STRONG CHILDREN'S RESEARCH CENTER

Name: Alexis Cohen and Yuriko Fukumura
School: Smith College and Wellesley College
Mentor: Dr. Sanjiv Amin, M.D., M.S.

ABSTRACT

Title: Communication and social skill competence in preterm infants

Background: Recent improvements in neonatal care have increased the survival rate of preterm infants. Research has shown that these premature infants have a higher risk for neurodevelopmental problems including autism spectrum disorder (ASD). ASD is characterized by social, communication, and behavioral problems. Studies have shown that premature infants are at increased risk for behavioral problems. However, the association between degree of prematurity and social skills as well as communication skills have not been well studied. It is also not known if sociodemographic factors influence social and communication skills among children born prematurely.

Objectives: Our objective was to evaluate association between degree of prematurity and social and communication skills. Secondly, to evaluate associations between sociodemographic factors and social and communication skills.

Design/Methods: This was a prospective study involving premature infants with a gestational age of 24 to 33 weeks who were discharged home from the Neonatal Intensive Care Unit. Infants with a history of chromosomal disorders, craniofacial abnormalities, and TORCH infections were excluded. Children's communication and social skills were assessed using standardized questionnaires filled out by parents. The mean communication and social skills scores are 100 (SD 15). Infants with a score of < 85 (1SD below mean score of 100) were deemed to have abnormal communication or social skills. Infants with abnormal scores (<85) were compared to those with normal scores (≥ 85). Statistical analysis was conducted through the student's t test, chi square analysis, and the Wilcoxon rank sum test.

Results: 102 premature infants were evaluated at a mean age of 5.8 years. Among these infants, 19% were deemed to have abnormal communication skills and 32% were deemed to have abnormal social skills. Race, maternal education, annual household income level, and breast milk duration, but not gestational age (GA), birth weight or ethnicity, were significantly associated with communication skills on bivariate analyses. On logistic regression, only annual household income level was independently associated with abnormal communication skills (p = 0.00). Similarly, GA, birth weight or duration of breast milk was not associated with social skills; however, gender, race, and ethnicity were significantly associated with social skills. On logistic regression, race and ethnicity were independently associated with social skills.

Conclusion: Our findings indicate that premature infants are at increased risk for abnormal social and communication skills. However, degree of prematurity is not associated with social or communication skills. Children cared for by families with annual household income > $35,000 have better communication skills. Similarly, non-Hispanic children are more likely to have better social skills compared to Hispanic children and Caucasian children are more likely to have better social skills compared to African American children born prematurely.

References:

1. Ochiai M, Kinjo T, Takahata Y, Iwayama M, Abe T, Ihara K, Ohga S, Fukushima K, Kato K, Taguchi T, Hara T. Survival and Neurodevelopmental Outcome of Preterm Infants Born at 22-24 Weeks of Gestational Age. Neonatology 2014;105:79-84

2. Ross, Gail, Lipper G, Evelyn, Auld A.M, Peter. Social Competence and Behavior Problems in Premature Children at the School Age. Pediatrics 1990; 86: 3

3. Allen, Marilee C, Neurodevelopmental outcomes of preterm infants. Current Opinion in Neurology 2008; 21: 123-128

4. Cross, JaNeen. Neuroprotective Core Measure 7: Optimizing Nutrition - Breastfeeding, Human Milk and Attachment. Newborn and Infant Nursing Reviews 2015; 15: 128-131

5. Soleimani, Farin, Farzaneh, Zaheri, Fatemeh, Abdi. Long-Term Neurodevelopmental Outcomes After Preterm Birth. Iran Red Crescent Med J 2014; 16: e17965.