State of Alaska Epidemiology **Bulletin** Recommendations and Reports

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Volume No. 5 Number 4
December 20, 2001

Diabetes in Alaska, 1991-2000

Results from the Behavioral Risk Factor Surveillance System (BRFSS)

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Summary

In Alaska, approximately 14,800 people report that they have diagnosed diabetes, comprising 3.4% of the adult population, age 18 and older (1). In 2000, the age-adjusted diabetes prevalence in Alaska was much lower than the age-adjusted median in the U.S., (38/1000 vs. 61/1000), however rates in Alaska will likely increase in the future (2). In Alaska, the prevalence of diabetes is higher in urban areas, in older populations, and in specific racial/ethnic groups such as African Americans, Hispanics and Alaska Natives. The prevalence of diabetes in Alaska Native populations is increasing rapidly. Over the past 20 years, the prevalence of diabetes in the Alaska Native population has increased by 80% (3).

Methodology

The Alaska Behavioral Risk Factor Surveillance System (BRFSS) was the primary data source used to calculate the rates of diabetes. The BRFSS is an ongoing telephone survey of non-institutionalized Alaskans, age 18 and older, conducted by the Alaska Division of Public Health with funding from the Centers for Disease Control and Prevention. Approximately 2,000 adults are interviewed each year; of these, about 50-75 people report that a healthcare provider has told them that they have diabetes (1). The BRFSS data used was weighted to reflect the sex and age composition of the regions in Alaska.

In this report, 10 years of BRFSS data were combined to provide a more reliable estimate of diabetes prevalence. The sample sizes were relatively small, though, and the trends over time showed significant year to year variance. A limitation of the BRFSS is that information is collected in a telephone survey, and in Alaska only 92% of the population had access to a telephone in the study period (1). This percentage varied depending on the region of the state. The BRFSS also relies on self-reported information regarding diagnosis of diabetes. Therefore, it only captured those who had been diagnosed with diabetes by a healthcare provider, and who answered accordingly when asked about it on the phone (1). It is estimated that a third of the people with diabetes are not aware they have the disease (4). Other limitations of the survey are that only adults (≥ 18 years old) living in households are represented, and the small numbers collected create inherent difficulties in extrapolating to the statewide population (1).

Additional data on the prevalence of diabetes in the American Indian/Alaska Native population were obtained through the Alaska Area Diabetes Program (AADP), formerly an Indian Health Service program now operated through the Alaska Native Tribal Health Consortium. The AADP maintains a computerized, statewide registry of all persons with diabetes who receive care from an Alaska Native healthcare facility. To be included in the registry, the diabetes cases must be verified to meet defined lab values for diabetes. Unlike the BRFSS, the AADP registry does not rely on self-reported data or a report from a healthcare provider, and the AADP registry includes all age groups with diabetes. The majority of Alaska Natives with diagnosed diabetes are included in the registry (3).

Trends in Diabetes

The yearly prevalence estimates for diabetes among adults in Alaska are shown in Table 1. On average, between 30 to 40 adults per 1000 people questioned self-reported diagnosed diabetes. There was no significant change in the rate of diabetes in Alaska from 1991 to 2000.

Table 1: Adult Diabetes by Year – Alaska, 1991-2000

Year	Adults with self-reported diabetes per 1000 population
1991	43
1992	28
1993	39
1994	31
1995	27
1996	35
1997	33
1998	30
1999	35
2000	38

Alaska BRFSS, 1991-2000

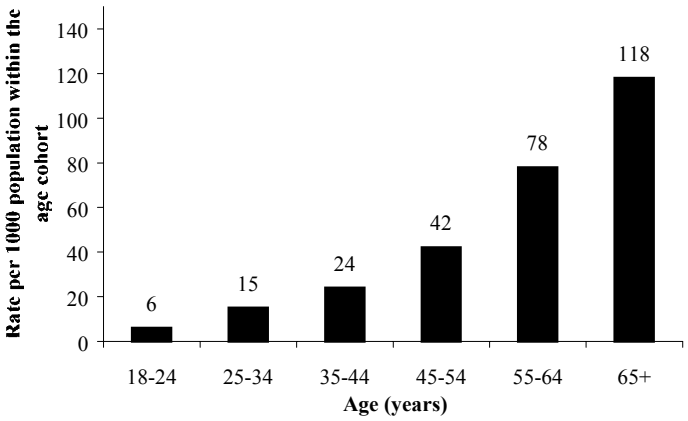
The diabetes prevalence rates of the adult male population (37/1000) and the adult female population (34/1000) were not significantly different.

The prevalence of diabetes in Alaska Native populations has increased over the past decade. (Table 2) The largest percent increases in diabetes prevalence were among Eskimos (110%) and Aleuts (81%). This change in prevalence occurred simultaneously to the shift from a traditional lifestyle to a more "Western" lifestyle, including changes in diet and physical activity levels (5). Westernization has been associated with an increased percentage of overweight persons and an increased percentage of sedentary lifestyles, which are risk factors for type 2 diabetes (4). The majority of Alaska Natives with diabetes has type 2 diabetes (6).

Diabetes Prevalence by Age

Among all Alaskans aged 65 and older, approximately 12% self-reported diagnosed diabetes. (Figure 1) As expected, the prevalence of diabetes increased with age. This is especially important because of the dramatic increase in the segment of the population over age 65 in Alaska. In 1999, the percentage of the population over 65 was 5.4% of the total population (7). Although this is a relatively small portion of the total Alaska population, the population aged 65 and older has increased 191% since 1980 (7). By 2018, it is estimated that Alaska seniors will comprise almost 12% of the total population (8). With this increase, the prevalence of diabetes is likely to increase overall.

Figure 1: Adults with Self-Reported Diabetes by Age: Alaska, 1991-2000



Alaska BRFSS, 1991-2000

Table 2: Diabetes Prevalence among Alaska Natives* - Alaska, 1985 and 1998

Alaska Native Group	Diabetes Prevalence 1985: per 1000 population**	Diabetes Prevalence 1998: per 1000 population*	Percent Increase in Diabetes Prevalence 1985-1998
All Alaska Natives	15.7	28.3	80.0%
Eskimos	8.8	18.5	110.0%
Indian	22.0	34.6	57.0%
Aleut	27.2	49.1	81.0%

Data from the Indian Health Service, Alaska Area Profile 1998, not from BRFSS
**All age groups included. Cases all medically diagnosed.*
***Age-adjusted to US 1980 population*

Diabetes by Race/Ethnicity

As shown in Table 3, the highest prevalence rates of diabetes were found among African-Americans (48/1000), Hispanics (43/1000) and Alaska Natives (38/1000). This is similar to national data that show diabetes disproportionately affects certain racial/ethnic groups, including African Americans, Hispanics, Asian and Pacific Islanders, and American Indians and Alaska Natives (9). From 1980 to 1999 the populations of Asian and Pacific Islanders, Hispanics, and African Americans in Alaska each increased by more than 70% (7). The growth of these populations at increased risk for diabetes, will likely lead to an increase in the overall prevalence of diabetes in the future.

Table 3: Diabetes by Race/Ethnicity - Alaska, 1991-2000

Race/Ethnicity	Adults with self-reported diabetes per 1000 population
White	33
African-American	48
Alaska Native	38
Asian/Pacific Islander	22
Hispanic*	43

Alaska BRFSS 1991-2000
**Hispanic can be of any race*

In Table 3, the prevalence of diabetes for Alaska Natives is different than the rate in Table 2**:** *Diabetes Prevalence among Alaska Natives: Alaska, 1985 and 1998*. The difference between the two rates is due to the different sources of the data and the use of a different denominator in each case. The diabetes prevalence rate among Alaska Natives includes cases of diabetes among all age groups, including individuals younger than 18 years old. The diabetes prevalence rate calculated using the AKBRFSS includes only those individuals 18 years and older. Differences in the rate may also be due to other confines of the survey discussed previously in the methodology.

Diabetes by Region

The highest prevalence of diabetes in Alaska was found in the Southeast and urban regions and the lowest prevalence was in rural regions. (Table 4) When regional data was analyzed by Alaska Native versus non-Native to see if regional differences could be attributed to race, it was found that the prevalence of diabetes in both populations was the same in rural areas, and that it was lower than all other regions. The low percentage of people with diabetes in rural areas may be attributed to many causes, including, a protective effect in rural areas, migration of people diagnosed with diabetes to urban areas, limited access to healthcare in rural regions, or a difference between the populations of rural areas and other regions of the state (e.g. age). The analysis indicated there was a significant difference in the Native population, with the diabetes prevalence rate in rural areas being much lower than in other regions of the state. Further analysis may indicate other differences between urban and rural populations. The difference by region may also be due entirely to the confines of the survey itself. The prevalence rates were based on telephone surveys, and as stated previously, the percentage of households with telephones varies by region (1).

Table 4: Diabetes by Region – Alaska, 1991-2000

Region of Alaska	Adults with self-reported diabetes per 1000 population
Urban	35
Gulf Coast	28
Southeast	44
Rural	25

Alaska BRFSS 1991-2000

Income, Education and Employment

To analyze income, education and employment status, categories were created within each topic, and then these were used to compare adults with diabetes to adults with no diabetes in the state. As demonstrated in Table 5, adults with diabetes were more likely to have a lower total household income than adults with no diabetes. More than a third of the adult population with diabetes (35.9%) was in the lowest income bracket (<$25,000 annually), and in comparison, only 24.4% of adults with no diabetes were in that same group.

Adults with diabetes were also more likely than adults with no diabetes to have a lower level of education. Among adults with diabetes, 17.4% did not graduate from high school, compared to 11.2% of adults with no diabetes.

The most striking difference, however, was between the adult population with diabetes and those with no diabetes, in regard to employment status. Over a third (36.9%) of adults with diabetes were either retired or unable to work. In comparison, 9.2% of adults with no diabetes were retired or unable to work. The difference in the portion of people retired or unable to work in the two groups is quite large, and is likely age-related. (Table 5)

Table 5: Income, Education and Employment Among People With Self-Reported Diabetes Compared to the Population With No Diabetes - Alaska, 1991-2000

	Population with Diagnosed Diabetes	Population with No Diagnosed Diabetes
Household Income		
< $25,000	35.9%	24.4%
$25,000-49,999	31.9%	35.6%
$50,000 and higher	32.1%	39.9%
Total	100.0%	100.0%
Highest Level of Education		
Less than high school	17.4%	11.2%
High School Graduate	44.3%	42.9%
Some college or technical school	27.6%	33.8%
College Graduate	10.7%	12.1%
Total	100.0%	100.0%
Employment Status		
Employed or Self-employed	51.9%	72.8%
Out of work	3.9%	7.4%
Homemaker	6.1%	6.8%
Student	1.9%	3.8%
Retired or unable to work	36.3%	9.2%
Total	100.0%	100.0%

Alaska BRFSS, 1991-2000

Recommendations

The prevalence of diagnosed diabetes in Alaska in the 1990s averaged 3.4% of the total population. However the changing demographics in Alaska, i.e., the increasing number of people over age 65, the increasing population of people in at-risk racial groups, such as African American and Hispanic, and the rising rates of diabetes in Alaska Native populations, will certainly affect the rate of diabetes overall (4,7).

Diabetes programs and education in the future should continue to target all of these at-risk groups. Given the increasing diversity of Alaska's population, efforts to ensure health care providers have culturally appropriate diabetes information, and have the ability to communicate the information in the language of the population served, is essential to the prevention and control of diabetes and its complications.

Approximately 12% of the Alaska population over age 65 have diabetes. Medicare provides insurance for acute illness and hospitalization to persons 65 and older however, for persons with chronic diseases such as diabetes, this type of coverage is not sufficient for recipients to adhere to recommended preventive practices. These recommendations include access to outpatient diabetes self-management training.

More than a third of the adult, Alaskan population with diabetes live in a household with a total income of less than $25,000 annually. Studies show that persons with diabetes who are economically disadvantaged suffer disproportionately from the complications of diabetes (4). Persons with low incomes are least likely to have adequate health insurance coverage. To reduce health disparities, strategies to ensure health insurance coverage should focus on the provision of access to optimal preventive care for all persons with diabetes.

Improved training about the risks of diabetes, its complications, and the importance of preventive care is essential to improve outcomes of diabetes. Mechanisms to facilitate improved adherence to recommended standards of care, including a better understanding of the role of the family and the community, should be identified and implemented to achieve positive health outcomes for persons with diabetes.

Another factor to consider in future interventions is the increasing rate of overweight and obesity nationally. Although obesity was not directly addressed in this paper, in Alaska, the percentage of the population considered overweight increased from 25% to 38% in the 1990's (1). Being overweight and physically inactive is estimated to account for more than 300,000 premature deaths nationwide, every year (10). Overweight, sedentary lifestyle and a high-fat diet are all associated with type 2 diabetes (11). Obesity and a sedentary lifestyle aggravate tissue insensitivity to insulin, which causes impaired glucose tolerance (12). A recent study has shown that changes in diet and physical activity levels, that affect obesity and overweight, can delay the development of type 2 diabetes in people with impaired glucose tolerance (13). Future diabetes interventions should consider all of these changing demographic rates and characteristics.

The final recommendation is that a better tool be developed for estimating diabetes prevalence in the state that does not rely on patient self-report or telephone surveys. The data collected by the Alaska Area Diabetes Program registry about Alaska Natives, which includes all lab-verified cases within the population using Alaska Native facilities, is a more complete estimate of prevalence in that population. The registry includes all cases, of all ages, and therefore provides a more accurate estimate of diabetes prevalence. Ideally a similar database for the population not using the Alaska Native services, or a database with a large sample of that population, would be needed to further study the prevalence of diabetes in Alaska.

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