Basic ADL Disability and Functional Limitation Rates Among Older Americans From 2000–2005: The End of the Decline?

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Background. This study sought to determine whether the rates of basic activities of daily living (ADL) disabilities and functional limitations declined, remained the same, or increased between 2000 and 2005 when (a) only community-dwelling Americans aged 65 and older were examined and (b) when institutionalized older adults were included.

Method. Using data from the American Community Survey and the National Nursing Home Survey, we calculated annual prevalence rates of basic ADL disabilities and functional limitations and fitted regression lines to examine trends over time.

Results. The rates of basic ADL disabilities among community-dwelling adults aged 65 and older increased 9% between 2000 and 2005. When institutionalized elders were included, basic ADL disability rates were stable among men but increased among women. Functional limitation rates did not significantly change between 2000 and 2005.

Conclusion. These findings suggest an end of the decline in disability rates among older Americans, which, if confirmed, could have important implications for health care.

Key Words: Disability—Activities of daily living—Functional limitations—American Community Survey—National Nursing Home Survey.

The 1990s saw the continuation of a slow but steady decline in disability rates among older Americans (1,2). This decline was confirmed by numerous studies (3–5) and documented in an influential systematic review, which showed an annual disability decline of 1–1.5% from the late 1980s through the 1990s (1). The falling rates were driven primarily by declines in limitations in instrumental activities of daily living (e.g., difficulties in shopping and cleaning) and functional limitations (e.g., difficulty reaching, bending, and/or stooping), which fell substantially during this period (2). Although findings on trends in limitations in basic activities of daily living (ADL) disabilities (e.g., bathing, dressing, and getting around inside the home) were much less consistent, a National Institute on Aging consensus panel concluded that there were declines of between 1% and 2.5% annually in ADL limitations in the population aged 70 and older during the mid- and late 1990s (2).

In an updated examination of trends in disability through 2005, Manton et al. (6) concluded that the declining trends in disability observed in the 1990s continued and, in fact, accelerated between 1999 and 2004–2005. During this latter period, they reported that chronic disability, a combined measure of ADL and instrumental ADL limitations, declined 2.2% per annum.

Accurately monitoring changes in disability rates is critical, both in the context of the anticipated doubling of the older population between 2000 and 2030 (7) and because disability is considered “a better predictor of medical and social service need than simple prevalence or incidence figures of disease.” (8) In this study, we examine trends in basic ADL disabilities and functional limitations among older adults from 2000 to 2005 using the American Community Survey (ACS), the largest nationally representative survey of community-dwelling elderly adults (response rates >93%), and the 2004 National Nursing Home Survey (NNHS). By examining basic ADL disabilities and functional limitations separately, we can better examine the differences and similarities in these trends than a combined chronic disease measure allows.

Methods

Data Set and Measures

The ACS is conducted annually by the U.S. Census Bureau and is representative of community-dwelling Americans. The ACS is designed to replace the long form of the decennial census with annually updated data. We used data for
2000–2005, with sample sizes that ranged from 512,768–601,875 (2000–2004) households to 1,924,527 (2005) households and response rates from 93.1% to 97.3% (9).

Respondents were classified as having functional limitations if they reported that they had a long-lasting condition, which substantially limited one or more basic physical activities, such as walking, climbing stairs, or carrying. Basic ADL disabilities were based on whether respondents had a physical, mental, or emotional condition lasting 6 months or more that made dressing, bathing, or getting around inside the home difficult. The same questions were used in each wave of data collection from 2000 to 2005.

Data Extraction and Analysis Strategy

We extracted data on the disability characteristics of men and women aged 65 and older from the published tables S1801 for each year of the ACS, 2000 through 2005 (http://www.census.gov/acs/www/). First, the prevalence of functional limitations and basic ADL disabilities in the community-dwelling elderly adults for each year from 2000 through 2005 was plotted. Regression lines were then fitted to the rates, and p values were calculated to show whether the trend was significant.

Because the ACS between 2000 and 2005 did not include individuals in group quarters (e.g., nursing homes), for sensitivity analysis, we included data from the NNHS, the nation’s official count of nursing home residents. The 2004 NNHS indicated that 98.8% of nursing home residents needed help with at least one activity of daily living (10). We therefore estimated that all individuals in nursing homes had basic ADL disabilities and functional limitations. The 2004 NNHS revealed an overall decline in the number of residents in nursing homes from 1,628,300 in 1999 to 1,492,200 in 2004, with a relative decline of 1.67% per annum (11). We assumed that the rates of institutionalized older adults decreased linearly from 1999 through 2005 at the same rate for both genders. We then estimated the annual number of institutionalized older adults by gender and added these data to the annual ACS numbers of disabled community-dwelling elderly adults in order to calculate each year’s disability rate for the combined institutional and noninstitutional population aged 65 and older.

RESULTS

As shown in Figure 1A, the rates of basic ADL disabilities among community-dwelling older adults showed a significant increase between 2000 and 2005. This was true for men (p = .010) and for women (p = .004). An estimated 0.16% annual increase in the absolute rate of basic ADL disabilities was observed for both genders combined (p = .005). This represents a 9% relative increase over 5 years from the 2000 base rate of basic ADL limitations. Functional limitations among community-dwelling elderly adults did not show any significant changes between 2000 and 2005 (p = .914 for men, p = .110 for women, and p = .359 for both combined) (Figure 1B).

When older adults living in nursing homes were included (see Figures 2A and B), the increasing trends of basic ADL disabilities were dampened slightly. However, there was still a trend toward statistical significance, indicating an increase in the overall rate of basic ADL disabilities among women and both genders combined (p = .053 and p = .052, respectively). No significant changes in basic ADL disabilities for men (p = .108) or in functional limitations for either gender were found (p = .663 for men and p = .296 for women).

DISCUSSION

The ACS provides no evidence that the previously declining rates of basic ADL disabilities and functional limitations among older Americans continued between 2000 and 2005. Furthermore, it suggests that there were increasing rates of basic ADL disabilities among community-dwelling individuals aged 65 and older during this time period. Analysis including NNHS data on nursing home residents further shows a statistical trend (p = .052) toward increasing rates of basic ADL disabilities among women and both genders combined.
Our findings conflict with those of Manton et al. (6) whose analysis of data from the National Long Term Care Survey (NLTCS) found that the percentage of older adults with ADL limitations decreased between 1999 and 2004 from 17.9% to 16.6%. There are three major reasons for the discrepancy between our findings and those of Manton et al. First, the samples vary in their construction. The ACS uses a cross-sectional sample, whereas the NLTCS is composed of an age-adjusted sample that is followed longitudinally, supplemented with a cross-sectional sample of those reaching 65 years between sample waves (6). Because people are followed over time, the Manton et al. sample may have greater dropout rates of people who develop disability, which may underestimate the prevalence rate of disability in the later years. The ACS uses repeated cross-sectional surveys with very high response rates. Second, Manton’s sample included individuals who lived in group quarters such as board and care homes. The analyses shown in our Figures 2A and B excluded those in group quarters other than nursing homes. Residents in these other forms of group quarters need not be disabled. It is unclear whether this exclusion would have biased estimates upward or downward.

Third, the definitions of basic ADL disabilities differ between the two surveys. The NLTCS investigated seven ADLs and defined chronic disability as having a limitation for at least 90 or more days. The ACS included only dressing, bathing, or getting around inside the home in the list of ADLs and defined limitations as those lasting 6 months or more. Furthermore, the NLTCS asked if the respondent was limited in each activity “without help or special equipment”, whereas the ACS just asked if the limitation “made it difficult” to do the task. It is possible that the ACS questions measure more severe disabilities, and these may have a different trajectory than the types of disabilities measured in Manton’s study.

Although the time period 2000–2005 is too short to definitively identify a trend, these data are intriguing. The ACS data provide evidence that the rates of functional limitations in the community did not decline between 2000 and 2005 and that the rates of basic ADL disabilities increased. The inclusion of NNHS data on institutionalized older adults suggests that the much heralded decline of disability rates in the older population during the 1990s may have reached a plateau in the early 21st century.

If our findings are confirmed in future research, several explanatory factors should be considered. First, better survival rates with chronic disease can lead to greater morbidity and basic ADL disability in the very old population. Second, increased rates of obesity among midlife and older adults are translating into increases in both functional and basic ADL limitations (12). Third, improvements in assistive technology and environmental accommodations may be enabling persons with more severe disabilities to remain at home.

The rise in basic ADL disabilities among the community-dwelling elderly adults may be influenced by two demographic transitions. As noted earlier, there was a substantial decline in the number of individuals living in nursing homes, with a 1.67% annual decline between 1999 and 2004. Thus, it may be that individuals with ADL limitations who would have lived in nursing homes a decade or two ago would now live in the community. However, most individuals with ADL limitations also have functional limitations, and therefore, it is harder to interpret the reasons for the leveling in functional limitation rates.

Demographic changes in the older population provide an additional plausible explanation for the rise in ADL disability with the concomitant flattening of functional limitation rates. With older adults living longer and an unusual trough in births during the Great Depression of the 1930s (13), the age distribution of the 65-and-older population is changing quickly. Between 2000 and 2005, the population of adults aged 80 and older rose quickly from 23.5% (14) to 26.2% (15) of the total community-dwelling population aged 65 and older. Basic ADL disability rates are much higher among those in the oldest age bracket. However, the majority of individuals with ADL limitations also have functional limitations, and therefore, it is harder to interpret the reasons for the leveling in functional limitation rates.

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At the same time, there was also a modest increase in the population aged 65–69 years from 28.2% to 28.8% of the
community-dwelling elderly adults, a gain that was counterbalanced by the decline in percentage of individuals in their ’70s. Those less than 70 years are less likely to have functional limitations than those aged 70–79 years. Although the nature of the present analysis precluded examining the young–old and old–old age-groups separately, further research is needed using data that do enable such exploration.

CONCLUSIONS
Disability is one of the best quality-of-life indicators as it captures both diseased and nondiseased persons and therefore may provide a more accurate assessment of well-being than traditional morbidity and mortality data.

As the Institute of Medicine has pointed out, carefully monitoring changes in disability is critical since “trend data provide a barometer of the nation’s achievements in terms of disability prevalence” (p.72) and can further help suggest needed intervention strategies (16). Continued and improved surveillance with the aging of the baby boom is particularly important because continued increases could have a sizable impact in this very large population. The potential increase in disability underscores the need for policies and programs that will help prevent, limit, or delay disabilities while also supporting the needs of an increasingly disabled population.

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