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Asthma and child behavioral skills: Does family socioeconomic status matter?

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ABSTRACT

Asthma is associated with poorer behavioral and psychological outcomes in children, yet little is known about whether and how the social stratification process affects the impacts of asthma on children's outcomes. Using data from the Early Childhood Longitudinal Study—Birth Cohort, this study considered the role of socioeconomic status in shaping the developmental consequences of children's asthma. Results showed that asthma was negatively associated with attention and social competence and positively associated with externalizing problem behaviors for children with low-educated mothers and children who lived in poor households. However, the adverse consequences of asthma disappeared for children with high-educated mothers and children who did not experience poverty. Additionally, the socioeconomic disparities were not fully explained by healthcare resources, family process, and exposure to environment risks and the disparities were found for both mild and severe cases. These findings suggest that, to fully understand the developmental consequences of illness in children, it is important to place socioeconomic status at the center of investigation.

1. Introduction

Long-term illness is associated with lower levels of behavioral and psychological wellbeing in children. Past research shows that children with chronic health problems have more behavioral problems, lower levels of emotional wellbeing, and decreased levels of social competence (Gortmaker et al., 1990; Hysing et al., 2007; Hysing et al., 2009; Martinez et al., 2011; Parcel et al., 2012). The poor behavioral and psychological outcomes of ill children are often attributed to neurobiological disorders resulting from physical illness (Cutuli et al., 2010; Rachelefsky et al., 1986) or the influence of contextual and healthcare factors, including access to quality healthcare, family process, and social supports (Butz et al., 1995; Patterson and Blum, 1996; Wallander and Varni, 1989). While the focus on these biological and social mechanisms generates considerable insights into the processes through which physical illness translates to poor developmental outcomes in childhood, very little attention is paid to socioeconomic status [SES]—a fundamental social condition that deeply influences all aspects of individual health and wellbeing—and it contribution to the differential consequences of illness in children.

This study focuses on a single chronic illness—asthma—as a case to highlight the role of socioeconomic inequality in shaping the developmental consequences of illness in children. Asthma is the most common and fastest growing chronic illness in children in the United States. The Center for Disease Prevention and Control [CDC] (2010) estimates that approximately 6% of children under the age of five have been diagnosed with asthma. Therefore, understanding the developmental consequences of asthma is important in its own right and highly relevant for policy. Furthermore, many clinical and epidemiological studies show that asthmatic children have higher levels of behavioral problems and that the impacts of such problems often increase with asthma severity (Cutuli et al., 2010; Calam et al., 2005; Rachelefsky et al., 1986). Yet, few explore socioeconomic disparities in developmental consequences of asthma. Finally, children's asthma is an ideal case for investigating how social stratification process shapes the developmental consequences of diseases because the prognosis of asthma depends heavily on parental management and successful management often depends on social circumstances.

The perspective proposed in this study, which emphasizes socioeconomic inequalities in disease consequences, complements the epidemiological approach in the current literature. Results from this study also provide important insights into secondary

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prevention efforts that aim to promote the behavioral skills and psychological wellbeing of asthmatic children.

2. The developmental consequences of asthma: a sociological perspective

Asthma is the most common chronic condition in young children in many developed countries including the United States (The International Study of Asthma and Allergies in Childhood Steering Committee, 1998). Early childhood asthma, while important in its own right and consuming enormous healthcare resources (Bahadori et al., 2009), can also affect children's development. Asthma can lowers lung function in children which, in turn, reduces the oxygen supply to the rapid developing brain in early childhood (Bass et al., 2004; Covar et al., 2004). The reduced availability of oxygen may result in behavioral and socioemotional problems. Medical studies also suggest that several medications for asthma can stimulate the central nervous system and cause change in children's behaviors and psychological conditions (Haahtela et al., 1994). Many observational studies have found significant associations between childhood asthma and children's behavioral outcomes, and the impact often is found to vary by severity (Bender et al., 1988; Calam et al., 2005). The importance of studying developmental consequences of asthma is further driven by the extensive research that links these early-life behavioral skills with a wide range of social outcomes, including educational attainment (Claessens et al., 2009), delinquency (Coneus and Laucht, 2011), and labor market success (Caspi et al., 1998). However, there are relative few population-based studies that examine whether and how asthma influences developmental outcomes in the general population of young children. More importantly, even fewer population-based investigate the social process that may influence the development of asthmatic children.

Sociology distinguishes itself from the epidemiological paradigm by considering SES as the fundamental cause of inequalities in health (Link and Phelan, 1995). As social stratification system determines the distribution of recourses and information, a persistent association between SES and health is created and maintained despite the advances of medical technology and substantial investments in public health. Although the bulk of the prior sociological works emphasizes socioeconomic disparities in health outcomes (e.g., Link et al., 2008; Phelan et al., 2004), its general tenets are applicable to understanding the consequences of illness. The idea that social stratification determines differential consequences of illness is further elaborated by Finn Diderichsen and his colleagues (Commission on Social Determinants of Health (2007); Whitehead, & Diderichsen, 2002). According to Diderichsen's model, socioeconomic position can modify the developmental consequences of illness like asthma because it relates to a number of broad mechanisms that influence children's development. Specifically, I argue that SES influences three broad mechanisms—healthcare resources, family process, and environmental risks—that connect asthma to poor developmental outcomes in children.

2.1. SES, healthcare resources, and disparities in consequences of asthma

Socioeconomic status yields heterogeneous healthcare resources, which affect individuals' access to healthcare and the quality of the services received. Not surprisingly, access to healthcare resources plays a central role in the discussion of the consequences of asthma. Children who have access to healthcare services show better asthma outcomes (Halfon and Newacheck, 1993). Aside from the access issue, the quality of the healthcare received may determine the consequences of asthma. Prior research on chronic illness suggests that better healthcare services can facilitate the control and management of chronic illness, including asthma (Lozano et al., 1995; Lutfey and Freese, 2005). Furthermore, medical institutions that serve the needs of high SES patients are often more responsive to the patients' conditions and emotional wellbeing (Lutfey and Freese, 2005). The same may well apply to children's asthma.

However, children from low SES families are less likely to have health insurance coverage, and thus have limited access to healthcare services (Urban Institute, 2005). Despite the recent expansion of public insurance programs, a non-trivial proportion of children remain uninsured (Angier et al., 2013). Among children covered by public insurance, approximately one-quarter were no longer enrolled in the program twelve months later (Sommers, 2005). The high dropout rate of children from public health insurance hinders the continuity of treatment and the development of a management plan for asthmatic children (National Heart, Lung, and Blood Institute, 2007), which can also be related to the behavioral skills and psychological wellbeing of asthmatic children.

2.2. SES, family process, and disparities in consequences of asthma

Socioeconomic status shapes family process, which has significant consequences for the development of asthmatic children. Among the many aspects of family process, maternal psychological resources and home environment are particularly important for child wellbeing. Decades of research has demonstrated strong associations between maternal depression and home environment and children's behavioral skills and psychological wellbeing (Belsky, 1984; Conger et al., 2002; Maccoby, 2000; McLeod and Nonnemaker, 2000). Extant evidence suggests that the role of family process is more important for the wellbeing of chronically ill children. Because physical illness decreases a child's energy, limits the child's activities, and generates pain, a supportive home environment and parental warmth can substantially mitigate the negative influence of illness on the child's daily life and promote the child's behavioral skills and psychological wellbeing (Kaugars et al., 2004). Distress in the family and parenting disorganization can be obstacles to medical adherence and the successful management of asthmatic symptoms, which leads to less optimal behavior and psychological outcomes (Christiaanse et al., 1989; Kaugars et al., 2004). The significance of family process on ill children's wellbeing has also been demonstrated in a randomized control trial. Chernoff et al. (2002) shows that interventions aim to reduce parenting stress and promote a positive home environment for families with an asthmatic child have demonstrated significant improvements on children's behavioral and psychological outcomes.

Socioeconomic status creates an unequal distribution of these important family resources among asthmatic children. Children from high SES families live in more developmentally beneficial home environments as compared to their low SES counterparts (Davis-Kean, 2005; Kalil et al., 2012; Lareau, 2003). In addition, because managing asthma in one's child is often time-consuming and stressful, asthma can lead to the decline of maternal psychological wellbeing and the home environment. Prior research shows a strong association between children's asthma and increased parental depression and parenting stress, and decreased family functioning (Carson and Schauer, 1992; Cohen, 1999; Hamlett et al., 1992). This often leads to a decline in emotional support and an increase in harsher parenting. Even worse, because high SES families have more resilient resources to buffer the impacts of the children's illness on the family process, the negative influence of the children's illness on the family process are expected to be found