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**Disparities in Disability Among Non-Hispanic
Black Elders: Results From the National
Interview Survey 2001–2003**

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Abstract

A drastically increasing elderly population and disparity among disability poses a concern for the US health care industry. This retrospective cross-sectional study analyzed whether ADL and IADL disabilities were different among non-Hispanic white (NHW) and non-Hispanic black (NHB) populations age 65 and over. Data was retrieved from the 2001–2003 National Health Interview Survey (NHIS) for comparing NHBs and NHWs using chi-square analysis for bivariate comparisons. For both elderly NHBs and elderly NHWs, increased rates of disability were reported for being over 75, female, single, and having lower education. NHBs reported statistically higher disability rates for ADL, IADL, and for any disability, with 10.0%, 18.0%, and 19.3%, respectively, compared to NHWs. There is a need to increase the access for NHBs to nursing home, hospice, and assisted-living facilities. Of further concern is the finding of lower institutionalization rates in the NHB population despite the significant presence of increased disability. The growing NHB elderly population needs an urgent societal intervention to address the persistent disparity, which has been neglected for so many years.

The number of older adults is predicted to increase to about 72 million by the year 2030, almost twice the number in 2007, as baby boomers will have reached age 65. The population of

non-Hispanic whites (NHWs) and non-Hispanic blacks (NHBs) age 65 and over is projected to grow 68% and 126%, respectively (Administration on Aging, 2008). This will increase the percentage of NHB in the older population from 8% to 10% and will change the distribution of whites, black and Hispanics within the elderly population by 2030, because the NHW is expected to decrease from 84% to 72%, while the percentage of Hispanic elders is expected to increase from 6% to 11%, following changes in the ethnic makeup of the US population (Velkoff, He, Sengupta, & DeBarros, 2005).

Disability among elders is still a problem, with 18 million seniors--or about 52% of individuals aged 65 and older--reporting disabilities in 2005. Of this number, about 13 million--or 37% of elders--presented a severe disability (Brault, 2008). A widening health disparity exists in the elderly population. Disparities in NHB disability have been attributed to socioeconomic status (SES), lifestyle behaviors, social environment (educational and economic opportunities, racial discrimination, and neighborhood and work conditions), and access to preventive health care services (CDC, 2005). All these factors translate to longer periods of chronic disease, higher disability rates, and higher mortality (Kelley-Moore & Ferraro, 2004). Additionally, Schoeini et al. (Schoeini, Martin, Andreski, & Freedman, 2005), have documented higher rates of disability in NHBs, which have been persistent from 1982 to 2002 (Schoeini et al., 2005). On the other hand, it has been reported that racial disability disparity disappears when socioeconomic and demographic variables are accounted for (Ozawa & Yeo, 2008).

Furthermore, the disparity between NHWs' and NHBs' health, disability, and mortality actually reverses in late old age. This reversal is known as the crossover effect (Johnson, 2000). Survival of the fittest underlies the pattern of NHB crossover effect; the less healthy and more disabled NHBs die in young-old age (<85 years), leaving healthier and functional older adults,

who are mostly women (Holton, 2007). Yet both the validity and the rationale of the crossover effect have been in question. One explanation involves the higher death rates among young NHBs, but it has been theorized that the crossover effect is an illusion created by inaccurate age reporting on death certificates and census questionnaires (Johnson, 2000).

There are several measures of disability. In 2001, the World Health Organization (WHO) adopted the International Classification of Functioning Disability and Health (ICF) to provide a framework for describing health and health-related states, and it is considered an international standard in describing and measuring health and disability. The ICF classifies the person's state of performance, in his or her environment, in a list of life situations and capacity to execute a task in a standard environment (Centers for Disease Control, 2008). The present study will use Katz's clinical measures of disability: activities of daily living (ADL) and instrumental activities of daily living (IADL), which are both measures used widely to identify functional limitations. Bathing, dressing, getting in or out of bed, getting around inside, toileting, and eating are six measures of ADL. Eight basic categories of IADL are light housework, laundry, shopping, preparing food, getting round outside, managing money, taking medications, and telephoning (Katz & Akpom, 1976; Lubitz, Cai, Kramarow, & Lentzner, 2003).

The purpose of this study was to compare rates of self-reported disability and disparity among nonhispanic blacks with data of older adults age 65 years and older, using a sample from the National Health Interview Survey (NHIS) survey 2001–2003.

METHODOLOGY

The NHIS is an annual, continuous, multipurpose, and multistage probability survey of the US civilian noninstitutionalized population and is conducted by the National Center for Health

Statistics (Fowler, 1996; Botman, Moore, Moriarty, & Parsons, 2000). A probability sample of households is selected and family members are interviewed by trained personnel. One adult from each household is selected at random and administered a health-oriented questionnaire (i.e., the adult core), which includes questions about ADL and IADL. Annual response rates to the 2001-2003 adult core ranged from 73.8% (in 2001) to 74.4% (in 2002) (Lethbridge-Çejku, Schiller, & Bernadel, 2004; Lucas, Schiller, & Benson, 2004; Lethbridge-Çejku & Vickerie, 2005). For the present study, individuals 65 years and older were pooled from the 2001–2003 NHIS survey. The resulting sample included 21,602 men and women.

Dependent and Independent Variables

The two dependent variables identified were ADL and IADL. The question asked for ADL disability was, “Because of a physical, mental, or emotional problem, {do/does} {person/persons} need the help of other persons with personal care needs, such as eating, bathing, dressing, or getting around inside this home?” The IADL disability item asked was “Because of a physical, mental, or emotional problem, {do/does} {person/persons} need the help of other persons in handling routine needs, such as everyday household chores, doing necessary business, shopping, or getting around for other purposes?” Finally, the estimate of any disability was defined as having either an ADL or IADL disability.

Independent variables included race, gender, age, education, household income, marital status, Medicare and Medicaid. Age was dichotomized into 65-74 years versus 75 years and older. Educational attainment was divided into less than 8th grade, 9th-12th grade, high school diploma or better. Annual household income was categorized as either greater than \$20,000 or less than or equal to \$20,000. There were two categories for marital status: married or single.

Analysis

Disability proportions were calculated by restricting the analysis to the disability of interest and computing the percent of respondents, out of all the subgroup respondents, reporting this disability. Non-Hispanic whites and non-Hispanic blacks were analyzed separately. Each group was examined using cross-tabulations to determine if there were significant differences in the presence of ADL disabilities or IADL disabilities due to the demographic factors. The chi-square analysis for bivariate comparisons was used to determine statistically significant differences. Statistical significance was assessed at the 0.05 level. All statistical analyses were conducted with SPSS, version 17.

RESULTS

A total of 21,602 individuals ages 65 and over participated in the survey and their overall rates of self-reported ADL and IADL are displayed in Table 1. The overall self-reported ADL disability rate was 6.6%, whereas the IADL disability self-reported rate was 12.8%. The frequency of any disability was 14.0% (Table 1).

Non-Hispanic blacks reported statistically higher disability rates for ADL (10.0%), IADL (18%), and for any disability (19.3%), compared to similar measurements of disability in NHW ($p < .05$). All disability rates increased with subjects 75 years and older. Non-Hispanic blacks 75 years and older reported an ADL disability rate (7.9%) more than twice that of elders 65-75 years old. For IADL disability, the rate was 2.3 times higher for elders 75 years and older compared with elders 65–74 years ($p < .05$, see Table 1). Females reported statistically significant higher ADL, IADL, and for any disability rates compared with males ($p < .05$). The disability rates were also higher using education status. Individuals in the lower education

category reported more than twice the ADL and IADL disability rates of those in the higher education category ($p < .05$, see Table 1). Any disability almost doubled for individuals whose household income was less than \$20,000. Singles reported twice the rates of ADL, IADL, and any disability compared to married individuals ($p < .05$, see Table 1).

The disability rate increased with subjects 75 years and older reporting ADL, IADL, and any disability for both NHB and NHW. For NHBs ages 65-74, ADL disability (6.5%) and any disability (12.8%) was statistically higher than NHWs (2.9% and 6.9%, respectively; $p < .05$; see Table 2).

Non-Hispanic white females, in contrast to NHB females, reported a significantly lower ADL disability rate with 6.7% versus 11.5%, respectively, ($p < .05$, see Table 2). Regarding NHB educational level, seniors who did not obtain at least a high school diploma reported higher ADL and IADL disability than NHWs. Household income above \$20,000 was associated with a statistically significant reduced reporting of ADL, IADL, and any disability in NHB groups, yet disability was also higher compared to NHWs ($p < .05$, see Table 2). For both racial groups, individuals who were enrolled in Medicare and/or Medicaid presented significantly higher rates of ADL and IADL disability compared with those who were not. Finally, in both governmental plans, disability rates in NHBs were higher when compared to NHWs.

Table 3 shows risk factors associated with several demographic factors. For NHBs and ADL disability, age had the highest risk factor, (OR = 2.577, $p < .05$) for those 75 and older. Also, marital status was a major risk factor, with singles being more likely to report an ADL disability than married individuals ($p < .05$). The other factors, including gender, educational level, and income, were all significant. Females were more likely to report an ADL disability than males. Seniors with less than a high school education were more likely to report an ADL disability. In

addition, those individuals earning less than \$20,000 were more likely to report an ADL disability ($p < .05$; Table 3). Individuals, receiving either Medicare or Medicaid, were more likely to report ADL disability in both racial groups ($p < .05$).

The analysis was performed for IADL disability, and the same results were obtained. All of the factors were statistically significant ($p < .05$, Table 3).

TABLE 1 Characteristics of Older Adults Reporting Any ADL^a or IADL^b Disability, National Health Interview Survey 2001–2003

Race and ethnicity*

Household income*

Patient Characteristic	Total Sample	ADL ^a Disability	IADL ^b Disability	Any Disability
Total	21, 602	6.6%	12.8%	14.0%
Age*				
65–74	11, 872	3.3%	6.8%	7.7%
75+	7, 606	7.9%	15.8%	17.0%
Gender*				
male	9, 076	5.4%	8.7%	10.0%
female	12, 511	7.4%	15.9%	16.9%
NHW ^c	18, 221	6.0%	12.1%	13.2%
NHB ^d	2, 305	10.0%	18.0%	19.3%
other	1, 062	8.3%	15.5%	16.8%
Education*				
<8th grade	3, 855	11.5%	20.7%	22.5%
9–12th grade	2, 919	6.4%	14.9%	15.7%
HS diploma or better	13, 724	4.9%	9.9%	13.7%
Household income*				
> \$20,000	11, 938	5.4%	9.4%	10.3%
< \$20,000	6, 635	8.8%	19.1%	20.3%
Marital status*				
married	12, 129	4.6%	7.2%	8.3%
single	9, 300	9.2%	20.3%	21.4%
Medicare*				
yes	19, 128	6.7%	13.4%	14.5%
no	2, 295	5.5%	9.0%	9.9%
Medicaid*				
yes	1, 950	17.8%	30.3%	32.5%
no	19, 473	5.4%	11.1%	12.1%

^a ADL = activity of daily living

^bIADL = instrumental activity of daily living

^cNHB = Non-Hispanic blacks

^dNHW = Non-Hispanic whites

Statistically significant at $p < .05$ level

TABLE 2 Characteristics of Non-Hispanic Black Elderly and Non-Hispanic White Elderly Reporting Any ADL^a or IADL^b Disability, National Health Interview Survey 2001–2003

Elderly Characteristics	Non-Hispanic Blacks						Non-Hispanic Whites									
	n	%	ADL ^a Disability	p	IADL ^b Disability	p	Any Disability	p	n	%	ADL Disability	p	IADL Disability	p	Any Disability (%)	p
Total	2,305	10.0	10.0%	*	18.0%	*	19.5%	*	18,235	6.0%	6.0%	*	12.1%	*	13.2	*
Age																
65–74	1,370	59.4	6.5%		11.6%		12.8%		9,848	54.0	2.9%		6.1%		6.9	
75+	935	40.6	15.2%	*	27.3%	*	28.8%	*	8,373	46.0	9.8%	*	19.1%	*	20.5	*
Gender																
male	841	36.5	7.5%		11.9%		13.9%		7,807	42.8	5.1%		8.2%		9.5	
female	1,464	63.5	11.5%	*	21.5%	*	22.4%	*	10,414	57.2	6.7%	*	15.0%	*	15.9	*
Education																
< 8th grade	583	27.3	14.7%		24.1%		26.8%		2,884	16.6	10.7%		19.7%		21.3	
< 12th grade	497	23.2	8.7%		16.7%		17.3%		2,304	13.3	5.8%		14.6%		15.4	
High school and above	1,059	49.5	8.1%	*	15.2%	*	16.2%	*	12,200	70.2	4.7%	*	9.4%	*	10.3	*
Marital status																
married	886	38.9	6.5%	*	8.9%	*	10.8%	*	10,664	58.9	4.4%	*	7.0%	*	8.1	*
not married	1,391	61.1	12.3%	*	23.9%	*	24.9%	*	7,438	41.1	8.3%	*	19.4%	*	20.4	*
Income																
< \$20,000	1,065	44.9	11.7%		22.4%		23.6%		10,524	67.0	8.1%		18.3%		19.5	
> \$20,000	885	55.1	8.9%	*	13.9%	*	15.4%	*	5,179	33.0	5.0%	*	8.8%	*	9.8	*
Insurance																
Medicare																
yes	1,885	82.8	10.4%		19.0%		20.4%		16,428	90.8	6.2%		12.5%		13.6	
no	392	17.2	9.0%	*	14.3%	*	15.3%	*	1,669	9.2	4.4%	*	7.6%	*	8.3	*
Medicaid																
yes	446	19.6	20.2%		33.0%		34.8%		1,257	6.9	16.8%		29.3%		31.5	
no	1,831	80.4	7.7%	*	14.6%	*	15.8%	*	16,840	93.1	1.2%	*	10.8%	*	11.8	*

^aADL = activities of daily living.

^bIADL = instrumental activity of daily living.

*Statistically significant at $p < .05$ level.

TABLE 3 Relationship of Demographic and Socioeconomic Status to ADL^a and IADL^b Disabilities for Non-Hispanic Blacks and Non-Hispanic Whites, National Health Information Survey 2001–2003

Demographics	Non-Hispanic Blacks (N = 2305)				Non-Hispanic Whites (N = 18235)			
	ADL ^a Disability		IADL ^b Disability		ADL Disability		IADL Disability	
	OR ^c	CI ^d	OR	CI	OR	CI	OR	CI
Female (vs. male)	1.603	(1.183–2.169)*	2.024	(1.585–2.577)*	1.344	(1.183–1.524)*	1.972	(1.789–2.174)*
Age: 75 + vs. 65–74	2.577	(1.949–3.401)*	2.865	(2.299–3.571)*	3.690	(3.205–4.237)*	3.610	(3.279–3.984)*
No high school (vs. high school or more)	1.493	(1.119–1.992)*	1.455	(1.164–1.819)*	1.911	(1.680–2.174)*	2.039	(1.856–2.240)*
Household income < \$20,000 (vs. > \$20,000)	1.353	(1.007–1.821)*	1.789	(1.408–2.273)*	1.667	(1.460–1.905)*	2.320	(2.105–2.558)*
Single (vs. married)	2.004	(1.585–2.577)*	3.195	(2.457–4.149)*	1.984	(1.695–2.137)*	3.215	(2.933–3.534)*
Medicare (receiving vs. not receiving)	1.180	(.809–1.721)*	1.409	(1.038–1.912)*	1.441	(1.130–1.838)*	1.737	(1.441–2.094)*
Medicaid (receiving vs. not receiving)	3.039	(2.278–4.053)*	2.876	(2.271–3.643)*	3.667	(3.116–4.216)*	3.431	(3.010–3.911)*

^aADL = activity of daily living.

^bIADL = instrumental activity of daily living.

^cOR = odds ratio.

^dCI = 95% confidence interval.

*Statistically significant at p < .05 level.

DISCUSSION

The overall self-reported ADL disability rate was 6.6%, and the IADL disability self-reported rate was 12.8%. Results indicated that age, education level, gender, and marital status were associated with higher reported functional disability in both NHWs and NHBs. As expected, respondents age 75 and older were more likely to report ADL and IADL disability than respondents 65-74; however, there was a higher disability rate for NHWs than NHBs for the two age groups. It's possible that this is indicative of the racial crossover effect that is seen at 85+ years (Holton, 2007). Reported disability decreased in NHBs as level of education increased. Disabling health problems were postponed by 12 years or more in higher-educated NHBs than those of a lower education level. Education attainment's effect on health is likely linked with the level of income it produces, differing levels of education and income can result in greater social and economic inequality (Goesling, 2007). Both NHB and NHW women report a higher rate of disability than men; the difference was greater among NHBs. Research has suggested this represents a higher prevalence rather than incidence due to lower mortality and recovery rates for women, resulting in disability of longer duration (Oman, Reed, & Ferrara, 1999). Married individuals tend to report lower disability rates. The finding of any type of disparity between married NHBs and single NHBs is consistent with the possibility that marriage may serve as a protective factor against disability. Marriage provides the primary form of physical, mental, and social support for many individuals. Research shows that marriage provides a number of important and substantial benefits, including healthier lifestyle, increased income and wealth, and a major source of emotional and instrumental support (Waite, 1995; Lillard & Panis, 1996). The ADL and IADL disabilities rates for NHBs 65 years and over were significantly higher than

for NHWs of the same age group. One possible explanation is the lack of access to adequate health care due to socioeconomic inequalities throughout the lifetime (Keith & Long, 1997). Sociocultural factors can also inhibit NHBs' access to or utilization of health care (Intercultural Cancer Council, 2004).

For the elderly population, ADL and IADL disabilities are key predictors of nursing home admission, paid home care, and palliative care (Coustasse, Bae, Arvidson, Singh, & Trevino, 2008). Having three or more ADL disabilities is among the strongest predictors of nursing home admission (Gangler, Duval, Anderson, & Kane, 2007). However, despite the presence of poorer health and higher rates of ADL/IADL disabilities in the older NHB population, they are less likely than NHW elders to be placed in a nursing home (Akamigbo & Wolinsky, 2006).

While a widely accepted consensus has eluded researchers, various causes have been proposed to explain this counterintuitive finding. One reported finding is that NHBs utilize paid home care, informal-only care, or no care in lieu of nursing home care (Wallace, Levy-Storms, Kington, & Anderson, 1998). It has also been reported that a delay in the institutionalization in nursing home care or preference for home care in the NHB population has been propagated by the involvement with grandchildren (Cagney & Agree, 1999). NHB elders may also draw upon a much more extensive, emotionally supportive network of friends and distant relatives to serve as caregivers (Mui, Choi, & Monk, 1998). Self-care and family-care practices may be embedded in NHB culture and due to historical struggles for survival, promotion of affiliation over individualism, and deep-rooted spirituality (Becker, Gates, & Newsom, 2004).

Yet the impact of cultural preferences or support systems has been difficult to quantify due to the presence of other mitigating factors, especially economic status (Keith & Long, 1997). NHBs rely more heavily on Medicaid to finance their nursing home placement. However, Medicaid's

low reimbursement rate may be a disincentive to nursing homes looking to maximize revenue by accepting more private-pay residents (Keith & Long, 1997). Since most residents are admitted directly from a hospital, disparities could also be attributed to the practices of hospital discharge planners (Angelli, Grabowski, & Mor, 2006). These disparities are further exemplified by the finding that over 50% of NHBs in nursing homes are concentrated in 10% of facilities, which are typically low quality, short-staffed, and financially unstable (Smith, Feng, Fennell, Zinn, & Mor, 2007). NHB elders are more likely to be treated in facilities with cleanliness and maintenance problems and a higher number of state-regulator-reported health deficiencies (Angelelli et al., 2006).

Limitations

Several limitations of the current study should be noted before conclusions are drawn. The survey questions focused on the self-reporting of level of dependence rather than the causes, therefore, no distinctions can be made regarding physical and cognitive disability. The survey's health measures were not clinically confirmed. Because the data was based on self-report, prevalence may be underreported or overreported, leading to a potential bias in the differences in disability and functional limitation among NHB and NHW.

CONCLUSION

Strong associations have previously been established between SES and higher rates of disease, impairment, and disability. Of further concern is this study's finding of disparity between the NHW and NHB populations, notably a statistically higher rate of ADL and IADL disabilities in the NHB population. An analysis of this NHIS dataset revealed that demographic factors such as age, gender, marital status, and education are also associated with higher rates of disability. A lack of access to preventive care throughout the lifetime for NHBs is a key

component of their disability disparity. Lower institutionalization rates in the NHB elderly population, despite the significant presence of increased disability, could be a manifestation of this deficiency of proper health care in later life and/or chronic poverty. However, further research is needed to investigate variability in disability and institutionalization rates as cultural differences that may affect how disability is experienced, reported, and treated.

With a growing elderly population, disability among all seniors is a major public health concern for the United States. A clear association of age and disability dictates a sense of urgency in a number of health care sectors: training of an increased supply of primary care practitioners; the need for more access for NHBs to nursing home, hospice, and assisted living facilities; and greater support for caregivers. The growing NHB elderly population in particular needs an urgent societal intervention to address the persistent disparity that has been neglected for so many years.

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