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## Health care expenditures of overweight and obese U.S. adults with intellectual and developmental disabilities



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### ABSTRACT

**Background:** U.S. adults with intellectual and developmental disabilities (IDD) have poorer health status and greater risks for being overweight and obese, which are major drivers of health care expenditures in the general population. Health care expenditures and IDD have not been studied using nationally representative samples, and the impact of overweight and obesity have not been examined.

**Aim:** Using nationally representative data, we aimed to compare the health care expenditures of not-overweight, overweight and obese U.S. adults with IDD, and calculate model-adjusted expenditures.

**Methods and procedures:** Pooled data from the 2002–2011 Medical Expenditure Panel Survey linked to National Health Interview Survey (n = 1224) were analyzed. Two-part model regressions were conducted, with covariates being year of survey, age, sex, race/ethnicity, household income status, geographical region, urban/rural, marital status, insurance coverage, perceived health status, and perceived mental health status.

**Outcomes and results:** Overall, obese adults with intellectual and developmental disabilities had higher expenditures than their non-obese peers. Being obese was associated with an estimated additional \$2516 in mean expenditures and \$1200 in median expenditures compared with the reference group, who were neither overweight nor obese.

**Conclusions and implications:** Obesity is an important predictor of higher health care costs among community-living adults with IDD. Finding effective strategies and interventions to address obesity in this population has great financial and policy significance.

### What this paper adds?

This is the first study to examine the link between obesity and health care expenditures among people with intellectual and developmental disabilities. It uses U.S. national representative survey data and two-part model to estimate the extent to which obesity impacts health care spending in community-living adults with IDD. Overall, this study shows that obesity is uniquely associated with higher costs even when other confounders are accounted for. It provides evidence that obesity is not only a health disparity faced by the IDD community but also a cost concern. Future interventions aiming to reduce obesity should consider strategies to include community-living adults with IDD.

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## 1. Introduction

In *Closing the Gap*, the U.S. Surgeon General (2002) highlighted the multitude of health-related challenges faced by U.S. adults with intellectual and related developmental disabilities (IDD). U.S. adults with IDD are consistently reported to have poorer health than their counterparts without IDD (Cooper, Melville, & Morrison, 2004; Morin, Mélineau-Côté, Ouellette-Kuntz, Tassé, & Kerr, 2012; U.S. Public Health Service, 2001). They are more likely to have skin conditions (Krahn, Hammond, & Turner, 2006), oral health problems (Morgan et al., 2012), thyroid disorders (Kapell, Nightingale, Rodriguez, & Lee, 1998), epilepsy, gastrointestinal problems, cardiovascular disease (Draheim, 2006), osteoporosis, musculoskeletal problems (Cooper et al., 2004), respiratory problems (McCarthy & O'Hara, 2011), phobias, depression (Turk, Khattran, Kerry, Corney, & Painter, 2011; Webb & Stanton, 2005), and be more overweight and obese (Melville et al., 2008; Rimmer & Yamaki, 2006; Rimmer, Yamaki, Davis, Wang, & Vogel, 2011; Stancliffe et al., 2011).

Studies have showed that individuals with IDD tend to live in poorer financial and social conditions compared to their counterparts without IDD (Fujiura & Yamaki, 1997; Yamaki & Fujiura, 2002). This poverty can translate to more hazardous living environments, more difficulties obtaining quality health insurance, and a lack of social support such as transportation for physician visits. The net effect of these aggregated trends is greater unmet health care needs (McCarthy & O'Hara, 2011; Morgan et al., 2012; Reichard & Stolze, 2011). Those unmet health care needs exacerbate the health problems of individuals with IDD, which likely increases their health care spending. Inadequate health insurance coverage can also result in greater out of pocket expenses on visits and medications: families affected by disabilities are more likely to have income below the poverty level and are thus more sensitive to these out-of-pocket expenses (Lukemeyer, Meyers, & Smeeding, 2000; Saunders et al., 2015). However, the number of existing studies on people with IDD and health care expenditures is limited. Program development and policy-making largely occurs in the absence of empirical evidence.

Overweight and obesity are significant health disparities among people with IDD (Hsieh, Rimmer, & Heller, 2013; Rimmer & Yamaki, 2006; Rimmer, Yamaki, Lowry, Wang, & Vogel, 2010). Obesity is a major driver of health care expenditures in the general population (Bach Xuan, Nair, Kuhle, Ohinmaa, & Veugelers, 2013; Karpur & Bruyère, 2012). Many conditions that are closely associated with obesity – heart disease, cancer, hypertension, diabetes and hyperlipidemia, are also among the most expensive in terms of health care costs (Andreyeva, Sturm, & Ringel, 2004; Finkelstein, Trogdon, Cohen, & Dietz, 2009; Wolf & Colditz, 1998). There is strong evidence that obesity is closely linked to higher health care expenditures in adults with and without disabilities. A systematic literature review found that obese individuals had about 30% higher medical expenditures than their normal weight peers (Withrow & Alter, 2011). A more recent report found that the obesity-attributable medical expenditures among people with disabilities were almost triple of that among people without disabilities (Anderson, Wiener, Khatutsky, & Armour, 2013). However, the relationship between weight status and health care expenditures in the population with IDD has not been examined. Without such examinations, efforts to design policies or interventions may be misguided and uninformed.

The primary objectives of this study were: 1) to describe and statistically model health care expenditures of U.S. adults with IDD, 2) determine whether and to what extent overweight and obesity are significant predictor of costs using two-part model regression. We hypothesized that health care expenditures are 1) higher among obese adults with IDD than their normal weight peers, 2) higher among overweight adults with IDD than normal weight adults with IDD and 3) higher among obese adults with IDD than overweight adults with IDD.

## 2. Methods

### 2.1. Data source

We used pooled data from the 2002–2011 Medical Expenditure Panel Survey and the corresponding years of the National Health Interview Survey. The Medical Expenditure Panel Survey (MEPS) is a comprehensive survey administered by the Agency for Healthcare Research and Quality. The MEPS collects information on health care access, service utilization, quality of care and spending for the US noninstitutionalized civilian population (Agency for Healthcare Research and Quality, 2013a). A detailed description of the Medical Expenditure Panel Survey panel design is available from Agency for Healthcare Research and Quality (Agency for Healthcare Research and Quality, 2018).

The MEPS draws its sample from the National Health Interview Survey (NHIS), an annual cross-sectional health survey of about 35,000 US households (National Center for Health Statistics, 2010). The NHIS provides comprehensive information on health, function and disability status.

### 2.2. Sample

In the present study, the identification of individuals with IDD was based on two screening methods. The primary method was use of the National Health Interview Survey cause of activity limitation variables in the Health Status and Limitation of Activity section of the Family Core. Survey respondents were asked whether any household member had an activity limitation or needed assistance with activities of daily living (eating, bathing, dressing, and getting around inside the home) or instrumental activities of daily living (household chores, doing necessary business, and shopping or running errands). Respondents were then asked to identify the condition(s) responsible for the activity limitation from flash cards that listed conditions. Cases were included as having IDD if “intellectual disability” (year 2011) or “mental retardation” (years prior to 2011) or “other developmental problem (e.g., cerebral

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