Additionally, parents in PC-A received a specific training program, which was provided by a dedicated team consisting of healthcare workers, psychologists and specially-trained nurses. The program consisted of a theoretical part and a practical one. In the theoretical part, consisting of six formal educational sessions of 45 min each, parents – in median in a group of 8 with a range from 3 up to 16 participants – were educated in infant development and behavior, on clues to the understanding of a preterm infant's demeanor, and practical aspects of preterm infant care. Duration of an entire course is 3 weeks with two educational sessions per week. Since participation in a session does not depend on the knowledge of the previous session, parents can enter the course at any time. Infant handling, stimulation, feeding and breastfeeding, personal hygiene, first aid, and early development were taught in these modules. After these, as a practical part, parents were supervised in the cot-side care of their baby, guided by specially-trained nurses. These practical sessions particularly focused on the parent–child-interactions during bathing or feeding by the caregiver and lasted up to 5 h.

In summary, parents received about 9 h of training, consisting of theoretical and practical parts. To deliver these 9 h of training a total man power of 6 h is needed per parent (1 h healthcare workers and psychologists, and 5 h from specially-trained nurses).

The specific training program was introduced in the PC-A more than 5 years ago. Since the introduction PC-A cared for 574 VLBWI with 534 families (28 twins, 6 triplets). 92% (482) of these parents participated in the training program. Only a minority of participants (11%) were unable to participate in the entire program. Reasons for termination of participation were: transfer to other units (5%) or time restrictions (maternal sickness, other siblings, etc.).

2.2. Testing

Spot sample surveys were undertaken at centers between 08/2012 and 04/2013. We included mothers of infants with a birth weight < 1500 g (VLBWI) and adequate German language skills; mothers with a psychiatric diagnosis and children with severe neonatal complications or non-viable infants were excluded from the study. The sample size was limited to 25 parent–child dyads at each center. All asked mothers of eligible infants who met the inclusion criteria gave their approval for analyzing the videotaped behavior. There were no dropouts.

Mother–infant interaction during regular neonatal care was videotaped throughout the hospital admission. To have comparable contexts, bathing was used for videotaping, where the mother would independently bathe, care and then dress her child, following the ward's standards of care. Of these videos, the first 120 s after the infant was taken from the bath back to the changing table were studied.

2.3. Methods of assessment

To compare the philosophies of care, a standardized questionnaire covering 11 recommendations of the Baby-Friendly-Hospital Initiative (BFHI) was used [32,33]. The neonatal staff marked on a 4 point Likert-scale to what extent – completely, predominantly, hardly, not at all – the following recommendations would suitably describe the philosophy of care of their NICU: (1) The mother should be able to stay with her sick baby for 24 h a day. (2) Every staff member should care for the mother and the infant and should be able to cope with psychological aspects. (3) The staff should promote breastfeeding to every mother and learn the techniques of expressing breast milk. (4) The psychological stress of the mothers should be decreased during the whole treatment period. (5) Unless medically indicated, newborns should not be given anything other than breast milk. (6) If the infant cannot suckle, breast milk should be given by tube and preferably by the mother. (7) The number of tests and examinations should be reduced to a minimum. (8) Mother-and-child skin-to-skin and air-to-air contact should be used as much as possible, and the use of technical equipment in childcare should be reduced. (9) Aggressive therapy should be reduced to a minimum. (10) The mother and infant should be considered as a closed psychosomatic system. Everyday ward rounds should focus not only on the infant but also on the needs of the mothers. (11) Healthy family members (father, grandparents or helpers) should be allowed to visit the mother and baby during a prolonged stay at the hospital.

To characterize the sample, the following criteria were used: the mother's age, parity, profession and marital status, gestational age and weight of the infant and infant's age at the time of the video survey.

For the analysis of interaction, a special data sheet for documenting observations on infant–mother interaction was used. Infant and maternal behavior was included. For the infant, eye contact, movement of eyes, hands, head, and body were assessed. For the mother, the focus lies on the adherence to optimal – intuitively correct – distancing for visual contact (viewing distance) and verbally addressing the infant in an intuitively correct manner (motherese) as well as sensitivity toward her infant. Infant's items were based on the synactive developmental model by Als et al. [34], while maternal behavioral items were orientated on intuitive parental didactics by Papousek and Papousek [5]. For the analysis, the 120 s video clips were divided into 10 s sequences. These sequences of infant–maternal dyads were coded by pre-defined items of interaction behavior. For instance eye contact by the infant was coded as no contact, occasional, predominantly, or continuously. To exclude from statistical comparison, we introduced another category (not assessable) where views of the infant or the maternal behavior may not have been optimally captured in the video. All 50 videos were analyzed in random order by a psychologist as professional rater who was blinded toward the origin of the videos (PC-A and PC-B), and was not familiar with the study's hypothesis.