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Early education and health outcomes of a 2001 U.S. Birth Cohort

Clive R. Belfield, Inas Rashad Kelly *

Queens College/CUNY, Department of Economics, United States

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ABSTRACT

This paper looks at health outcomes, health behaviors, and health screening with respect to participation in Early Childhood Care and Education. With information on health status at multiple periods in time, we are able to look at whether healthier children select into early childhood education (as measured by center-based preschool care and Head Start), as well as whether early childhood education has immediate and near-term effects on a range of health status measures. There is some evidence that child obesity is ameliorated by participation in center-based preschool or Head Start and this finding is supported by clear evidence of improved nutrition and increased levels of health screening. Effects on other health outcomes such as asthma, ear infections, and respiratory problems may be partially masked by unobserved heterogeneity.

1. Introduction

One policy for improving child health status is expanded provision of Early Childhood Care and Education programs outside the home. Some types of early childhood education, such as center-based preschool care or Head Start, have been shown to improve a host of cognitive and behavioral outcomes in children (Garces et al., 2002; USDHHS, 2005; Belfield et al., 2006; Ludwig and Miller, 2007; Deming, 2009; Reynolds et al., 2011a). These programs have the potential to influence health outcomes as well: the influence may be direct, either through actual health services, health education, better nutrition or more physical activity; or indirect through cognitive and behavioral advantages. The consequences even from one-year early childhood education programs may be significant (Reynolds et al., 2011b). Health behaviors such as improved nutrition and physical activity levels and outcomes such as reduced childhood obesity may last into adulthood, which in turn has beneficial effects on labor market outcomes (Cawley, 2004; Conley and Glauber, 2006). Moreover, there is a large literature on the causal effects of schooling on adolescent and adult health status and health behaviors (Cutler and Lleras-Muney, 2010). This evidence raises hope that expanded early education programs can ameliorate persistent or growing health challenges, such as asthma and obesity as respective examples. However, center-based early education might impair health. Preschool may expose children to more infections or potential health insults from other children (Haskins and Kotch, 1986; NICHD ECCRN, 2003), although insofar as this exposure protects against future infections the net effect may be slight (Ball et al., 2002; Cote et al., 2010). Also, where early childhood education participation is because mothers are at work, the adverse effects of maternal employment on child health may be a confounding factor (on the importance of parental investments in children, see Coneus et al., 2012; Doyle et al., 2009). Finally, if new programs are low quality (e.g., large groups) because resources are spread thinly across more children, perhaps

* Corresponding author.
E-mail address: Inas.Kelly@qc.cuny.edu (I.R. Kelly).

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no association between child health and early education might be expected.

A recent systematic review suggests a very modest role for preschool in raising child health, describing at best a "general trend towards beneficial effects" from a "rather flimsy" evidence base (D'Onise et al., 2010, p. 1432). However, the evidence is more appropriately described as mixed, depending critically on how health is interpreted. Few studies are able to either examine direct effects separately or address key methodological challenges; and a mere eight out of the 37 studies described were strong methodologically.[1] In identifying links between preschool enrollment and near-term or contemporaneous health status a key issue is endogeneity. Quantifying the average treatment effect of participation in center-based care or Head Start can be challenging for several reasons. The main concerns are structural endogeneity, or reverse causality – parents may be less likely to enroll their child in preschool if he or she has a health condition, or perhaps more so to relieve the household of the burden of caring for the child – and statistical endogeneity (individual, unobserved heterogeneity). As well, it is not straightforward either to define early childhood education participation so as to reflect its likely influence. Many children are in mixed modes of child care, with variations in the intensity of and duration of preschool as well as variations in their interactions with other children; and of course all children receive educational and health supports from parents and guardians.[2] Thus, the optimal amount of early childhood education is unclear. Finally, certain populations are systematically different and may respond to the 'treatment' when another group will not. Programs that target low-income families such as Head Start may provide benefits to vulnerable groups that are not generalizable to the population as a whole, such as increasing school readiness and reducing health gaps (Currie, 2005; Magnuson and Waldfogel, 2005). Alternate types of care that these groups would receive may differ substantially from care that less vulnerable groups may receive. At the same time, the lower initial health (as measured by ADHD, asthma, and lead poisoning) of these vulnerable groups may render unadjusted estimates conservative at best or potentially biased in the wrong direction (Currie, 2005).

This paper adds to the literature on the effects of early childhood education on immediate and near-term child health outcomes and behaviors using the Early Childhood Longitudinal Survey – Birth Cohort (2001–2008, http://nces.ed.gov/ecls/birth.asp). Looking at an array of health conditions, behaviors, and medical screenings, we employ several empirical strategies to address endogeneity of selection into early childhood education; investigate several definitions of early childhood education; and examine these relationships for subgroups of the population.

Our analysis is structured as follows. First, we review the possible mechanisms through which early childhood education might affect child health and summarize the evidence. Second, we describe the dataset and outline our empirical methodology. In our section on results we report the association between early childhood education enrollment and health in the preschool year; we then focus on early childhood education enrollment and health status in kindergarten and apply a series of empirical strategies. Our final section offers conclusions.

2. Background

2.1. Early Childhood Care and Education (early childhood education): overview

Insofar as early childhood education is in part a health service, e.g. providing nurse care, immunizations, and even psychological counseling, we might expect more health care and improved health outcomes for children. (We refer to early childhood education as the general term for public or private center-based preschool and Head Start, in contrast to parental, family, or non-parental home care.) This direct effect may occur through four possible mechanisms. The strongest direct effect would be where children receive actual health care services such as immunizations or nurse care. A second effect may be because early childhood education promotes more physical activities (e.g., less television or more play), which in turn promote social development. A third direct effect might occur where children are taught about (or have reinforced) the importance of healthy behaviors, such as washing hands or eating nutritious foods. A fourth would occur if early childhood education programs provide children with a healthier diet.

However, early childhood education programs may or may not focus on child health as an explicit part of their provision. As defined by the United Nations Educational, Scientific and Cultural Organization (UNESCO), early childhood education programs are ones "that attend to health, nutrition, security and learning and which provide for children's holistic development."[3] Instead, many early childhood education programs may be more accurately described as basic child care, which does not necessarily focus on education and health and may generate none of these direct effects. Indeed, Herbst and Tekin (2011) examine general child care subsidies and find, using data from the Kindergarten cohort of the Early Childhood Longitudinal Study (ECLS-K), that these subsidies do not improve health outcomes in children.

Other early childhood education provision does include an explicit focus on health. Head Start, for example, is a

[1] It also raises a puzzle in that some studies have found long-term health effects (e.g., Deming, 2009).

[2] That noted, while the mixture of care varies with family characteristics, statistics from the American Time Use Survey suggest that the average adult spends a limited amount of time with her child. For the 2005–2009 period, adults living in households with children under six years of age spent an average of 2.0 h per day providing primary child care to household children and an average of 5.6 h per day providing secondary child care. Primary child care is defined as "child care that is done as a main activity, such as physical care of children and reading to or talking with children," while secondary child care refers to having at least one child in their care while participating in other activities (usually leisure or household activities). See www.bls.gov/tus/data.htm.

[3] See http://www.unesco.org/new/en/education/themes/strengthening-education-systems/early-childhood/.