The Newborn Behavioral Observations (NBO) System on Mother-infant Interaction: A Randomized Study

Judith Wides, University of Massachusetts at Amherst, Clarissa Valim, Children's Hospital, Boston and Harvard Medical School, Mei-Chiung Shih, Children's Hospital, Boston and Harvard Medical School

Objective: The Newborn Behavioral Observations (NBO) system (Nugent, Keesee, O'Brien, Johnson and Blanchard, 2005) is a newly developed neurobehavioral tool that can be used to provide information to parents about their infant’s behavior and development, with the goal of promoting a positive relationship between parent and infant and between practitioner and family. This study was designed to evaluate the effectiveness of the NBO on mother-infant interaction over the first four months of life.

Methods: Forty primiparous mothers and their healthy full-term infants were recruited in two hospital settings, a community hospital and an urban hospital. The mothers had no perinatal complications, while the infants were all between 36 and 41 weeks gestational age, with birthweights above 2500 gms and Apgar scores no less than 8 at 10 minutes. Subsets were randomly assigned to experimental and control groups. The control group (n=20) received their routine care as practiced in the respective hospital nursery at the time of the study. They were then observed in their homes at one month and filled out a series of questionnaires. The experimental group (n=20) participated in the NBO intervention in the hospital after birth and were then followed at home setting at one month. The NBO was administered by either of three child development specialists, all of whom had been trained by the first author in the administration of the NBO.

The Intervention

The NBO was administered in the hospital within the first two days of life and again at home in the first month. The NBO consists of a set of 18 neurobehavioral observations that describe the newborn’s capacities and behavioral adaptation from birth to one month of age. A profile of their baby’s behavioral repertoire, and thus enabled the clinician to provide important information to parents about their baby and identify the kind of support and stimulation needed to promote positive parent-infant interaction.

Results

Forty primiparous mothers and their healthy full-term infants were randomized into experimental or control groups. The experimental group participated in the NBO in the hospital at two days and in the home at one month. At four months, 17 control dyads and 16 experimental dyads were videotaped in their homes and coded. The CARE-Index Scoring System was used to measure the quality of parent-child interaction.

Conclusions

The Newborn Behavioral Observations (NBO) system was designed to sensitize parents to their newborn’s capacities and individuality, with the goal of promoting positive interactions with their children from the very beginning. In sum, this joint observation provides a forum for parents and clinicians to care for and interpret the newborn’s behavior. It should help parents read their baby’s communication cues and to identify the kind of support needed to promote development. These findings suggest that the NBO is infant-focused and family-centered, and can be personalized through intervention strategies. The NBO can be a useful tool for pediatric professionals to strengthen the relationship between parents and infants. In this study, the NBO was used with great success in facilitating parent-infant communication cues and to identify the kind of support needed to promote development. These findings suggest that the NBO is infant-focused and family-centered, and can be personalized through intervention strategies.

The Effects of the Newborn Behavioral Observations (NBO) System on Mother-infant Interaction: A Randomized Study

J Kevin Nugent, University of Massachusetts at Amherst and Brazelton Institute, Children’s Hospital, Boston and Harvard Medical School, Jay Kilgour, University of Massachusetts at Amherst, Julio Gonzalez, SUNY, Old Westbury

Judith Wides, University of Massachusetts at Amherst, Clarissa Valim, Children’s Hospital, Boston and Harvard Medical School, Mei-Chiung Shih, Children’s Hospital, Boston and Harvard Medical School

Introduction and Aims

Research shows that contingent maternal interactions between mothers and their infants are related to better social and cognitive development in childhood (Grossmann and Grossmann, 1991; Van den Boom, 1994; Grossmann et al., 2005). This study was based on the assumption that contingent maternal interactions and individuality foster the development of contingent interactions between parents and infants and thus prevent the compounding of international problems which occur if the caregiving environment is unable to adjust adequately to meet the infant’s needs. (Brazelton & Nugent, 1979; Field, 1987; Belsky et al., 1983; Belsky & Plomin, 1985; Dunn & Munn, 1986; Lucas & Johnson, 1993; Speiskopf & Phillips, 2000; Else et al., 2003; Nougent and Blanchard, 2005; Van Den Boom, 2005).

The goal of this study was to evaluate the efficacy of the NBO as a teaching and relationship-building tool for health care professionals. Specifically, this randomized study examined the efficacy of the NBO in promoting positive mother-infant interactions in the early months of life.

Abstract

The goal of this study was to evaluate the efficacy of the NBO as a teaching and relationship-building tool for health care professionals. Specifically, this randomized study examined the efficacy of the NBO in promoting positive mother-infant interactions in the early months of life.

Outcomes (Four months)

The CARE Index (Crittenden, 1981, 1988) was administered to the home when the infants were four months of age, by an interviewer who had been trained in reliability in its administration and coding, according to the protocol for maternal sensitivity in parent-infant interaction. The mother-infant dyads were video taped in a semi-structured play session. The videotapes of both mother and infant were coded, reviewed and scored, with 1 points assigned to parent and infant respectively. Mothers’ scores were then summarized on an overall sensitivity index.

Table 1:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Experimental Group</th>
<th>Control Group</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>10.24 (95% CI = 5.91, 14.56)</td>
<td>5.91 (95% CI = 1.54, 10.28)</td>
<td>0.001</td>
</tr>
</tbody>
</table>

The Final Model: results for both outcomes

The Odds Ratio for the association between intervention and “mother sensitive” adjusted for all covariates between experimental and control groups was 6.56 (95% CI = 1.14, 37.71), suggesting that this association was an independent effect.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Chi-Square</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Null Hypothesis</td>
<td>15.44</td>
<td>4</td>
<td>0.001</td>
</tr>
</tbody>
</table>

The Final Model: results for both outcomes

The Odds Ratio for the association between intervention and “mother cooperative” adjusted for all covariates between experimental and control groups was 6.56 (95% CI = 1.14, 37.71), suggesting that this association was an independent effect.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Chi-Square</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Null Hypothesis</td>
<td>15.44</td>
<td>4</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Significance:

 Mothers who participated in the NBO were four times more likely to be classified as “sensitive” in their interactions with their children than mothers who did not participate in the NBO.

 Infants of mothers who participated in the NBO were six times more likely to be classified as “responsive – “cooperative” , adjusted for hospital and mother’s age was 6.56 (95% CI = 1.14, 37.71), suggesting that this association was an independent effect.

The Final Model: results for both outcomes

The Odds Ratio for the association between intervention and “mother cooperative” adjusted for all covariates between experimental and control groups was 6.56 (95% CI = 1.14, 37.71), suggesting that this association was an independent effect.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Chi-Square</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Null Hypothesis</td>
<td>15.44</td>
<td>4</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Conclusions

The Newborn Behavioral Observations (NBO) system was designed to sensitize parents to their newborn’s capacities and individuality, with the goal of promoting positive interactions with their children from the very beginning. In sum, this joint observation provides a forum for parents and clinicians to care for and interpret the newborn’s behavior. It should help parents read their baby’s communication cues and to identify the kind of support needed to promote development. These findings suggest that the NBO is infant-focused and family-centered, and can be personalized through intervention strategies. The NBO can be a useful tool for pediatric professionals to strengthen the relationship between parents and infants. In this study, the NBO was used with great success in facilitating parent-infant communication cues and to identify the kind of support needed to promote development. These findings suggest that the NBO is infant-focused and family-centered, and can be personalized through intervention strategies.

Figure 1

www.brazelton-institute.com

Zero to Three 21st National Training Institute, Washington, DC, Nov 3-6, 2006

Based on 25 years of research with the Brazelton Neonatal Behavioral Assessment Scale (Brazelton, 1973; Brazelton & Nugent, 1986), the NBO has been developed specifically for clinicians caring for newborn infants. The NBO is designed to provide structure and support for the clinician and parents, from the very beginning. It is conceptualized as a participatory interactive session, the NBO is always administered in the presence of both the parent and the child. The information derived from the NBO is used as a form of anticipatory guidance since it can help parents make informed choices about caregiving. In sum, this joint observation provides a forum for parents and clinicians to care for and interpret the newborn’s behavior. It should help parents read their baby’s communication cues and is designed to provide a positive relationship between parents and their infants and between clinician and patients, from the very beginning.