Research Paper

Self-reported incidence and age of onset of chronic comorbid medical conditions in adults aging with long-term physical disability

Amanda E. Smith, B.S.*, Ivan R. Molton, Ph.D., and Mark P. Jensen, Ph.D.

Department of Rehabilitation Medicine, University of Washington, Seattle, WA 98195, USA

Abstract

Background: Adults with long-term disability are living longer and may experience accelerated aging. More information is needed to understand the incidence of chronic comorbid medical conditions in this population.

Objective: To examine the incidence, prevalence, age of onset and predictors of five chronic conditions in a sample of adults with long-term physical disability.

Methods: Longitudinal self-report surveys were mailed to 1594 adults with multiple sclerosis, muscular dystrophy, post-polio syndrome or spinal cord injury twice, 3.5 years apart. Survey questions assessed demographics (date of birth, sex, income, disability type, height/weight), self-reported diagnosis of coronary heart disease, hypertension, arthritis, diabetes and cancer, and health behaviors (alcohol use, smoking, physical activity).

Results: Over the course of the study, the most commonly reported new onset chronic comorbid medical condition was arthritis (percent incidence = 14%), followed by hypertension (9%) and cancer (7%). Report of a new condition was greatest in adults aged between 56 and 65 years, and risk factors included greater BMI, waist circumference, and the presence of another chronic comorbid medical condition at baseline.

Conclusions: Chronic comorbid medical conditions are prevalent in persons with long-term physical disability. Midlife appears to be the period of greatest risk for onset of a new condition, and risk for incidence increases in the presence of other chronic comorbid medical conditions. Modifiable risk factors include BMI and waist circumference. Future research should explore whether changes in modifiable factors at midlife or earlier (e.g., diet, exercise) would help prevent or delay onset of comorbid conditions in this population. © 2016 Elsevier Inc. All rights reserved.

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The aging of the U.S. population puts considerable pressure on the health care system to manage chronic comorbid medical conditions. This is also true in persons aging with physical disabilities, typically acquired in young adulthood, including post-polio syndrome (PPS), multiple sclerosis (MS), spinal cord injury (SCI) and neuromuscular disease (MD). These individuals may experience increased longevity in combination with accelerated aging of organ systems.[1–4]

Although much is known about the prevalence of chronic comorbid medical conditions in the general population, less is known regarding the incidence of these conditions in adults aging with these long-term physical disabilities.

Knowledge regarding incidence, prevalence and predictors of these chronic comorbid conditions in individuals with disabilities is vitally important. Cardiovascular disease is the leading cause of death in the U.S., followed by cancer, while arthritis is the leading cause of disability. Hypertension and diabetes are both significant risk factors for cardiovascular disease, as are obesity and physical inactivity.[5] Adults with physical disabilities may be at an increased risk for the development of these chronic comorbid conditions, due to limited mobility, medication side-effects or secondary conditions related to their disability. Understanding the age of onset and risk factors for these conditions in adults with disabling conditions is also important in guiding the development of programs and services to reduce the risk of developing these conditions and improve health and wellness in this community.

Objective

To address the knowledge gap in this area, we sought to evaluate self-reported incidence and risk factors for developing five common chronic comorbid medical conditions in a national sample of adults with long-term physical disability (SCI, MD, PPS, and MS).

Methods

Procedures

Participants were recruited into the study through invitations to disability specific research registries (the University of Washington Department of Rehabilitation Research Registry, the Northwest Spinal Cord Injury Model Systems, and the University of Rochester Muscular Dystrophy Registry), as well as through print and web advertisements. Eligible participants were 18 years or older with a self-reported physician's diagnosis of MS, MD, PPS or SCI, and were able to read and understand English. Paper surveys and consent forms were mailed to 2041 interested and eligible participants across the United States. Upon receipt of a signed consent and completed survey, staff reviewed the survey for missing data, and followed up by phone as needed. Non-responders were sent a reminder letter 4 weeks after their survey mailing and an additional follow-up phone call if the survey was still not received 6 weeks after mailing. All participants were sent $25 for their time and effort.

All participants were sent a survey in year 1 (T1) and approximately 3.5 years later (T2). In year 1, 1877 surveys were returned between July, 2009 and April, 2010. After accounting for missing consent or data, fifteen surveys were excluded, resulting in a final T1 data set of 1862 surveys. Two hundred seventy participants withdrew from the study by T2 or submitted incomplete data, yielding a final data set for this longitudinal analysis of 1594 participants (data collection from August, 2012 through March, 2013). All procedures were approved by the University of Washington Institutional Review Board.

Measures

Demographic and medical descriptive variables

Participants reported their date of birth, sex, height, weight, waist circumference, household income, highest level of completed education, race, and disability type (MS, MD, PPS or SCI).

Presence of comorbid conditions

Questions taken from the 2009 National Health Interview Survey (NHIS)[6] were used to collect information on self-reported diagnoses of coronary heart disease, hypertension, cancer, diabetes or arthritis. Participants were asked whether they had "… ever been told by a doctor or other

health professional that [they had]" any one of the chronic comorbid conditions, by responding "yes," "no" or "don't know." These conditions were selected based on their high prevalence in older adults.[5,7−10]

Health risk factors

Participants were also asked to report on their alcohol consumption, use of smoking tobacco, and physical activity. Problematic alcohol use was screened using the 3-item Alcohol Use Disorders Identification Test (AUDIT-C). This is a well validated 3-item screening measure, with a higher score indicating greater risk of hazardous consumption and possible active alcohol use disorder.[11] Smoking (tobacco) was assessed using questions taken from the 2009 National Health Interview Survey.[6] Participants were categorized into smokers (1) if they endorsed currently smoking some days or every day or non-smokers (0) if they did not endorse smoking on at least some days. Physical activity was assessed using the International Physical Activity Questionnaire (IPAQ) short form, which assesses time spent walking or engaging in moderate and vigorous physical activity.[12] The IPAQ generates total metabolic equivalent counts (METs), with higher scores indicating greater engagement in physical activity.

Analytic approach

To describe the sample, we first computed means and standard deviations (or rates, as appropriate) of age, sex, ethnicity, disability type, and education level. Prevalence of comorbid conditions was based on reported endorsement of each chronic comorbid condition at T1 and T2, including only participants who completed both surveys (n = 1594). Significant differences in prevalence rates from T1 to T2 were assessed by computing the McNemar's statistic for each condition. For purposes of analysis, self-reported incidence was established by identifying participants who a) did not endorse diagnosis of a particular condition at T1, and b) did endorse a diagnosis of that same condition at T2 (3.5 years later). For these participants, the mean age at T2 represented the approximate average age by which these conditions emerged. Participants who reported conflicting information (e.g. reporting "yes" to ever being diagnosed with cancer at T1 and "no" at T2) and who could not be contacted for follow-up were not included in the analyses.

The effect of behavioral or demographic risk factors measured at T1 on incidence by T2 was evaluated by comparing those who did, versus those who did not, develop a new condition over the 3.5 year period. Participants who developed a new onset were participants who did not endorse a condition at T1, but did endorse that same condition at T2. Those considered "non-developers" were defined as participants who did not endorse the condition at either T1 or T2. Risk factors were evaluated using independent sample t-tests (for continuous predictors) and