

Cumulative psychosocial and medical risk as predictors of early infant development and parenting stress in an African-American preterm sample

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Available online 11 September 2006

Abstract

The present study examined predictive linkages between cumulative psychosocial and medical risk, assessed neonatally, and infant development and parenting stress at 4 months of infant corrected age. Predominantly low-income, African-American mothers and their preterm infants served as participants. Cumulative psychosocial risk predicted early mental, but not motor development, while cumulative medical risk predicted both mental and motor development. Cumulative psychosocial risk, but not medical risk, predicted parenting stress. Few studies of preterm infants have reported links between cumulative psychosocial risk and infant development at such an early age, nor has earlier work found associations between cumulative psychosocial risk and mothers' perceptions of parenting. Results support the premise that early intervention should target both the medical and psychosocial needs of low-income families with preterm infants, and that addressing psychosocial stressors shortly after birth may improve developmental outcomes in infancy.

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Keywords: Psychosocial risk; Medical risk; Mental development; Premature infants; Parenting stress; Parent perceptions; African-American mothers

1. Introduction

Premature infants comprised 11.9% of all births and 17.5% of all African-American births in the United States in 2001 (Centers for Disease Control and Prevention, 2002), the highest rate in twenty years. Prematurity is a known risk factor for developmental delay (Cloonan, Maxwell, & Miler, 2001; Hack et al., 2002), with the impact depending on the degree of prematurity and associated medical conditions (e.g., intraventricular bleeds, chronic lung disease). Those preterm infants facing multiple medical risks have a significantly higher probability of developmental delay through toddlerhood and the preschool years than do infants experiencing little perinatal risk (Brazy, Eckerman, Oehler, Gustafson, & Thompson, 1991; Thompson et al., 1994, 1997).

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At the same time, development in premature infants, as in all infants, is sensitive to ecological/psychosocial risk factors. The development of preterms has been linked positively with maternal education (Brazy et al., 1991) and negatively with mothers' daily stress and other sociodemographic, psychosocial risk factors (Korner et al., 1993; Thompson et al., 1994). Theoretical/ecological models of cumulative psychosocial risk posit that the cumulative effects of multiple "distal" risk factors such as education, income, family size, and minority status, and "proximal" risk factors such as maternal stress, supports, and depressive symptoms, are more influential than the effect of any risk factor alone (Rutter, 1979; Sameroff, 2000). Empirical studies have found greater cumulative psychosocial risk to be significantly predictive of lower cognitive development scores in children at 4 (Sameroff, Seifer, Barocas, Zax, & Greenspan, 1987) and 13 years of age (Sameroff, Seifer, Baldwin, & Baldwin, 1993), and in infancy, lower scores in expressive and receptive language development (Hooper, Burchinal, Roberts, Zeisel, & Neebe, 1998). In preterm infants, cumulative psychosocial risk has also been predictive of lower IQ scores at age 3 (Liaw & Brooks-Gunn, 1994), increased internalizing and externalizing behaviors in 2, 4 and 8 year olds (Laucht, Esser, & Schmidt, 2001), and early infant development (3 months corrected age) in an economically diverse German sample (Laucht, Esser, & Schmidt, 1997).

The present study examined very early development of preterm infants in relation to cumulative psychosocial risk and cumulative medical risk. This study adds to the current literature on the development of premature infants in several ways. First, it assesses the individual and joint impact of cumulative medical and psychosocial risk shortly after birth on early infant development. Previous studies demonstrating the impact of psychosocial risk on the early development of preterms (Laucht, Esser, & Schmidt, 1997) did not control for medical risk in the same manner. Second, this study focuses on a sample of predominantly inner-city, low-income, African-American preterm infants, a group that is more likely than mothers of other racial/ethnic groups to deliver prematurely (Centers for Disease Control and Prevention, 2002). Based on evidence that perinatal medical risk relates inversely to infant development in the first year and beyond (e.g., Brazy, Goldstein, Oehler, Gustafson, & Thompson, 1993), we expected that cumulative medical risk would predict early infant development. Less clear was whether maternal psychosocial risk would predict early development in a high-risk sample of infants who are at "double jeopardy". Demonstrating such a linkage would demonstrate to interventionists the need to focus as much on reducing mothers' psychosocial stressors (e.g., by connecting families with needed resources) as on working with infants directly to promote development.

Finally, the present study examined the individual and joint impact of medical and psychosocial risks on maternal reports of parenting stress. Few studies of preterm infants exist to date that compare the relative, putative impact of cumulative psychosocial risk and cumulative medical risk on maternal reports of parenting stress in early infancy. Indeed, a long-standing assumption in the literature is that parental distress among parents of high-risk infants is a direct function of the infant's severity of illness (Auslander, Dvorah, & Arad, 2003; Jeffcoate, Humphrey, & Lloyd, 1979; Teti, O'Connell, & Reiner, 1996). It is important to note, however, that premature birth is disproportionately associated with poverty and adverse ecological conditions (Foster et al., 2000). Poverty itself is associated with parenting stress and parenting failure, which in turn is predictive of poor developmental outcomes in preterms independent of medical risk (McLoyd, 1998). Thus, it was reasonable to expect that variation in cumulative psychosocial risk may account for variation in parenting stress beyond that accounted for by cumulative medical risk. If such a predictive relation could be demonstrated, it would underscore the need for early intervention efforts to attend equally to maternal as well as infant needs.

2. Method

2.1. Participants

Data collection took place as part of a larger, ongoing investigation, the Preterm Infant Development Study (PIDS). The PIDS examines the efficacy of a 20-week intervention program comprised of parent-delivered infant massage, serial administrations of the Neonatal Behavioral Assessment Scale (NBAS) with increasing parent involvement, an educational video on preterm infants' perceptual and interactive capacities in the nursery, and general information and guidance regarding child development and infant care. The aim of the intervention was to facilitate parent-child interaction and infant mental and socioemotional development, as well as parental adjustment to having a preterm infant.

Participants were 103 African-American mothers and their preterm infants for whom complete data were available at baseline and 4 months of infant corrected age. Another 23 African-American mothers and infants had been recruited but

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