



Concurrent medical conditions and health care use and needs among children with learning and behavioral developmental disabilities, National Health Interview Survey, 2006–2010[☆]

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ABSTRACT

Studies document various associated health risks for children with developmental disabilities (DDs). Further study is needed by disability type. Using the 2006–2010 National Health Interview Surveys, we assessed the prevalence of numerous medical conditions (e.g. asthma, frequent diarrhea/colitis, seizures), health care use measures (e.g. seeing a medical specialist and >9 office visits in past year), health impact measures (e.g. needing help with personal care), and selected indicators of unmet health needs (e.g. unable to afford needed prescription medications) among a nationally representative sample of children ages 3–17 years, with and without DDs. Children in four mutually exclusive developmental disability groups: autism ($N = 375$), intellectual disability (ID) without autism ($N = 238$); attention-deficit/hyperactivity disorder (ADHD) without autism or ID ($N = 2901$); and learning disability (LD) or other developmental delay without ADHD, autism, or ID ($N = 1955$); were compared to children without DDs ($N = 35,775$) on each condition or health care measure of interest. Adjusted odds ratios (aORs) were calculated from weighted logistic regression models that accounted for the complex sample design. Prevalence estimates for most medical conditions examined were moderately to markedly higher for children in all four DD groups than children without DDs. Most differences were statistically significant after adjustment for child sex, age, race/ethnicity, and maternal education. Children in all DD groups also had significantly higher estimates for health care use, impact, and unmet needs measures than children without DDs. This study provides empirical evidence that children with DDs require increased pediatric and specialist services, both for their core functional deficits and concurrent medical conditions.

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1. Introduction

Developmental disabilities (DDs) profoundly affect children's health and functioning. Although patterns of health care use among children with special health care needs including DDs, have been generally described, there are limited population-based studies that examined health effects associated with multiple specific DDs side by side. In a previous study, we assessed children in the 1997–2005 National Health Interview Surveys (NHIS) who had a range of DDs and found

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that children with DDs were 4–32 times more likely than children without DDs to have one or more health impact indicators such as limitations in movement, needing help with personal care, and regular prescription medication use (Boulet, Boyle, & Schieve, 2009). Children with DDs were also 2–8 times as likely to have used various health care services in the previous year and to have had a high number of total annual health care visits. While we did assess individual DDs separately, sample size constraints precluded us from thoroughly examining children with single versus multiple DD diagnoses by specific DD types. Moreover, we did not assess associations with specific medical conditions.

Using a separate U.S. population-based sample, Bitsko et al. (2009) found that parents of children with special health care needs with neurologic conditions were more likely to report unmet health care needs than parents of children without special health care needs, especially if the child was affected with two or more conditions. Similarly, Kogan et al. (2008) studied children with autism from the same 2005 to 2006 survey and found they were more likely to have unmet needs for specific health care and family support services and their families were more likely to report financial problems compared with other children with special health care needs without emotional, developmental, or behavioral problems. Schieve et al. (2011) found that US parents whose child had a special health care need associated with an emotional, behavioral, or developmental disorder, and those whose child had autism in particular, were substantially more likely to report parental aggravation than parents of children without developmental problems and that lack of a medical home was one of the strongest predictors of parenting aggravation within the autism group. Thus, developing a better understanding of the health care needs of children with DDs and providing improved health care supports might measurably impact family stress and coping ability in addition to having direct impacts on the child's health.

It is well documented that children with DDs often meet the diagnostic criteria for multiple DDs (Bitsko et al., 2009; Boulet et al., 2009; Levy et al., 2010); thus, it is often difficult to disentangle which condition or aspect of a given condition is associated with an identified increased health risk or health care impact. In our previous study (Boulet et al., 2009) we reported that subsets of children with attention-deficit/hyperactivity disorder (ADHD) or learning disability (LD) without other developmental diagnoses including intellectual disability (ID) had increased rates of health care use, but it was beyond the scope of the study to explore specific "isolated" DDs in depth with full consideration of concurrent medical conditions and potential socio-demographic confounding factors. While Bitsko et al. (2009) more thoroughly assessed children with a single developmental condition versus two or more conditions, analyses were not conducted for specific types of developmental conditions; nor were specific medical conditions assessed. Thus, overall, there is a need for more in depth population-based assessments of health care needs among children with DDs that more thoroughly evaluate both the specific types of DDs and the medical conditions that underlie health care needs. Those population-based studies that have assessed the prevalence of concurrent medical conditions in children with DDs were generally limited to an assessment of a single DD, rather than a fuller spectrum of developmental problems, and thus, comparisons across studies are difficult.

In the current study, we assessed concurrent medical conditions, health care use, health impact, and unmet health needs among children aged 3–17 years with and without select mutually exclusive behavioral and learning DDs included in the NHIS child samples in 2006–2010. This is a more recent cohort of U.S. children than past studies. Given the increases in prevalence of some DDs, such as autism and ADHD (Boyle et al., 2011), it is important to re-examine health risks in this population of children. It is possible that the functional effects and needs of this changing population have also changed. We also more carefully considered individual DDs by creating a hierarchy that considered whether the child had autism, ID, ADHD, LD, and/or other developmental delays.

2. Methods

2.1. Study population and sample

This study used data from the 2006 through 2010 National Health Interview Surveys. The annual household samples are selected to be representative of the civilian non-institutionalized U.S. population. In sampled households with children, a child <18 years of age was randomly selected and information was collected with the Sample Child Core questionnaire via in-person interviews with a knowledgeable parent or guardian. For this study, data were primarily derived from the set of health-related questions contained in the Sample Child Core questionnaire and supplemented with household demographic information.

This study was limited to children ages 3–17 years because the conditions examined in this paper were not usually diagnosed before the age of three. The response rate for the child section of the survey is >70% each year (National Center for Health Statistics, 2011). Of the total number of children in 2006–2010 NHIS who were ages 3–17 years ($N = 41,244$), 5469 had at least one DD reported.

2.2. Definition of learning and behavioral disabilities

We examined children with and without DDs that have a learning or behavioral impact. These included autism, ID, ADHD, LD, or other developmental delay. For each condition, the parent or guardian respondent was asked: "Has a doctor or health professional ever told you that [child's name] had [condition]?" We compared children with any of the aforementioned DDs with children without these DDs. Additionally, we classified children with DDs into one of four mutually exclusive groups: (1) autism, (2) ID without autism, (3) ADHD without autism or ID, and (4) LD or other

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