



Introduction

Disability due to physical, mental, or emotional problems is a major public health problem, resulting in reductions in quality of life and increasing dependence on the health-care system in New York State and the nation. Disabilities are disproportionately represented among the elderly and populations of lower socioeconomic status. As the number of people who survive life-threatening conditions increases, and as the population continues to age, quality of life issues associated with disability become of greater public health concern. The aging of the state's population and its accompanying burden of disease and disability have profound public health implications for the utilization of medical care, and for the need for supportive and long-term care. In the mid-1980s, there were about 28 million people in the United States aged 65 years and older. The U.S. Bureau of the Census has predicted over twice as many, 59 million, by the year 2025.¹ In New York State, 2000 Census figures show nearly 2.4 million residents are 65 years and older. By the year 2025, this total is projected to increase by nearly one-third to over 3.2 million. As a result, the measurement and surveillance of the indicators of disability are critical to monitoring its impact on an aging population. This report presents prevalence estimates of disability for various sociodemographic subgroups of adult New Yorkers as well as data on selected health risk factors by disability status. The findings update those from the *Chartbook on Disability in New York State, 1998-2000: Results from the Behavioral Risk Factor Surveillance System*.²

DISABILITY AMONG ADULTS IN NEW YORK STATE, 2001-2003: Prevalence and Health Risk Behavior

Larry L. Steele, Ph.D.

Copies may be obtained by contacting:

BRFSS Coordinator
New York State Department of Health
Bureau of Chronic Disease,
Epidemiology and Surveillance
Empire State Plaza, Rm. 565,
Corning Tower
Albany, NY 12237-0679

or by phone or electronic mail:
(518) 473-0673 or
BRFSS@health.state.ny.us or
www.health.state.ny.us

New York State Department of Health

George E. Pataki, Governor
State of New York

Antonia C. Novello, M.D., M.P.H., Dr.P.H.,
Commissioner

Methods

Data for this report came from the 2001 through 2003 administrations of the New York State (NYS) Behavioral Risk Factor Surveillance System (BRFSS) questionnaire. The BRFSS is a telephone-based surveillance system supported in part by the Centers for Disease Control and Prevention and administered by the New York State Department of Health. The system is designed to provide information on behaviors and risk factors for chronic and infectious diseases and other health conditions among the noninstitutionalized, civilian adult population aged 18 years and older. The system monitors modifiable risk behaviors and other factors contributing to the leading causes of morbidity and mortality in the population.

From 2001 through 2003, the NYS BRFSS questionnaire included two questions to assess disability in the adult population:

- “Are you limited in any way in any activities because of physical, mental, or emotional problems?”
- “Do you now have any health problem that requires you to use special equipment, such as a cane, a wheelchair, a special bed, or a special telephone?”

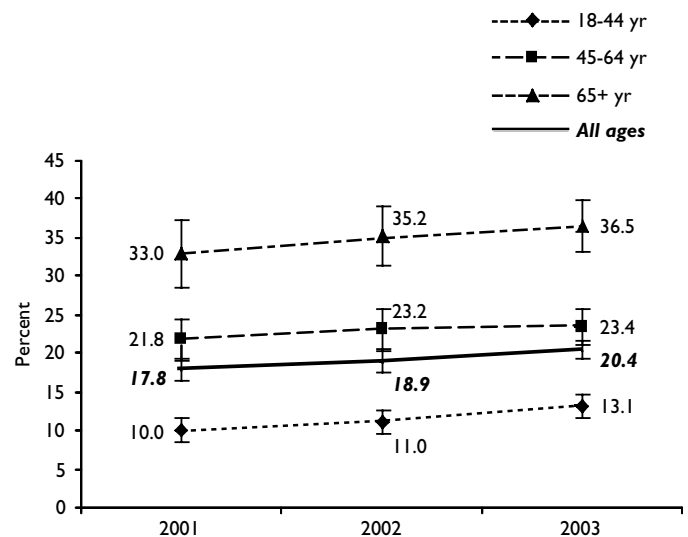
“Disability” was defined as a “yes” response to either or both items. Estimates of the prevalence of disability were determined for each survey year and tested for trend over time. The three successive years of data were then combined to permit the calculation of stable estimates for subgroup comparisons. In addition to prevalence estimates, 95% confidence intervals were calculated to afford a measure of the precision of the estimates as well as to facilitate subgroup comparisons. The data for this report have been weighted to adjust for the selection probabilities and the estimates of age-sex-race distribution of adults in the state for each of the calendar years. Analyses were performed using SUDAAN software to account for the multistage, stratified sampling of the survey.³

Results

Trend in prevalence of disability

The overall prevalence of disability among adult New Yorkers showed an upward trend across the three-year period (test for trend significant, $p \leq 0.01$), ranging from 17.8% in 2001 to 20.4% in 2003 [Figure 1]. A breakdown by age revealed a significant positive trend ($p \leq 0.01$) in the youngest age group (18-44 years) as well.

Figure 1
Prevalence of disability among adult New Yorkers, by age group and survey year: 2001-2003 BRFSS



Note: Error bars represent 95% confidence intervals.

Prevalence by region

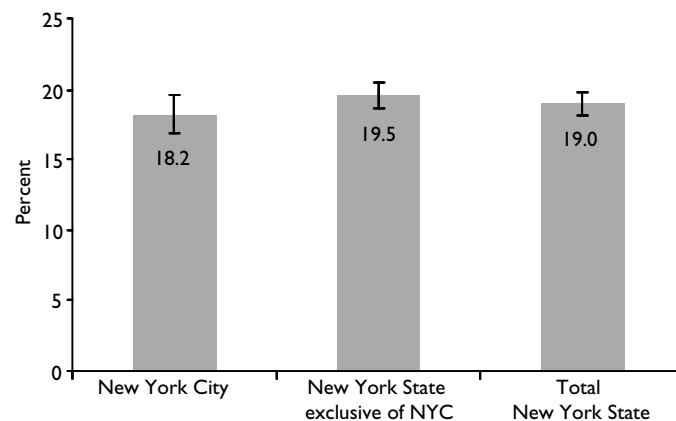
According to the combined data from 2001 through 2003, nearly 2.7 million New York adults (19.0% of the noninstitutionalized population) reported having a disability. The prevalence of disability did not differ statistically by region [Figure 2].

Prevalence by sociodemographic characteristics

The prevalence of disability among women (20.2% [confidence interval (CI), 19.2-21.2]) was significantly higher than among men (17.7% [CI, 16.5-18.9]) [Figure 3].

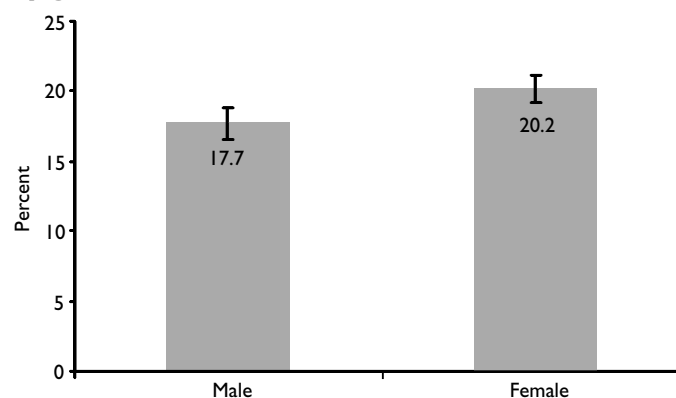
Disability prevalence increased with age, ranging from 9.9% among those aged 18-34 years to 42.7% among those aged 75 years and older [Figure 4].

Figure 2
Prevalence of disability among adult New Yorkers, by New York State Region: Combined 2001-2003 BRFSS



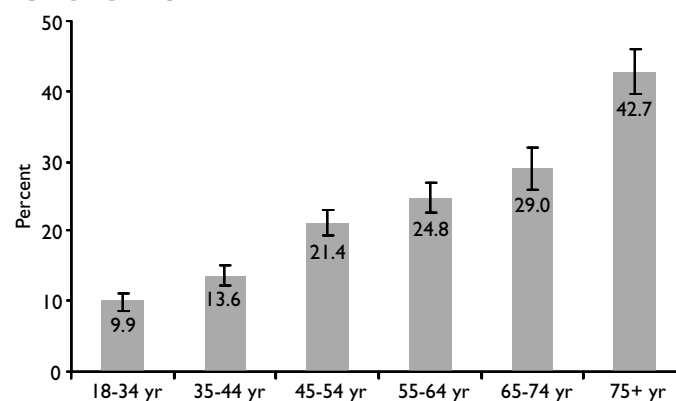
Note: Error bars represent 95% confidence intervals.

Figure 3
Prevalence of disability among adult New Yorkers, by gender: Combined 2001-2003 BRFSS



Note: Error bars represent 95% confidence intervals.

Figure 4
Prevalence of disability among adult New Yorkers, by age group: Combined 2001-2003 BRFSS



Note: Error bars represent 95% confidence intervals.

Non-Hispanic whites (20.0% [CI, 19.1-20.9]) and non-Hispanic blacks (20.2% [CI, 17.5-22.9]) reported the highest overall rates of disability [Figure 5]. In comparison, the prevalence among Hispanics (15.0% [CI, 12.9-17.2]) was significantly lower than that of either of these two non-Hispanic subgroups.

Disability prevalence estimates showed an inverse relationship with level of education attainment: the higher the educational level, the less likely respondents were to report disability [Figure 6]. Disability was highest (25.7% [CI, 22.8-28.5]) among those with less than a high school education. The prevalence among college graduates was significantly lower (15.0% [CI, 13.9-16.2]) than that of all other subgroups.

The prevalence of disability varied inversely by reported annual household income [Figure 7]. The rate among those earning less than \$15,000 (35.8% [CI, 32.7-38.9]) was significantly higher compared to other income subgroups. The lowest rate of disability (11.8% [CI, 10.5-13.0]) was reported by those earning \$75,000 or more.

Figure 5
Prevalence of disability among adult New Yorkers, by race/ethnicity: Combined 2001-2003 BRFSS

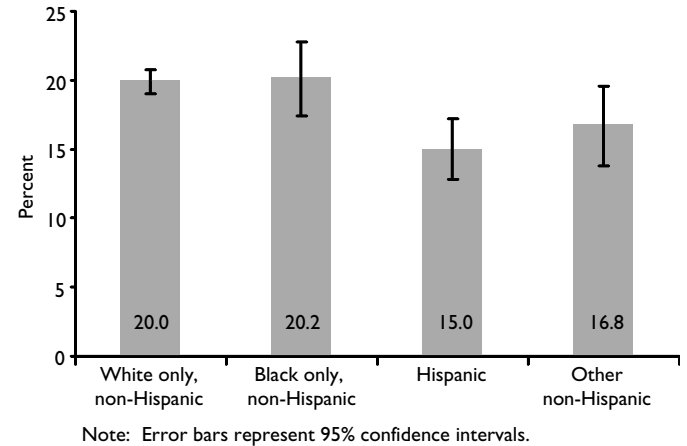


Figure 6
Prevalence of disability among adult New Yorkers, by educational attainment: Combined 2001-2003 BRFSS

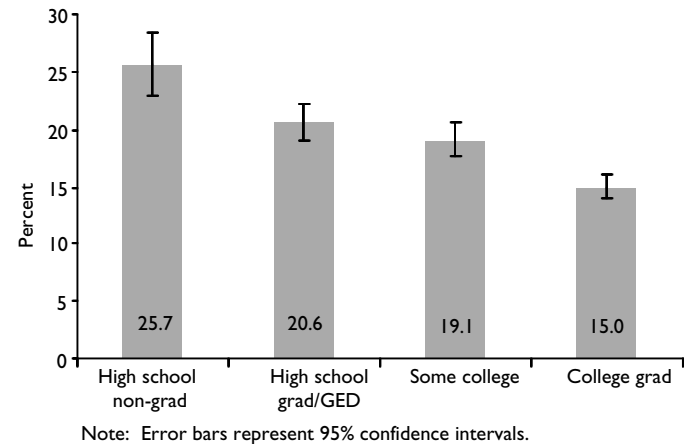
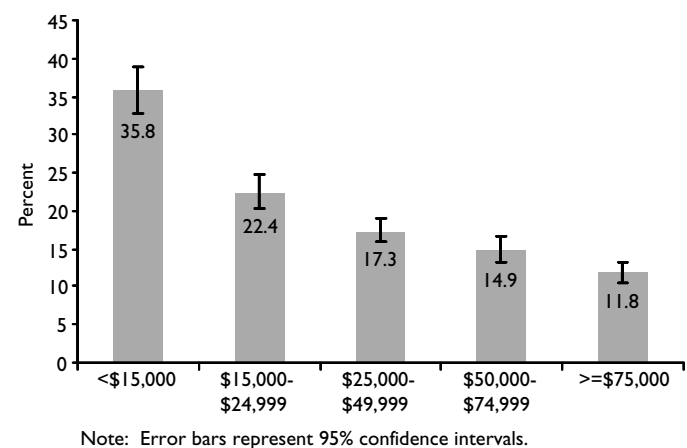


Figure 7
Prevalence of disability among adult New Yorkers, by annual household income: Combined 2001-2003 BRFSS



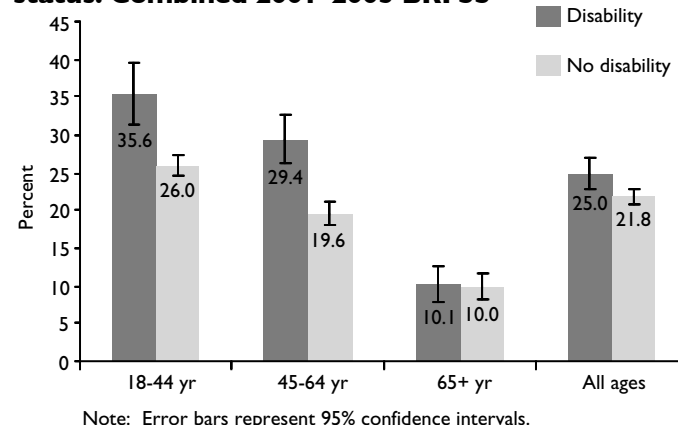
Health risk behavior

Among BRFSS respondents, a “current smoker” is defined as a person who has smoked at least 100 cigarettes in his/her lifetime and now smokes everyday or some days. Results showed that current smoking behavior varied by both age and disability status [Figure 8]. Working-age persons with disabilities were more likely to be current smokers than were those with no disabilities. This difference was found in both the 18-44 year age group (35.6% vs. 26.0%, respectively) and the 45-64 year age group (29.4% vs. 19.6%, respectively). Smoking behavior was generally low among elderly respondents regardless of disability status.

Across the age spectrum, persons with disabilities were far more likely than those without disabilities to be obese (body mass index [BMI] of 30.0 kg/m² or greater) [Figure 9]. The contrast was especially evident among those aged 45-64 years, as the rate of obesity among those with disabilities (42.1% [CI, 38.4-45.7]) was nearly double that among those without disabilities (22.4% [CI, 20.6-24.2]).

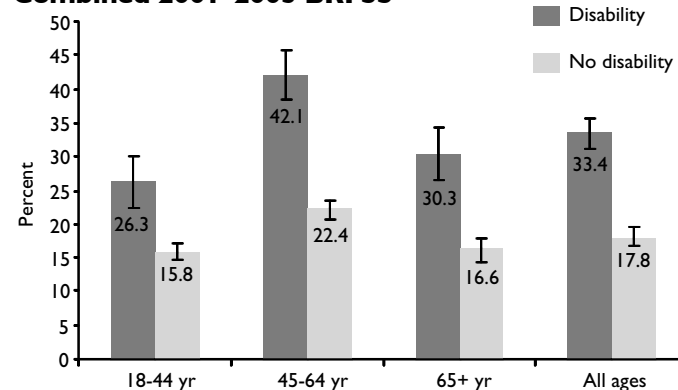
Respondents were classified as physically active at the recommended level if they reported adequate physical activity of moderate intensity (≥ 30 minutes per day, ≥ 5 days per week) or of vigorous intensity (≥ 20 minutes per day, ≥ 3 days per week). Results showed that persons with disabilities were less likely than those without disabilities to report meeting recommended levels for physical activity [Figure 10]. The gap between the groups increased with age: Among those aged 65 years and older, those without disabilities (40.8% [CI, 37.1-44.4]) were twice as likely as those with disabilities (20.3% [CI, 16.3-24.3]) to report being physically active at the recommended level.

Figure 8
Percentage of adult New Yorkers who were current smokers, by age group and disability status: Combined 2001-2003 BRFSS



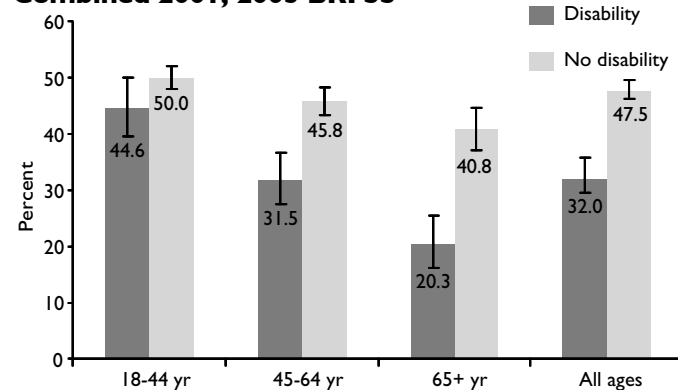
Note: Error bars represent 95% confidence intervals.

Figure 9
Percentage of adult New Yorkers who were obese, by age group and disability status: Combined 2001-2003 BRFSS



Note: Error bars represent 95% confidence intervals.

Figure 10
Percentage of adult New Yorkers who met recommendations for physical activity, by age group and disability status: Combined 2001, 2003 BRFSS



Note: Error bars represent 95% confidence intervals.

Discussion

This analysis revealed a positive trend in overall disability prevalence among adult New Yorkers over the three-year period 2001 through 2003. When stratified by age, disability rates also trended upward in all age groups, including the youngest age group. Recent studies have confirmed that disability rates are rising among Americans younger than 60 years. Obesity, leading to musculoskeletal problems and diabetes, is implicated as the primary cause of this increase.⁴ Disability prevalence among the oldest New Yorkers (65 years of age and older) remained stable or perhaps increased slightly over the three years. This finding, however, is not consistent with recent evidence suggesting that disability among the elderly is falling over time.^{5,6} Explanations offered for this decline in disability among elderly Americans reported elsewhere include improvements in medical technology (e.g., joint replacement procedures), increased use of effective pharmaceutical products (e.g., nonsteroidal anti-inflammatory drugs), decline in smoking, and the increasing socioeconomic status of this population.⁵

Analysis of the combined three years of data showed that disability prevalence among New Yorkers varied directly by age and inversely by levels of education and household income. Research has shown that persons with more education are much less likely to be disabled than are those with less education, as are those with higher incomes working in white-collar jobs.⁷ More educated persons have up to a 50 percent lower disability rate than do the less educated, perhaps because of factors such as less exposure to occupational hazards and fewer employment-related musculoskeletal injuries.^{5,7} Also, positive health behaviors such as avoidance of smoking are seen among better-educated people, and they may use more medical services.⁷ Women in the survey had a higher prevalence of disability than did men. In the general population, women have a higher rate of disability than men, due primarily to women's higher average longevity and the fact that activity limitation increases sharply with age.⁸ After adjusting for age (statistically accounting for age differences between men and women), female New Yorkers were no more likely to have disabilities than were males (results not shown). The analysis also revealed a lower prevalence of disability among

Hispanics compared to the non-Hispanic groups, although this difference was no longer significant after age adjustment (results not shown). Ethnic differences are probably due to a variety of factors in addition to age, including income, education, and other socioeconomic disparities,⁹ as well as possible cultural differences in how disability is experienced and reported.⁸

Current cigarette smoking, obesity, and inadequate physical activity, risk factors that have been consistently associated with mobility loss,¹⁰ were shown to be more prevalent among New Yorkers with disabilities compared to those without disabilities. The greater prevalence of current cigarette smoking among persons with disabilities is consistent with other reports on smoking behavior in this population.^{2,11} In an analysis of Massachusetts BRFSS data, Brawarsky and colleagues found that, compared to those without disabilities, adults with disabilities were not only more likely to be current smokers, but also, if current smokers, to smoke more cigarettes per day.¹¹ The association of cigarette smoking with disability could be explained by its known association with several disabling chronic conditions, including heart disease, stroke, cancer, and chronic obstructive pulmonary disease.^{12,13}

The higher prevalence of obesity found among New Yorkers with disabilities compared to those without disabilities is not surprising given the documented association between weight status and disabling conditions. Several studies have shown body weight to be related to functional disability.¹⁴⁻¹⁶ Moreover, obesity has been found to be associated with a greater risk for both lower-body^{17,18} and upper-body osteoarthritis,¹⁹ leading directly to disability. Obesity may also be indirectly associated with disability through diseases related to weight status. Excess weight is associated with increased incidence of cardiovascular disease, type 2 diabetes mellitus, and stroke.²⁰ Heart disease has been associated with difficulties in activities requiring endurance, stroke has been associated with upper extremity and self-care tasks,²¹ and diabetes has been found to be a significant cause of mobility impairments.^{22,23}

New Yorkers with disabilities were less likely than those without disabilities to report meeting recommended levels of physical activity. Recent evidence has shown that physical inactivity itself can be a primary cause of disability.²⁴⁻²⁷ Physical inactivity results in a cycle where it contributes to obesity, obesity exacerbates disability, and disability impedes exercise.^{28,29} Furthermore, adults with disabling conditions or disabilities are more likely to face barriers to regular exercise, thus contributing to the higher prevalence of obesity among this population.³⁰ These include environmental and disability-specific barriers, such as availability of accessible facilities and transportation. In addition, physical impairments, including pain and weakness, may hinder or preclude certain physical activities.

The findings in this analysis are subject to several limitations. Due to certain inherent features of the BRFSS, it is likely that the true prevalence of disability may be underreported in the target population. Persons not included in the survey are those whose health conditions would not permit a telephone interview, for example, those who are hearing impaired; have cognitive, speech, and other communication impairments; have limited physical stamina; or have mobility impairments that prevent them from getting to the telephone.³¹ Moreover, given that the BRFSS targets only the civilian adult, noninstitutionalized population, the survey cannot assess disability among the population under 18 years of age, nor can it measure disability among the institutionalized population, which carries a substantial burden of activity limitation.

Historically, traditional views held that all disability originated from disease or pathology. We now recognize that disability can also result directly or indirectly from certain health behaviors. As a result, persons with disabilities become an important target group for interventions to reduce risky health behavior. The continued measurement and surveillance of disability indicators and health risk factors will be critical to monitoring the effectiveness of programs designed to reduce secondary conditions, promote better health behaviors, and improve quality of life among persons with disabilities.

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