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Obesity and Disability:

Time to Act

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Today, 34% of Americans have a BMI above 30.^{1–3} The dramatic rise in obesity has generated considerable concern due to the increased risk that excess weight poses for chronic diseases. The economic burden is substantial, with medical spending estimated to be 42% higher for someone who is obese and obesity-related healthcare costs estimated at \$147 billion annually.⁴ Although smoking is the leading preventable cause of U.S. mortality,^{5, 6} obesity causes greater morbidity⁵ and some speculate that deaths due to poor diet and inactivity may exceed those from smoking.^{6, 7}

Increased weight may be more problematic for people living with impairments than for the nondisabled population. However, little attention has been devoted to this group despite evidence that people with disabilities are more likely to be obese than the general population.^{8–10} This is troubling considering that people with disabilities are at risk for the same weight-related chronic conditions experienced by the general population, while also being at increased risk for chronic medical conditions associated with disability.^{11–13}

The combination of disability and weight gain can create a vicious cycle, posing additional health burdens and further restricting functioning and independence. Further, people living with disabilities may be at greater risk than their peers without disabilities for weight gain due to low levels of activity.^{14, 15} Physical activity barriers include those facing the general population (e.g., time, motivation), in addition to physical limitations of the impairment, reduced opportunities for physical activity and sports participation, inaccessible environments,¹⁶ and fewer health-promotion programs which target appropriate exercise options.^{8, 17–19}

Nearly 20% of the population, or about 54 million people experience some type of disabling condition.²⁰ Despite the nation's focus for more than a decade on eliminating health disparities among specific racial and ethnic minority groups,^{21–24} people with disabilities represent a consistently underserved group with substantial health disparities.²⁵ This paper argues that people with disabilities should be an emerging population of concern within public health efforts related to obesity. The three core public health functions of assessment,

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policy development, and assurance²⁶ are used as a framework to address this serious public health threat for this group.

Assessment

Assessment encompasses “regularly and systematically collecting, assembling, analyzing, and making available information on the health of the community.”²⁶ Substantial efforts are devoted to tracking and disseminating data on the weight status of Americans, however similar efforts fall short for those with disabilities. Although one of the greatest barriers to assessment has been the lack of disability-identifying questions in federal surveys, this hurdle has recently been removed due to progress on Healthy People 2010 objectives. Objective one in Chapter 6 on Secondary Conditions and People with Disabilities²⁵ was to “Include in the core of all relevant Healthy People surveillance instruments a standard set of questions to identify people with disabilities.”

Three federally administered surveillance systems, the National Health Interview Survey (NHIS), the Behavioral Risk Factor Surveillance System (BRFSS), and the National Health and Nutrition Examination Survey (NHANES) recently adopted disability identifying questions. These surveys all obtain height and weight data from which BMI can be calculated (plus related health behaviors of physical activity and nutrition). The NHIS and BRFSS are telephone-based and rely on self-reported data whereas the NHANES measures height and weight directly in a mobile examination unit. To date, published obesity estimates for adults with disabilities exclusively derive from NHIS and BRFSS, resulting in prevalence data from self-report.

Obesity estimates for adults with disabilities range from 25% to 31% compared to 15%–19% for adults without disabilities.^{8, 27–30} However, analyses of NHANES data, with direct height and weight measures would more accurately depict obesity prevalence for this population. Evidence from the general population reveals a reporting bias for height and weight that results in substantial misclassification of weight categories.^{31–34}

Evidence is lacking regarding the discrepancy between self-reported and measured height and weight for people with disabilities. However, data from regional samples where height and weight were measured directly to calculate BMI indicate twice as many are obese (48%–62%)³⁵ than national data based on self-report (25%–31%).^{8, 27} Concerns regarding the representativeness of regional samples are valid, yet highlight the importance of examining NHANES data.

The single published study that has measured height and weight among 306 adults with disabilities in Chicago reported that 62% were obese and 22% extremely obese.³⁵ However, sample-specific demographic factors likely contribute to the high prevalence as most were black women, a group with greater obesity.^{2, 36} Further, obesity may have contributed to disability onset as 55% experienced diabetes, arthritis, and stroke. Nevertheless, the occurrence of obesity and extreme obesity is alarmingly high and suggests that many people living with impairment need intervention.

Notably however, Rimmer et al.’s findings are similar to BMI data derived from direct height and weight measures collected by the first author among two mobility-impaired samples for whom the primary impairment was not obesity-related (CDC #R04/CCR717707 and NICHD/NIH #HD048628, refer to Table 1). The first sample included 108 women with mobility impairments, more than half of whom used an assistive device for mobility. Nearly half (48.1%) had a BMI of 30 or greater and 19.4% were extremely obese with a BMI ≥ 40 . The second sample of 128 men and women all used a wheelchair for mobility and 47.7% were obese while 14.1% were extremely obese. Although the racial composition of these

samples better reflects the U.S. population, both represent people with mobility impairments, a subset of people with disabilities who experience greater obesity than other impairment groups.^{8, 28} Thus, obesity may be more common among these samples than in other impairment groups.

Assessment encompasses systematically and regularly collecting, assembling, and analyzing data. Obtaining a single snapshot is not sufficient; rather efforts should include surveillance and dissemination. In contrast to obesity surveillance for Americans, where dissemination efforts include government reports,³⁷ the Morbidity and Mortality Weekly Report (MMWR),³⁸ and prominent peer-reviewed journals,^{1, 3} for people with disabilities surveillance is lacking and dissemination limited. The first national obesity estimates for people with disabilities were published in 2002 in a peer-reviewed journal⁸ and the MMWR.²⁷ While subsequent estimates have been released in government reports,^{28, 29} including the MMWR,³⁰ dissemination and visibility of the reports remains low. Obesity data for people with disabilities have mostly been published in locations not indexed in search engines (e.g. PubMed) and the reports do not make comparisons to earlier estimates. Thus, obesity surveillance and dissemination for people with disabilities should be enhanced.

Policy Development

Policy development is “the development of comprehensive public health policies by promoting use of the scientific knowledge base in decision making about public health and by leading in developing public health policy.”²⁶ Although a person’s weight status has traditionally been considered a private matter best addressed through exercising personal control, consensus is growing that we live in a “toxic food environment”³⁹ for which environmental and policy changes are required.⁴⁰ Additionally, while many population-level policy changes may be equally effective for everyone, such as making healthy choices the default option,⁴¹ disability-specific policy initiatives may also be necessary.

Initial weight control initiatives focused heavily on individual-level behavior change, including lifestyle, pharmaceutical, and surgical approaches.⁴² The positive effect of this research is that successful short-term approaches have been developed.^{43, 44} However, research has generally overlooked individuals with disabilities, although there is some evidence regarding weight loss approaches for people with intellectual⁴⁵ and developmental⁴⁶ disabilities and mental illness.^{47, 48} The result of having minimal evidence is that evidence-based federal initiatives have then overlooked people with disabilities. The Guide to Community Preventive Services and the Common Community Measures Project for obesity Prevention are two evidence-based federal initiatives that provide recommendations to public health entities about effective intervention approaches for obesity prevention and weight management.

The Guide to Community Preventive Services has evidence-based reviews available for 18 public health topics, including obesity. Obesity intervention recommendations derive from evidence reviews on using multi-component approaches in worksite settings,⁴⁹ reducing screen time for children,⁵⁰ and using technology-supported multicomponent interventions.⁵¹ While these strategies are relevant for people with disabilities, evidence is lacking to support their use with this population. Thus, it will important to establish the effectiveness of these approaches for children and adults with disabilities.

Evidence is also growing about environmental and policy influences on energy imbalance.^{52–56} CDC initiated the Measures Project to provide local and state policymakers with evidence-based recommendations regarding planning, implementing, and monitoring environmental and policy-level obesity-prevention strategies.⁴⁰ The report recommends 24

strategies organized into six areas and includes promoting the availability and affordability of healthy food and beverages and creating safe communities that support physical activity through infrastructure changes. These changes will likely address some factors that affect weight management for individuals with disabilities, but may not be sufficient if changes do not address their unique accessibility concerns.

Thus, research should examine environmental and contextual factors related to physical activity, nutritional intake, and weight maintenance among people with disabilities. Issues could include availability, affordability, and accessibility of home- and community-based physical activity options for people with disabilities; who selects, purchases, and prepares food; and how medications may interact with appetite, metabolism, and weight gain. CDC recently issued an announcement (Broad Agency Announcement 2011-N-13396) soliciting proposals to develop assessment tools that can identify barriers and facilitators of environments, policies, and systems to active living and healthy eating for people with disabilities.

Other policy approaches should be considered. For example, the Commission on the Accreditation for Rehabilitation Facilities (CARF) could add a standard targeting nutrition and weight management as a method for addressing the U.S. Preventive Services Task Force⁵⁷ recommendation on obesity screening and intervention. Rehabilitation providers are well positioned to address this issue for individuals who acquire disability, as their role is to facilitate individuals' return home with the knowledge and skills to function with existing limitations. Finally, it may be productive to review the standards for providing dietary services in facilities where individuals with disabilities reside.

Assurance

The third core public health function relates to assuring access to services. Assurance can be accomplished through various activities including linking people with services; assuring a competent workforce; enforcing laws and regulations; and evaluating the effectiveness, accessibility, and quality of services.⁵⁸ A comprehensive approach to reducing obesity requires including high-risk groups in prevention. Therefore, public health should assure that people with disability are intended recipients of services. Explicitly including people with disabilities in public health messages that promote healthy eating and being active is one strategy to assure access to services.

One example of this strategy is CDC's educational campaign promoting physical activity for everyone following release of the Surgeon General's Report on Physical Activity and Health.⁵⁹ A wheelchair user was depicted on CDC-distributed posters promoting the new recommendations and a single-page fact sheet was created for people with disabilities. These actions assured that people with disabilities saw themselves as intended targets of mainstream messages to become active. Materials related to weight control should also explicitly include people with disabilities.

Another strategy would be to link the 16 CDC-funded Disability and Health programs with the 23 CDC-funded Physical Activity and Obesity programs so that they can work together to assure their efforts and messages encompass people with disabilities. Overlap currently exists in nine states (Arkansas, California, Iowa, Massachusetts, Michigan, Montana, New York, North Carolina, South Carolina).

Conclusion

In sum, as the nation tackles the current obesity epidemic, evidence that people with disabilities are more likely to be affected cannot be overlooked. Public health approaches to

obesity prevention must include people with disabilities in assessment, policy development, and assurance to be effective and meet a core value of public health—social justice. Reducing obesity among people with disabilities who represent 20% of the population and who experience greater health risks may lower the national prevalence of obesity and lead to improved health and functioning for the group.

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Table 1

BMI data based on direct height and weight measures collected among two mobility-impaired samples in the greater Kansas City metro area, *n* (%) unless otherwise indicated

	Sample 1 ^a <i>n</i> =108		Sample 2 ^b <i>n</i> =128	
Demographic variables				
Age (years), M (SD)	44.4	8.2	43.9	13.0
Years live with disability, M (SD)	16.3	15.5	22.0	15.9
Female	108	100	64	50.0
Caucasian	76	70.3	99	78.0
Primary disabling condition				
Joint and connective tissue disease	37	34.3	6	4.7
Multiple sclerosis	16	14.8	10	7.8
Spinal cord injury/traumatic brain injury	16	14.8	65	50.8
Muscular dystrophy	12	11.1	--	--
Spina bifida/cerebral palsy	6	5.6	27	21.1
Amputation	2	1.9	5	3.9
Other	19	17.6	15	11.7
Assistive device use ^c	62	57.4	128	100
Weight categories (%)				
Under/normal weight (BMI < 18.5–24.9)	37	34.3	35	27.3
Overweight (BMI 25–29.9)	19	17.6	32	25.0
Obese (BMI ≥30)	52	48.1	61	47.7
Mild obesity (BMI 30–34.9)	17	15.7	22	17.2
Moderate obesity (BMI 35–39.9)	14	13.0	21	16.4
Extreme obesity (BMI ≥40)	21	19.4	18	14.1

^a sample of women with mobility impairment

^b sample of men and women who require wheelchair use due to mobility impairment

^c Device use differed between the samples: the Sample 1 included wheelchairs, canes, crutches while all in the Sample 2 were wheelchair users