

Disparities in Chronic Disease Risk Factors and Health Status Between American Indian/Alaska Native and White Elders: Findings From a Telephone Survey, 2001 and 2002

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We compared prevalence estimates of chronic disease risk factors and health status between American Indian/Alaska Native (AIAN) and White elders. We used 2001 and 2002 Behavioral Risk Factor Surveillance System data to estimate the prevalence of smoking, physical inactivity, obesity, diagnosed diabetes, and general health status. For all health behavior and status measures, American Indians/Alaska Natives reported greater risk than did Whites. Risk factors among AIAN elders need to be addressed to eliminate disparities in chronic diseases. (*Am J Public Health*. 2005; 95:825–827. doi:10.2105/AJPH.2004.043489)

Heart disease, cancer, and diabetes are the 3 leading causes of death for American Indians/Alaska Natives (AIAN) aged 55 or older (henceforth referred to as *elders*).¹ Chronic diseases such as these also negatively affect the general health status and quality of life of AIAN elders.² The burden of chronic diseases on AIAN communities will increase as the number of elders grows from approximately 310 000 in 2000 to 459 000 in 2010.³ Population-based estimates of chronic disease risk factors can be useful in developing interventions to prevent and control these diseases.⁴ Addressing chronic disease risk factors will help us reach the *Healthy People 2010*:

Understanding and Improving Health goals of improving the quality of people's lives, increasing their years of healthy life, and eliminating health disparities.⁵ The purpose of our study was to examine differences between AIAN elders and White elders on 5 health behavior and status measures with data from the Behavioral Risk Factor Surveillance System (BRFSS) for 2001 and 2002.

METHODS

The BRFSS is a continuous telephone survey conducted by state health departments in collaboration with the Centers for Disease Control and Prevention to assess health behaviors primarily related to chronic disease and injury. A sample of noninstitutionalized adults (aged 18 years or older) is drawn through random-digit-dialing methods. Data are weighted to reflect both the respondent's probability of selection and the race-, age-, and gender-specific population of the state. A detailed description of the survey is available elsewhere.^{6,7}

As noted earlier, we defined *elders* as persons aged 55 or older.⁸ Racial categorization was based on responses to the question, "What is your race?" Respondents who reported being American Indian or Alaska Native alone or in combination with another race or races were categorized as American Indians/Alaska Natives. (Sociodemographic characteristics of respondents who reported being American Indian/Alaska Native alone versus those who reported being American Indian/Alaska Native in combination with other races are available from the authors on request).

The 5 health behavior and status measures examined are defined in Table 1. These 5 measures were chosen for this analysis be-

cause of their importance to chronic disease and because they were asked of every BRFSS respondent in both 2001 and 2002. Demographic measures of age, education, employment, geographic region, and urban or rural residence also were examined and used as control variables in multivariate logistic models. Annual household income was examined but not included in the modeling because 20% of the respondents did not know or refused to report their income. Because of the relatively small sample size of AIAN elders, we aggregated 2001 and 2002 BRFSS data from the 50 states and the District of Columbia, resulting in a sample of 3125 American Indians/Alaska Natives and 127 485 non-Hispanic Whites.

The methodology of the Council of American Survey Research Organizations⁹ was used to derive median response rates, which were 51.1% in 2001 and 58.3% in 2002.^{10,11} Response rates could not be calculated separately for racial groups because information on the race of nonrespondents was not available. Another issue regarding representativeness of the sample is that as a telephone survey, coverage is not the same for all populations; the percentage of households with a telephone is estimated to be 83.4% for American Indians/Alaska Natives and 95.7% for Whites.¹² Despite this difference, 2.6% of the BRFSS respondents in 2001 and 2002 reported AIAN race compared with 1.5% in the 2000 US census.¹³ Further discussion of telephone coverage among American Indians/Alaska Natives is available elsewhere.¹⁴

We calculated prevalence estimates and adjusted odds ratios for the 5 measures by race and by gender. Analyses were conducted with SUDAAN statistical software (Research Tri-

TABLE 1—Selected Health Behavior and Status Measures: Behavioral Risk Factor Surveillance System, 2001 and 2002

Current cigarette smoking	Having smoked 100 cigarettes and reporting that one smokes now
No leisure-time physical activity	Reporting no exercise or physical activity (other than regular job duties) during the preceding month
Obesity	Having a body mass index ≥ 30.0 kg/m ² (calculated from self-reported height in inches and weight in pounds)
Diagnosed diabetes	Having ever been told by a doctor that one has diabetes (when not pregnant)
Fair or poor general health	Reporting that one's general health is "fair" or "poor" as opposed to "good," "very good," or "excellent"

TABLE 2—Prevalence Estimates and Adjusted Odds Ratios (ORs) of Health Behavior and Status Measures for American Indian/Alaska Native (AIAN) and White Elders (Aged 55 or Older): Behavioral Risk Factor Surveillance System, 2001 and 2002

Health Measures	Gender	AIAN			White			Adjusted OR ^a (95% CI)	Adjusted OR ^b (95% CI)
		N	%	95% CI	N	%	95% CI		
Current cigarette smoking	Overall	3107	26.7	22.9, 30.5	126967	13.9	13.6, 14.2	2.08 (1.73, 2.52)	1.78 (1.46, 2.19)
	Men	1339	31.0	25.3, 36.7	47781	14.6	14.1, 15.1	2.48 (1.90, 3.24)	2.19 (1.65, 2.89)
	Women	1768	22.6	17.7, 27.4	79186	13.4	13.0, 13.7	1.72 (1.32, 2.26)	1.43 (1.06, 1.92)
No leisure-time physical activity	Overall	3123	37.2	33.5, 41.0	127365	29.3	28.9, 29.7	1.51 (1.28, 1.78)	1.24 (1.04, 1.49)
	Men	1349	35.6	30.0, 41.2	47905	25.6	25.0, 26.2	1.66 (1.29, 2.12)	1.37 (1.03, 1.81)
	Women	1774	38.8	33.8, 43.9	79460	32.2	31.7, 32.7	1.42 (1.15, 1.76)	1.15 (0.93, 1.43)
Obesity	Overall	2992	29.3	25.8, 32.8	122344	21.7	21.4, 22.1	1.41 (1.18, 1.69)	1.29 (1.07, 1.55)
	Men	1332	26.9	22.1, 31.7	47422	22.4	21.8, 23.0	1.20 (0.93, 1.55)	1.15 (0.89, 1.50)
	Women	1660	31.7	26.7, 36.8	74922	21.2	20.7, 21.7	1.65 (1.29, 2.10)	1.41 (1.09, 1.82)
Diagnosed diabetes	Overall	3119	21.9	18.8, 24.9	127293	13.0	12.6, 13.3	1.92 (1.61, 2.31)	1.66 (1.37, 2.00)
	Men	1348	22.0	17.7, 26.3	47852	14.5	14.0, 15.0	1.71 (1.33, 2.20)	1.55 (1.20, 2.01)
	Women	1771	21.7	17.3, 26.1	79441	11.7	11.3, 12.1	2.13 (1.64, 2.77)	1.73 (1.31, 2.28)
Fair or poor general health	Overall	3097	38.2	34.5, 41.9	126943	23.6	23.3, 24.0	2.14 (1.82, 2.53)	1.52 (1.24, 1.86)
	Men	1336	35.0	29.5, 40.4	47758	23.2	22.6, 23.8	1.90 (1.48, 2.45)	1.37 (1.01, 1.88)
	Women	1761	41.3	36.2, 46.4	79185	24.0	23.5, 24.5	2.39 (1.92, 2.98)	1.63 (1.25, 2.14)

Note. CI = confidence interval.

^aAdjusted for race, with White as the referent, each health measure as the dependent variable, and age (continuous).

^bAdjusted for age (continuous), education (<high school graduate, high school graduate, education past high school), employment (employed, unemployed, unable to work, retired, other), geographic region (Northeast, Midwest, South, West), and urban or rural residence (metropolitan statistical area, non-metropolitan statistical area).

gle Institute, Research Triangle Park, NC) to account for the complex survey design.

RESULTS

AIAN respondents were significantly ($P < .01$) more likely than White respondents to report being unable to work (15.4% vs 4.6%) and less likely to report retirement (48.2% vs 54.9%). Less than 12 years of education was reported by 29.3% of the American Indians/Alaska Natives and 13.0% of the Whites ($P < .01$). An annual household income of less than \$25 000 was reported by 42.1% of the AIAN respondents compared with 27.3% of the White respondents. The percentage of respondents living in metropolitan statistical areas was similar for both races (70.2% for American Indians/Alaska Natives and 73.3% for Whites).

Prevalence estimates for all 5 health behavior and status measures were higher among AIAN respondents than among White respondents (Table 2). The prevalence of current cigarette smoking among AIAN men was more than twice that for White

men: 31.0% versus 14.6%. AIAN men (35.6%) also were much more likely than White men (25.6%) to report no leisure-time physical activity. The prevalence of obesity was approximately 50% higher among AIAN women than among White women, and the prevalence of diagnosed diabetes was almost twice as high. In addition, more than 41% of the AIAN women reported their general health as being fair or poor, compared with 24.0% of the White women. Except for no leisure-time physical activity among women and obesity among men, American Indians/Alaska Natives were significantly ($P < .05$) more likely than Whites to report all 5 health risk behavior and status measures after we controlled for age, education, employment, geographic region, and urban or rural residence.

DISCUSSION

Prevalence estimates of cigarette smoking, no leisure-time physical activity, obesity, and diagnosed diabetes—all risk factors for chronic disease—were higher among AIAN

elders than among White elders. Even after we controlled for sociodemographic differences, American Indians/Alaska Natives were significantly more likely than Whites to report most risk factors for chronic disease. These findings are similar to those of the Strong Heart Study, which also examined cardiovascular disease risk.¹⁵ Moreover, the Indian Health Service has found that after adjustment for miscoding of Indian race on death certificates, the age-adjusted heart disease mortality rate is higher for American Indians/Alaska Natives than for the total US population and has remained stable for American Indians/Alaska Natives since the late 1980s but has decreased for the total US population.¹ The prevalence of diagnosed diabetes for American Indians/Alaska Natives is almost 4 times that for Whites among persons aged 45 to 64 years, twice that for Whites among those aged 65 or older, and increasing for American Indians/Alaska Natives in both age groups.^{16,17}

The disparities we found between AIAN and White elders in self-perceived general health may be a result of the higher preva-

lence of heart disease, diabetes, and other chronic diseases among American Indians/Alaska Natives.^{2,18} Eliminating disparities in chronic disease between AIAN elders and other racial/ethnic groups will require monitoring and addressing the risk factors for those diseases.^{19,20} ■

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This brief was accepted August 11, 2004.

Contributors

C. H. Denny planned the study, analyzed the data, and wrote the brief. D. Holtzman and J. B. Croft assisted with the design of the study and the writing of the brief. R. T. Goins assisted with the writing of the brief.

Acknowledgments

We acknowledge the contributions of the state Behavioral Risk Factor Surveillance System coordinators.

Human Participant Protection

No protocol or institutional review board approval was needed for this study because data were collected anonymously from a public health surveillance system in which adults voluntarily consented to telephone interviews.

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