Disability and Health Journal 9 (2016) 600–608

Disability and Health Journal

www.disabilityandhealthjnl.com

Research Paper

Impact of disability and chronic conditions on health

Katherine Froehlich-Grobe, Ph.D.[a,*], Denton Jones, M.P.H.[b], Michael S. Businelle, Ph.D.[c], Darla E. Kendzor, Ph.D.[c], and Bjial A. Balasubramanian, M.B.B.S., Ph.D.[d]

[a]*Baylor Institute for Rehabilitation, Dallas, TX 75246, USA*
[b]*Pepperdine University, Campus Recreation, Malibu, CA 90263-4490, USA*
[c]*University of Oklahoma Health Science Center, Department of Family and Preventive Medicine, Oklahoma City, OK 73104, USA*
[d]*University of Texas, School of Public Health, Dallas Regional Campus, Epidemiology, Genetics, Environmental Health, Dallas, TX 75390-9128, USA*

Abstract

Background: Today one in five Americans have a disability and nearly half of Americans experiences a chronic condition. Whether disability results from or is a risk factor for chronic conditions, the combined effects of disability and chronic conditions warrants further investigation.

Objectives: Examine the added impact of chronic conditions among those with and without disability on self-reported health status and behaviors.

Methods: 2009 Behavioral Risk Factor Surveillance System (BRFSS) data were analyzed to examine the association of disability with unhealthy behaviors and poor health stratified by number of self-reported chronic conditions (0, 1, or 2+). Linear and logistic regression models accounting for the complex survey weights were used.

Results: Participants with disability were 6 times more likely to report fair/poor self-rated health, reported 9 more unhealthy days in a month and 6 more days in a month when poor health kept them from usual activities, were 4 times more likely to be dissatisfied with life, had greater odds of being a current smoker, and were less likely to be physically active. Presence of chronic conditions in addition to disability was associated, in a dose–response manner, with poor health status and unhealthy behaviors.

Conclusions: People living with both chronic diseases and disability are at substantially increased risks for poor health status and unhealthy behaviors, further affecting effective management of their chronic conditions. Multi-level interventions in primary care and in the community that address social and environmental barriers that hinder adults with disability from adopting more healthy lifestyles and improving health are needed.

Keywords: Disability; Health status; Health behaviors

About one in five Americans, 56.7 million people, experiences a disability.[1,2] Total disability-related health care costs were estimated at nearly $400 billion in 2006.[3] These costs account for more than a quarter (27%) of all health care expenditures and are predominantly covered by the public sector, with $280 billion paid by Medicare and Medicaid. Public health perceptions of disability have slowly shifted over the past two decades. Previously, public health viewed disability exclusively as an outcome to prevent, but today public health encompasses the view that people living with disabilities are a population for whom promoting health and preventing disease should be addressed.[4]

In 1980, the federal Healthy People Initiative began setting broad health goals for the nation to work toward achieving over the following decade and each decade since, the federal initiative has issued new health goals. After two decades of progress, the Healthy People initiative included people with disabilities as a population of interest in both the 2010 and 2020[5,6] objectives. Among the disability-related national objectives are targets for improving surveillance for people with disabilities, including developing a standardized set of questions to identify people with disabilities. Historically federal surveillance systems either have not included items to identify disability or not used consistent definitions of disability, which has led various methods to identify disability. While some sources such as the National Health Interview Survey have included many items to characterize the type and severity of

Funding: Funding was not received for this study.

Financial disclosure: The authors of this paper have no financial disclosures to report.

This study received no external or internal funding.

* Corresponding author. Tel.: +1 214 818 2584.
E-mail address: kfgrobe@bir-rehab.com (K. Froehlich-Grobe).

1936-6574/$ - see front matter
http://dx.doi.org/10.1016/j.dhjo.2016.04.007

limitations respondents' experience, others such as the Behavioral Risk Factor Surveillance System for a more than a decade (2001–2012) used only two items to identify disability. Nevertheless, the current evidence base derived from extant published data from different data sources using various disability identifiers consistently reveals that individuals with disabilities report significantly poorer health,[7] are less likely to be physically active,[8,9] are more likely to be overweight or obese,[10,11] and are more likely to smoke.[12,13] People with disabilities are also more likely to experience chronic health conditions, such as arthritis, hypertension, and diabetes among others.[9,11,14,15,16] Notably, future evidence may be better able to illuminate these relationships between disability and health following progress of an interagency working group in developing a standardized set of items to identify disability using questions that ask people whether they experience serious limitations in six domains of function: hearing, vision, cognitive, ambulatory, self-care, or independent living.

A myriad of conditions have been defined as "chronic conditions." This paper follows the conceptual model outlined by Goodman and colleagues[17] that guided the multiple chronic conditions (MCC) working group through the process of developing a standardized approach to defining and identifying chronic conditions in the U.S. The working group's goal was to develop of list of conditions that met three characteristics: chronicity (lasting a year or more and require ongoing medical attention and/or limit activities of daily living), prevalent (commonly occur), and amenable to public health or clinical intervention. The 20 conditions Goodman and colleagues identified include hypertension, heart disease, high cholesterol, stroke, arthritis, asthma, cancer, diabetes, depression, HIV, autism, among others. Evidence consistently demonstrates that individuals who live with disability are significantly more likely to experience these chronic conditions.[15,16,18,19]

A bidirectional relationship exists between disability and chronic conditions.[20] National estimates indicate that arthritis, heart trouble, and diabetes are among the top six causes of disability.[21] Thus, while chronic conditions can cause disability, primary conditions like spinal cord injury are also known to increase risk for chronic conditions such as high blood pressure or diabetes.[22] Dixon-Ibarra and Horner-Johnson[15] explored this issue by examining whether those who had a lifelong disability experienced a greater risk for developing chronic conditions than those without a disability. The results demonstrated that even after controlling for relevant factors (e.g., age, sex, race/ethnicity, marital status, and working status) individuals living with lifelong disabilities experienced a significantly increased odds of having each of the five chronic conditions compared to those with no limitations, with adjusted odds rates that ranged from as high as 2.92 (CI 2.33–3.66) for congestive heart disease to 1.61 (CI 1.34–1.94) for cancer.

National efforts have targeted preventing chronic diseases,[17] with greater attention paid over the past 15 years toward addressing the preventive health needs of individuals living with one or more chronic conditions.[23,24] While emerging evidence points to higher rates of chronic conditions among those living with disabilities,[15,16,18,19] the individual and combined effects of disability and chronic conditions on overall health status have not been characterized in a population-based study. The purpose of this study is to compare self-reported health status and health behaviors among those with and without disabilities and by number of chronic conditions using the nationally representative Behavioral Risk Factor Surveillance System (BRFSS). We hypothesized that the overall health status of those with disability and with co-occurring chronic conditions would be significantly poorer than those without co-occurring chronic conditions. Notably, there are a myriad ways to define disability, including based on work limitations; experiencing limitations in major life activities of walking, seeing, hearing, or speaking; experiencing limitations in activities of daily living such as toileting, bathing, dressing, eating, walking or limitations in instrumental activities of daily living such as cleaning, shopping, paying bills; or being perceived as having an physical or mental impairment that substantially impairs functioning as within the federal legislation of the Americans with Disabilities Act. This paper uses a broad definition of disability that is consistent with the taxonomy of the International Classification of Functioning, where the terms functioning and disability are characterized by impairments of body functions and structures that can result in activity limitations and participation restrictions. Thus, in this paper disability status is based on respondents endorsing that they experience either (1) any activity limitation due to physical, mental, or emotional problems or (2) special equipment use because of a health problem.

Methods

Data for this cross-sectional study were collected as part of the 2009 Behavioral Risk Factor Surveillance System (BRFSS), which is an ongoing state-based random digit dial telephone survey that collects data about the health risk factors of non-institutionalized adults in the U.S. BRFSS sampling design and weighting strategy have been described in detail elsewhere.[25,26] In 2009, the median response rate was 52.48% and the median cooperation rate was 72.04%, yielding a sample of 432,607 respondents.[27,28] Data for this study were analyzed in the fall of 2014.

Independent variables

The main independent variable was disability status, assessed using participant responses to the following questions: 1) Are you limited in any way in any activities because of physical, mental, or emotional problems? and 2) Do you now have any health problem that requires you