The Prevalence of Selected Risk Factors for Chronic Disease Among American Indians in Washington State

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SYNOPSIS

DESPITE GREAT IMPROVEMENTS in recent decades, the health status of American Indians continues to lag behind that of other Americans. Continued health improvement will depend largely on changes in individual behavior. Until recently, however, few data existed on health risk behaviors among American Indians. We conducted personal interviews among the adult population of an Indian Health Service Service Unit in Washington State to estimate the prevalence of some health risk behaviors. This analysis focuses on three of the many topics covered in the survey: tobacco use, alcohol consumption, and weight. Cigarette smoking was more prevalent among both men and women than it was in the general population in the same area with 43% of men and 54% of women among the American Indians interviewed reported that they currently smoked. However, they tended to smoke much less heavily than smokers in the general population. Smokeless tobacco use was concentrated among young men, with the overall prevalence similar to that found in the general population. Acute heavy drinking was found to be common with 40% of men and 33% of women reporting this behavior for the previous month. The prevalence of substantial overweight was 45% among men and 43% among women, considerably higher than in the general population. Tribal leaders and the Indian Health Service are using the findings to design disease prevention and health promotion activities. In addition to providing valuable information about the surveyed populations, the survey served as a pilot for similar studies of other American Indian groups.

In recent decades, the overall health status of American Indians and Alaskan Natives (hereafter referred to as American Indians) has improved substantially but continues to lag behind the general U.S. population.[1,2] The fact that life expectancy for the period 1989–1991 was approximately three years shorter for American Indians than for the overall United States population does not fully describe the poor overall health status of American Indians. During that same period, 32% of American Indian deaths in the Indian Health Service (IHS) population (American Indians living on or near reservations) occurred before the age of 45 years, compared with only 9% for the white population of the United States.[3] In some major cause-of-death categories related to behavior and lifestyle, the age-adjusted mortality

rates in 1990 for American Indians who lived on or near reservations were much higher than those for the white population of the United States: chronic liver disease and cirrhosis (3.8 times greater), diabetes mellitus (2.9 times greater), unintentional injuries (2.7 times greater), and homicide (2.6 times greater).[3]

Comparison of smoking habits of American Indians surveyed with those of the county and national populations are unfavorable.

IHS is the agency within the Public Health Service whose "goal is to raise the health status of American Indians and Alaska Natives to the highest possible level."[4] IHS has a unique role among health service providers to special populations because any member of a federally recognized tribe is eligible for services, and the comprehensive nature of services provides an incentive for population-based disease prevention and health promotion activities. Recognizing the importance of individual behaviors, IHS has collaborated with 12 American Indian tribes and the Centers for Disease Control and Prevention (CDC) to measure the prevalence of behaviors that contribute to health problems, as well as to measure the prevalence of selected conditions among American Indians.[5–8] This study presents the results of one of these collaborations.

Methods

In 1987, the Washington State Health Department conducted a behavioral risk factor surveillance survey (BRFSS) by telephone of the state's general adult population following the standard CDC/BRFS protocol. One county (County A) was singled out for oversampling in this statewide survey because of its unusually high mortality rate.[9] The American Indian population is only 4% of the total population in the catchment area, yet this county-wide survey provided a general population comparison group for the subsequent American Indian survey.

In 1989, four tribes that lived in this and surrounding counties in Washington State conducted the Washington American Indian Behavioral Risk Factor Survey (referred to subsequently as the American Indian survey) in collaboration with the IHS Area Office and CDC. The goals were to measure the prevalence of health risk behaviors and select related conditions among American Indians in the area in question, and then to apply the survey results to develop effective health promotion and disease prevention strategies and activities.

The 1989 American Indian Survey was designed to collect information from a representative sample of American Indians at least 15 years of age who were living in the catchment area of the IHS service unit in and around County A. This catchment area is predominantly rural and includes four reservations, as well as a large number of American Indians not living on these reservations. The sampling frame consisted of American Indians registered with the local IHS Service Unit health center or enrolled in one of the four tribes and living in the Service Unit catchment area. To locate people who identified themselves as Native Americans but who had not taken advantage of health care benefits, we also compared those sources with the Bureau of Indian Affairs (BIA) list in that agency's regional office, located in the county seat of the catchment area. We found no additional names. There may well be a number of American Indians living in the area who have not availed themselves of IHS services and are members of other tribes. However, the most likely reason for their nonuse of IHS services would be that these members had medical insurance coverage from another source and did not require IHS clinical services. In light of the fact that the catchment area was economically distressed, it seems likely that few American Indians from other tribes would migrate into the region and have no need for IHS services.

By means of systematic sampling with a random start, 218 men and 273 women living in the catchment area were selected. Between May and September 1989, trained American Indian interviewers living in the survey areas conducted face-to-face interviews with a total of 160 men (response rate = 73%) and 193 women (response rate = 71%). Interviewers conducted interviews only with respondents of his or her own sex.

The American Indian Survey included behavior and knowledge questions routinely included in state behavioral risk factor surveys.[10] Tribal leaders and the IHS identified several other topics as important health concerns among American Indians living in the area. The broad topics covered were tobacco use, alcohol consumption, weight and diet, physical activity, blood pressure control, injury prevention, diabetes, maternal and child health, family planning, cholesterol screening, cancer screening, home dental care, drug use, utilization and attitudes about available health care services, and knowledge of HIV transmission risk factors.

In this paper, we discuss the findings on cigarette smoking, alcohol use, and weight—three of the most important risk factors for a number of chronic diseases—and compare the results of the American Indian Survey with the 1987 county survey of the general population. The two data sets were collected two years apart; if behaviors were changing rapidly in one or both populations surveyed this could affect the validity of such a comparison. Additionally, differences

between response to telephone and personal interviews might also affect the comparisons. However, as will be seen below, many differences are so large that these biases are unlikely to account for them. We feel that if there are differences in the reliability of responses in the two surveys, the American Indian survey probably achieved higher reliability because of the greater degree of interviewer-respondent rapport typically achieved in face-to-face, as compared to telephone surveys.

Results

Demographic characteristics. Seventy-six percent of respondents lived on one of the four reservations, with the remainder living in nearby towns and rural areas. The age distribution of the American Indian Survey respondents was somewhat younger than that of the countywide survey. However, age-adjustment of the results did not substantially alter the findings. Among the American Indian respondents who were older than 18 years, 35% of men and 39% of women had not completed high school, compared with only 21% of men and 22% of women in the county-wide Behavioral Risk Factor Survey (table 1).

Table 1 also illustrates the generally low economic status of the American Indian population interviewed. Almost half of American Indian respondents reported an annual household income of less than $15,000. One-fourth of men and more than one-third of women reportedly lived in households that received some form of financial assistance, such as welfare payments, food stamps, or BIA general assistance.

Tobacco. Comparison of smoking habits of American Indians surveyed with those of the county and national populations are unfavorable: 45% of the American Indian men smoked as compared to 33% of the men in the county and 31% of men nationwide; 54% of women in the American Indian Survey smoked cigarettes at the time of interview compared to 30% of women in the county and 27% of women nationally.[11] Age-adjustment of the American Indian results to the county survey age distribution reduces the smoking rates only slightly, to 40% for men and 50% for women, still higher than the county and national figures.

Smoking prevalence was greatest among men and women ages 25 to 49 years in both the American Indian and countywide surveys (table 2). The prevalence of cigarette

Table 1. Percentage distribution of selected demographic and socioeconomic characteristics of respondents, 1989 Washington American Indian Behavioral Risk Factor Survey and 1987 County Behavioral Risk Factor Survey

	Men		Women	
	America Indian	County survey	America Indian	County survey
Characteristics	N=160	N=230	N=193	N=369
Age Group				
15–24	23.8	11.7[a]	26.4	7.7[a]
25–34	31.3	21.3	26.9	20.8
35–49	26.3	25.9	29.5	28.9
50 and older	18.7	41.0	17.1	42.6
Education[b]				
Less than 12 years	35.0	21.0	39.1	21.8
12 Years	42.0	41.9	31.6	43.4
More than 12 years	23.1	37.2	29.3	34.8
Household income per year				
Less than $15,000	42.6	—[c]	46.7	—[c]
At least $15,000	49.4	—[c]	35.8	—[c]
Don't know, Refused	8.1	—[c]	17.6	—[c]
Receiving financial assistance				
Yes	24.4	—[c]	36.8	—[c]
No	73.8	—[c]	63.2	—[c]
Don't know	1.9	—[c]	0.0	—[c]

[a]Ages 18–24.
[b]Excludes persons younger than 19 in American Indian survey.
[c]Information not obtained in county survey.

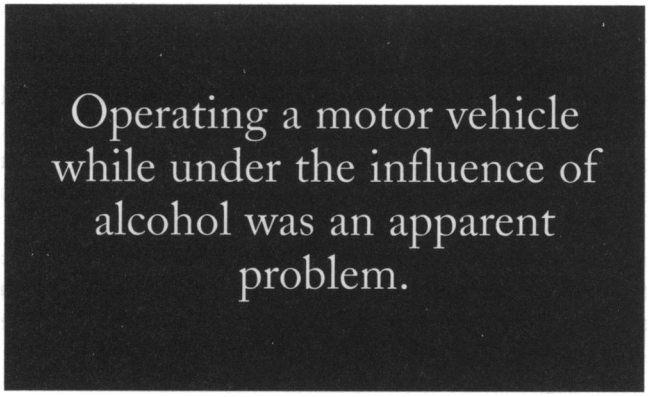
Table 2. Percentage of respondents who currently smoke cigarettes, 1989 Washington American Indian Behavioral Risk Factor Survey and 1987 County Behavioral Risk Factor Survey

	Men		Women	
	American Indians	County survey	American Indians	County survey
Age and Education	N=160	N=230	N=193	N=369
Total Percent	45.0	33.3	54.2	29.7
Age group				
15–24	34.2	—[a]	51.0	—[a]
25–34	46.0	44.0	63.5	43.8
35–49	57.1	28.6	58.9	29.1
50 and older	26.7	28.8	36.4	21.7
Education				
Less than 12 years	43.9	46.8	50.6	28.7
12 years	50.8	40.6	55.2	35.3
More than 12 years	24.2	16.6	60.8	23.0

[a]Fewer than 25 respondents.

smoking among women exceeded the prevalence among men in all age and education groups in the American Indian survey.

Although smoking prevalence was higher among respondents in the American Indian Survey than among those in the county survey, respondents in the American Indian Survey who smoked, tended to smoke less heavily; more than half of smokers reported smoking fewer than 10 cigarettes a day (table 3). Only 10% of male smokers and 9% of female smokers in the American Indian Survey reported smoking more than 20 cigarettes (one pack) per day, whereas 31% of male smokers and 26% of female smokers in the county survey reported smoking more than this amount. Men and women respondents ages 35 and older were somewhat heavier smokers than men and women respondents ages 25–34 (data not shown).



Among current smokers, 47% of American Indian men and 59% of American Indian women reported that they had quit smoking for at least one week during the preceding 12 months. This indicates that although smoking prevalence was high, there was a widespread desire among smokers to quit.

Even though more women than men smoked cigarettes, the overall prevalence of tobacco use was similar among men and women in the American Indian survey because 10% of men used smokeless tobacco, compared to less than 1% of women (table 4). Smokeless tobacco use was particularly high among men younger than age 25, among whom one-fourth were current users. Living on a reservation and having no postsecondary education were associated with smokeless tobacco use.

Alcohol consumption. Respondents in both the American

Table 3. Percentage distribution of average number of cigarettes smoked per day by current smokers, 1989 Washington American Indian Behavioral Risk Factor Survey and 1987 County Behavioral Risk Factor Survey

	Men		Women	
	American Indians	County survey	American Indians	County survey
Cigarettes per day	N=68	N=73	N=105	N=109
Fewer than 10	54.4	21.9	55.2	24.0
11–20	35.3	47.5	36.2	50.2
More than 20	10.3	30.7	8.6	25.8

Table 4. Percentage of men who currently use smokeless tobacco, 1989 Washington American Indian Behavioral Risk Factor Survey and 1987 County Behavioral Risk Factor Survey

Characteristics	American Indians N=160	County survey N=230
Total	10.1	7.8
Age group		
15–24	26.3	—[a]
25–34	8.0	19.7
35–49	2.4	3.3
50 and older	3.3	3.2
Education		
Less than 12 years	10.6	8.8
12 Years	13.3	11.6
More than 12 years	3.0	0.7
Residence		
On reservation	18.2	NA
Off reservation	4.3	NA

[a]Fewer than 25 respondents
NA=not applicable

Indian survey and the county survey were asked a series of questions on alcohol consumption. Because of the stigma associated with heavy alcohol use, there is the possibility of underreporting. The results presented here should be viewed as minimum estimates of alcohol consumption. There is no evidence that the responses in either survey were more reliable than in the other.

Respondents in the American Indian Survey were less likely to report that they currently drank alcohol than respondents in the county survey (table 5): 51% of American Indian men reported having at least one drink in the past month, compared with 65% of men in the county survey; 45% of women in the American Indian Survey as opposed to 50% of women in the county survey reported at least one drink in the last month. The proportion of current drinkers was highest at ages 25–34 years for both men and women in both surveys. The American Indian survey also indicated that drinking tends to start at a young age: 26% of men and 20% of women had started drinking before their fifteenth birthday. The median age for starting drinking was about 17 years for both men and women (data not available for county population).

Respondents who reported having five or more drinks on at least one occasion during the past month were defined as exhibiting acute alcohol use. In the American Indian Survey 40% of men and 33% of women reported acute alcohol use (age adjusted, 36% and 28%, respectively) (table 6). The proportions of men (23%) and women (12%) in the county survey who fell into this category were far lower. In addition, 34% of the American Indian Survey men and 19% of the women reported that when they drank, they usually drank enough to become drunk or to pass out (county comparison data not available). These results support the speculation previously voiced by tribal and IHS officials that there was a considerable amount of so-called "binge drinking" among Indian residents of the IHS Service Unit surveyed.

In addition to acute alcohol use, operating a motor vehicle while under the influence of alcohol was an apparent problem. Nine percent of men and 6% of women reported that they had driven after having had "perhaps too much to drink" at least once in the previous month. Furthermore, 13% of men and 19% of women said they had recently ridden with a driver who "perhaps had had too much to drink". Thus, the safety of far more people than those who report

Table 5. Percentage of respondents who drank any alcoholic beverages during the past month, 1989 Washington American Indian Behavioral Risk Factor Survey and 1987 County Behavioral Risk Factor Survey

	Men		Women	
Age and Education	American Indians N=160	County survey N=230	American Indians N=193	County survey N=369
Total	50.6	64.7	45.1	49.8
Age group				
15–24	50.0	—[a]	51.0	—[a]
25–34	62.0	80.7	61.5	62.0
35–49	45.2	65.8	38.6	43.3
50 and older	40.0	55.7	21.2	45.6
Education				
Less than 12 years	48.5	53.5	44.4	37.2
12 years	55.7	65.7	53.5	53.9
More than 12 years	45.5	73.1	36.5	49.2

[a]Fewer than 25 respondents

Table 6. Percentage of respondents who had five or more drinks on at least one occasion during the past month, 1989 Washington American Indian Behavioral Risk Factor Survey and 1987 County Behavioral Risk Factor Survey

	Men		Women	
	American Indians	County survey	American Indians	County survey
Age and Education	N=160	N=230	N=193	N=369
Total	40.3	23.0	32.6	11.5
Age Group				
15–24	37.1	—[a]	34.8	—[a]
25–34	52.0	36.6	42.0	24.1
35–49	37.5	21.2	30.4	6.5
50 and older	27.6	9.7	18.8	4.4
Education				
Less than 12 years	43.6	12.3	33.3	12.4
12 years	43.3	33.5	40.4	15.2
More than 12 years	30.3	16.6	23.5	7.0

[a] Fewer than 25 respondents

driving after drinking is jeopardized by the combination of alcohol use and motor vehicles.

Weight. Respondents in both surveys were asked to report their weight and height. The Body Mass Index (BMI=weight in kilograms/squared height in meters) was used to determine whether or not a person was substantially overweight.[12] Women with a BMI of 27.3 or greater and men with a BMI of 27.8 or greater were classified as substantially overweight. Forty-five percent of men and 43% of women in the American Indian Survey fell into this category (table 7). The prevalence of obesity among the American Indian Survey respondents exceeded that among county respondents in every age and demographic category, in most cases by a considerable amount. The proportion of overweight respondents increased sharply with age, especially among women, and exceeded 50% among both men and women aged 35 years or older in the American Indian Survey. Age adjustment of the American Indian results increases the proportion overweight further, to 48% of men and 53% of women.

Eighty-five percent of the overweight respondents did consider themselves to be overweight. However, only about one-third of overweight people reported that they had been advised by a health professional to lose weight. Roughly half of the overweight people—49% of men and 58% of

Table 7. Percentage of respondents who are substantially overweight,[a] 1989 Washington American Indian Behavioral Risk Factor Survey and 1987 County Behavioral Risk Factor Survey

	Men		Women	
	American Indians	County survey	American Indians	County survey
Age and Education	N=160	N=230	N=193	N=369
Total	45.0	21.9	43.4	29.1
Age group				
15–24	23.7	—[b]	22.9	—[b]
25–34	46.0	23.8	36.7	24.4
35–49	61.9	24.8	53.9	27.2
50 and older	46.7	21.6	66.7	32.1
Education				
Less than 12 years	39.4	28.2	42.7	40.9
12 years	44.3	20.1	29.1	28.3
More than 12 years	57.6	21.2	60.0	21.3

[a] A respondent was classified as "substantially overweight" if his or her body mass index (BMI=Weight (KG)/Height (M)^2) was at least 27.8 for men and 27.3 for women.
[b] Fewer than 25 respondents.

Table 8. Percent of respondents reporting selected behavioral risk factors according to presence or absence of a telephone in the household, 1989 Washington American Indian Behavioral Risk Factor Survey

	Men		Women	
	Telephone	No telephone	Telephone	No telephone
Risk factor	N=97	N=63	N=156	N=39
Currently smoke	39.2	46.8	52.0	63.2
Use smokeless tobacco	10.4	9.7	—[a]	—[a]
Five or more drinks at least once in past month	34.4	50.8	27.7	51.4
Overweight	53.6	32.3	46.5	31.6
Do not regularly use seat belts	42.7	55.7	36.8	50.0

[a]Data not available for female respondents.

women—said that they were trying to lose weight at the time they were interviewed (data not shown).

Despite the fact that most overweight people recognized that they weighed too much and that half said they were trying to lose weight, few people reported using means proven to be effective to try to accomplish their goal. Eighty-one percent of men and 77% of women maintained that they had neither reduced their food/caloric intake nor increased their physical activity. Members of the youngest group were the least likely to have reduced their food intake or increased activity to lose weight. Those at least 50 years old were much more likely to report eating less than to report exercising to reduce their weight.

The use of face-to-face interviewing was necessary to avoid potential biases associated with telephone coverage in the American Indian survey: 39% of the men and 21% of the women respondents reported living in households without telephones.

Discussion

The results illustrate the extent of select behaviors that are major contributors to chronic health problems in this American Indian population. This population is clearly not unique in these respects. Similar surveys conducted among other American Indian populations across the United States have often shown similar rates of tobacco use, alcohol consumption, and obesity.[5–8] Despite these similarities, American Indians are not a homogeneous population in the United States. There are substantial social, economic, cultural, and other differences, particularly among regions of the United States.[4] The findings from this survey cannot be generalized to American Indian populations in other parts of the country. However, they do yield a description of behaviors among certain rural Indians of the Pacific Northwest and can help provide information for health promotion and disease prevention activities in similar populations.

When comparing the survey data, it must be kept in mind that the American Indian Survey used a face-to-face strategy, while the county survey was conducted by telephone. Table 8 shows that the use of face-to-face interviewing was necessary to avoid potential biases associated with telephone coverage in the American Indian survey: 39% of the men and 21% of the women respondents reported living in households without telephones. The data show substantial differences in the prevalence of risk factors between respondents with telephones and the sizable minority without phones. Among both men and women, those without phones were more likely to smoke and drink heavily (at least occasionally). Those with phones were more likely to be overweight. These findings confirm the necessity of using face-to-face interviewing in order to obtain a representative sample of health risk behaviors in this population.

The disturbingly high cigarette-smoking prevalence rate is somewhat mitigated by the fact that individual daily consumption is quite low and that a large proportion of respondents would like to quit smoking. These findings suggest that well-designed smoking cessation activities would have good prospects for achieving successful results.[13,14] There is still relatively little information available on the determinants of smoking intensity, but no doubt social forces play a

role. There is some evidence, though, that it is easier for light smokers than heavy smokers to quit smoking.[15]

The overall picture of alcohol use among American Indians in the IHS Service Unit is mixed. The proportion of people who drink is lower than for the general population. According to self-reports, the problem of chronic drinking is not a severe one. However, many respondents tend to consume large amounts of alcohol when they drink. This "binge drinking" should be an area of concern to health care providers and health planners. An additional area of concern is driving under the influence of alcohol, and just as importantly, the willingness of people to ride with drivers who have been drinking. The fact that drinking tends to start at an early age must also be a major consideration in the development of interventions to address harmful patterns of alcohol consumption.

Obesity, a major risk factor for cardiovascular disease, diabetes, hypertension, and other chronic conditions, is clearly a significant problem in the survey population. This points out the need to develop community programs to stress the importance of physical activity, as well as to encourage people to improve their dietary behaviors. It is encouraging to note that most overweight people recognized their need to lose weight. However, relatively few people were taking effective measures to do so.

A major goal of the 1989 American Indian Survey was to support tribal efforts to set objectives and design interventions for healthier communities. This survey yielded estimates of the prevalence of selected behavioral risk factors for the four tribes and other American Indians living in the IHS Service Unit catchment area. Populations at high risk for various conditions have been identified for health promotion and disease prevention programs, and baseline prevalence estimates have been made that can be used to identify and follow trends and evaluate interventions. These data also provide tribes and providers of health care with a means for monitoring trends in health behaviors and tracking progress toward the year 2000 health objectives.[16–18]

The four tribes and IHS Service Unit staff are in a unique position of having recent estimates of the prevalence of key risk factors available for the adult population. Two of the tribes have been seeking funding to establish a nutrition and exercise program to address the high prevalence of obesity. We encourage the tribes and IHS staff to use these data to set and to measure priority health objectives for their communities. These steps are crucial in efforts to obtain the funds needed to support intervention programs. The survey results should be used as part of a coordinated strategy, in combination with knowledge of what types of interventions have proven successful in other settings, to develop and implement effective health promotion and disease prevention interventions.

The high prevalence of many of the risk factors examined implies that health promotion and disease prevention activities have the potential to make a significant contribution to risk reduction. Focusing these activities on the behaviors found to represent the greatest problem areas and on certain subgroups of the population could maximize the potential improvement in the health of Indian people. However, as with any Behavioral Risk Factor Survey data, there is a potential for "blaming the victims". Surveys such as the one used for this analysis can only focus on individual-level risk factors and behaviors, while many of the key determinants of specific diseases and conditions are rooted in poverty and other social and environmental problems that must also be addressed in order to reduce morbidity and mortality and improve the quality of life.

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