Diabetes in Idaho

A Summary Report: 2003

Idaho Department of Health and Welfare
Division of Health
Bureau of Community and Environmental Health
Idaho Diabetes Prevention and Control Program

IDAHO DEPARTMENT OF
HEALTH & WELFARE

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Executive Summary

Diabetes in Idaho continues to steadily increase. Since 1997, the prevalence of diabetes in Idaho has gone from 4.0% to 6.3% in 2003. In addition, diabetes is the sixth leading cause of disease among Idaho adults. Diabetes is also a costly disease, with a total annual cost in Idaho of $873 million in 2003.

The large expenses due to diabetes complications can be prevented or significantly reduced by improving self-monitoring of blood glucose, increasing the proportion of people with diabetes who have an annual hemoglobin A1c test, influenza and pneumonia vaccinations, eye exams, foot exams, and dental care.

The increasing prevalence of diabetes can also be prevented or reduced. Risk factors for developing diabetes include a sedentary lifestyle, overweight and obesity, poor eating habits, smoking, blood pressure, and cholesterol. Addressing these modifiable risk factors can significantly contribute to reducing the prevalence of diabetes in Idaho. Diabetes education is a very effective tool for preventing both the disease and its complications.


1 West Wing
West Elevators
Respiratory Care
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Introduction

Purpose

The purpose of this report is to provide private and public health care professionals with a general summary of the prevalence, effects, costs, care levels, and risk factors associated with diabetes in the State of Idaho. This document supports future efforts to reduce the burden of diabetes in the state, and provides a means of increasing awareness and improving levels of care, an aid to strategic planning efforts, and a benchmark for future program evaluation activities.

Overview of Diabetes

Diabetes mellitus is a group of chronic diseases characterized by hyperglycemia (elevated blood glucose) resulting from defects in insulin secretion, insulin action, or both. People with diabetes are at greater risk for developing other health complications including cardiovascular disease, kidney disease, blindness, and lower limb amputations.

Most diabetes cases fall into two categories:

- Type 1, formerly called insulin-dependent diabetes or juvenile-onset diabetes, usually begins during childhood or adolescence and requires the use of insulin. About 5% to 10% of diabetes cases are type 1.

- Type 2, formerly called non-insulin-dependent diabetes or adult-onset diabetes, usually develops in adults who are overweight, physically inactive, or have a family history of diabetes, and is characterized by insulin resistance and relative insulin deficiency. Prevalence of type 2 diabetes is greater in certain ethnic and racial groups such as Hispanics, Native Americans, African Americans, and Asian-Pacific Islanders.

Idaho Diabetes Prevention and Control Program

The Idaho Diabetes Prevention and Control Program (DPCP) has operated with core funding from The Centers for Disease Control and Prevention (CDC) since 1994. Because the burden of diabetes and the risk of developing the disease are growing statewide, addressing these issues is a public health responsibility. Over the past 10 years, the DPCP has focused first on defining the burden of diabetes by assessing prevalence and incidence; second, by moving forward with coordination and implementation of programs and projects which tackle access to care issues, providing professional and public education, promoting health communication messages, and creating synergistic partnerships among provider systems. Healthy People 2010 diabetes objectives serve as the state directive toward reducing the burden of diabetes.

The DPCP contributes to the infrastructure of the seven district health departments and other Idaho Department of Health and Welfare programs. The Diabetes Alliance of Idaho, a statewide coalition of diabetes advisory groups, supports and works with the DPCP to address issues and promote public and professional education. Over the years, the DPCP has placed increasing emphasis on evaluation and surveillance and using the findings to direct the program.

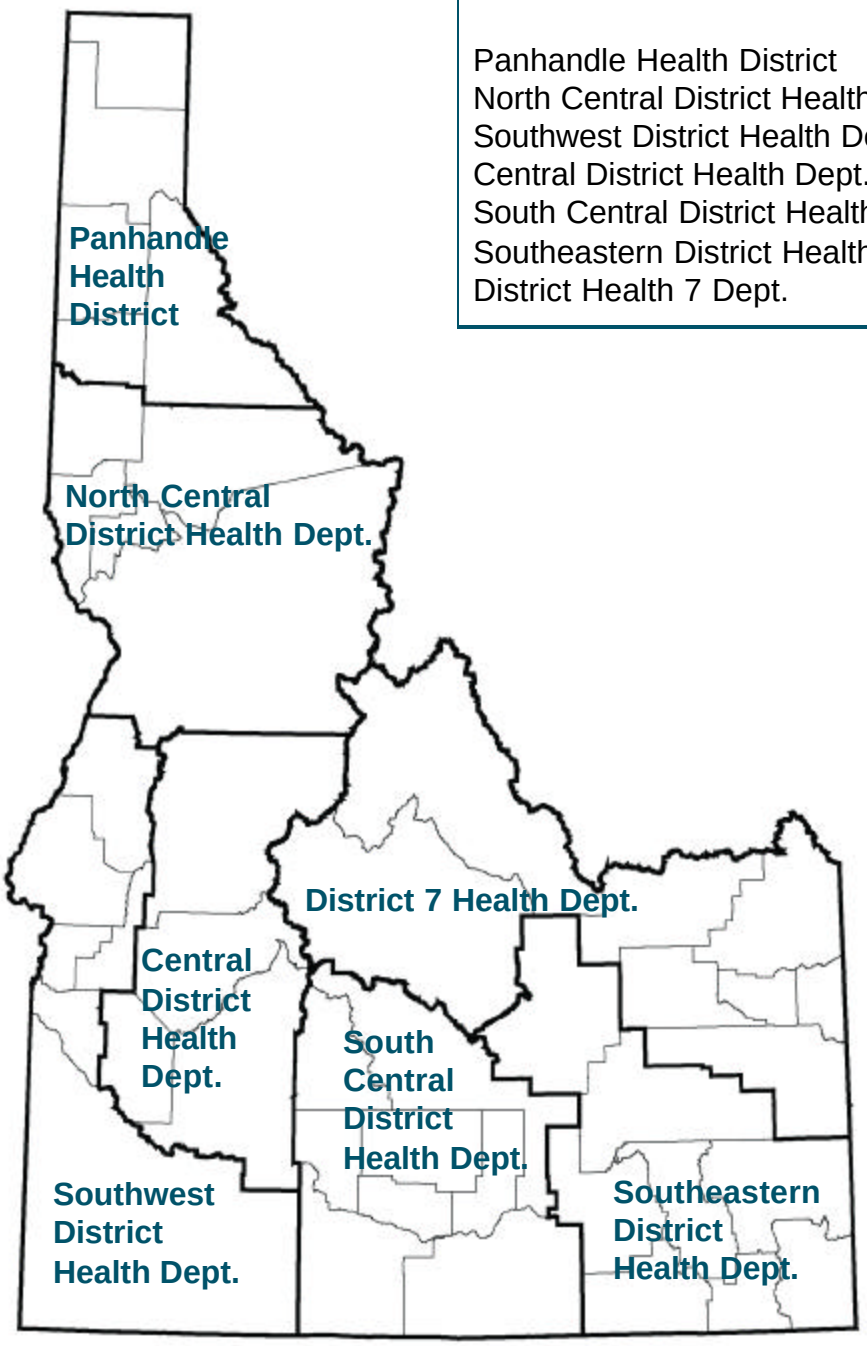
Geography and Population

- Idaho ranks 11th in land area among the states with 82,751 square miles.[1]
- Idaho is comprised of 44 counties. Eight of these counties are classified as urban by the U.S. Census Bureau, meaning that each contains a population center with at least 20,000 people. Twenty counties are deemed to be rural, i.e. contain six or more people per square mile, while 16 counties are classified as frontier with fewer than six people per square mile.[2]
- Seven local public health districts serve Idaho.
- The population of Idaho totals 1.37 million people composed of the following racial groups:[2]

White	96.4%
Native American/Alaskan Native	1.6%
Asian, Pacific Islander	1.3%
African American	0.7%
Hispanics (of any race)	8.7%

Source: Bridged Race Population Estimates, National Center for Health Statistics. Estimates of the July 1, 2001-July 1, 2003, United States resident population from the Vintage 2003 post-censal series, prepared under a collaborative arrangement with the U.S. Census Bureau Internet release date August 18, 2004.

Idaho Population Density 2003
Public Health Distric Boundaries



Statewide Diabetes Prevalence by Health District 2003

Panhandle Health District	7.0%
North Central District Health Dept.	5.8%
Southwest District Health Dept.	7.7%
Central District Health Dept.	4.9%
South Central District Health	5.8%
Southeastern District Health Dept.	8.2%
District Health 7 Dept.	5.8%

Prevalence

- It is estimated 88,000 adult residents of Idaho have diabetes, but only 63,000 have actually been diagnosed.[3]
- The disease is especially prevalent among those 65 years of age or older (14.0%).[6]
- Overall, the prevalence of diabetes among Idaho adults has increased 50% since 1994, from 4.2% to 6.3% in 2003.[6]

Mortality

- Diabetes was the sixth leading cause of death among Idaho residents in 2003.[2]
- Average annual death rates due to diabetes were substantially higher among those residents in older age groups, among Hispanics, and among those races other than white.[2]

Economic Costs

- The total annual cost of diabetes in Idaho, including direct medical expenses and indirect costs, is estimated at $873 million.[5]

Health Care

- Areas for achieving improved levels of health care that meet the clinical practice recommendations of the American Diabetes Association (ADA) include:

    1. Increasing the number of visits to health care professionals;
    2. Optimizing the frequency that blood glucose levels are self-monitored;
    3. Conducting an HbA1c test every three months;
    4. Receiving an annual influenza vaccination; and
    5. Performing foot and eye examinations on a yearly basis.

Risk Factors and Prevention

- Risk factors for developing diabetes include:

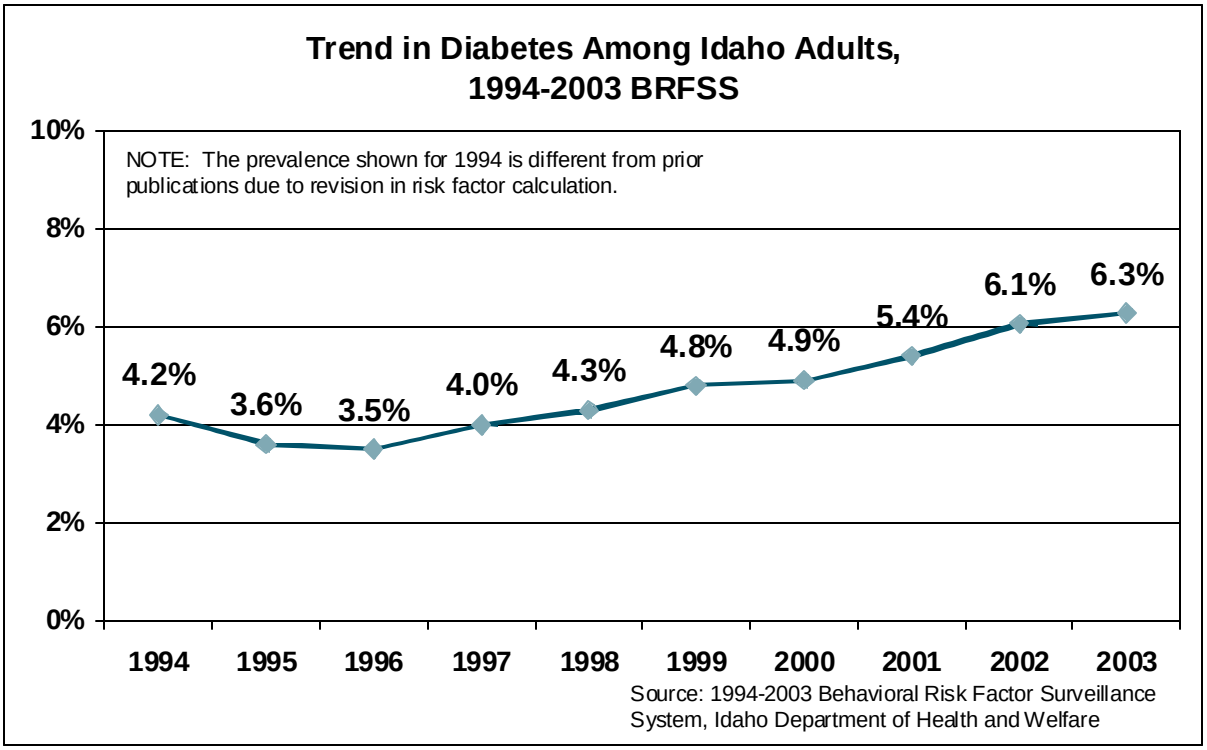
    1. More than 45 years of age;
    2. Overweight or obese;
    3. Physically inactive;
    4. History of gestational diabetes, giving birth to a baby weighing more than nine pounds at birth; and
    5. Family history of diabetes.

- Diabetes prevention efforts for Idaho residents should primarily focus on the known, manageable risk factors. Specifically, these are:

    1. Reducing overweight and obesity;
    2. Increasing physical activity and exercise;
    3. Dietary improvements, such as eating more fruits and vegetables;
    4. Reducing hypertension; and
    5. Lowering blood cholesterol levels.

Prevalence

Approximately 63,000 people, or 6.3% of Idaho adults, 18 years of age or older, report ever being told by a doctor they have diabetes (excluding gestational diabetes).[3] It is estimated that 25,000 adults are undiagnosed, leaving the total prevalence at 88,000.[3]




OLIVER PEOPLES

Mortality

Diabetes was the sixth leading cause of death among Idaho residents in 2003.[8] The average annual age-specific death rate due to diabetes was considerably higher among residents age 65 and older, based on the three-year period from 2001 to 2003.[8]

CAUSE OF DEATH: DIABETES Idaho Residents: 2001-2003	Number of Deaths	Average Annual Age-Specific Death Rates per 100,000 Population
All Ages	995	24.3
Age: <15	1	0.1
15-24	1	0.2
25-34	13	2.4
35-44	37	6.5
45-54	90	15.9
55-64	109	28.4
65-74	200	83.3
75-84	322	197.2
85+	222	349.0

To compare causes of death among populations that have different age distributions, it is best to use age-adjusted rates. Age adjusting allows for direct comparisons without bias due to categorical age differences.

CAUSE OF DEATH: DIABETES Idaho Residents: 2001-2003		Number of Deaths	Age-Adjusted Average Annual Death Rates per 100,000 Population
State Total		995	26.7
Sex:	Male	458	28.0
	Female	537	25.5
Race:	White	952	26.0
	Other Than White	43	68.3
Ethnicity:	Non-Hispanic	962	26.5
	Hispanic	32	40.3
	Ethnicity Unknown	1	--

NOTES:

a. The manner of coding the underlying cause of death changed in 1999 from the ninth revision (ICD-9) to the 10th revision of the International Classification of Diseases (ICD-10). The introduction of ICD-10 in all states and the U.S. involved more than simply changing from a numeric classification to an alphanumeric classification. The 10th revision resulted in new titles for causes, shifting terms and titles from one category to another, regroupings of diseases, and modifications of the coding rules. Therefore, 2001-2003 data are not comparable to data prior to 1999 without comparability ratios based on Modified ICD-9 codes.
b. Rates are per 100,000 population.
c. Idaho crude rates are calculated using 2003 population estimates based on 2000 census.
d. Age-adjusted rates are artificial measures developed to eliminate the bias inherent in differing age compositions, thus allowing comparisons between geographic regions. Idaho age-adjusted rates were calculated using the 2000 U.S. population estimate as the standard population. Age-adjusted rates based on the 2000 U.S. population estimate are NOT comparable to age-adjusted rates based on the 1940 U.S. census standard population, which was used prior to 1999.

In 2002, the ADA estimated total annual costs attributable to diabetes in the United States were $132 billion (or approximately $9,924.81 per capita).[4] This amount comprised $91.8 billion in direct medical expenditures and $40.2 billion in indirect costs (disability, work loss and premature mortality).[5] Based on the reported prevalence levels of diabetes in 2003, it is estimated that the 2003 total annual cost in Idaho was approximately $873 million.

Estimated Cost of Diabetes in Idaho (2003)[5]

Direct Medical Expenditures	$ 607 million
Indirect Costs (disability, work loss, premature mortality)	$ 266 million
Total Costs (Direct and Indirect)	**$ 873 million**

Diabetes requires continuing medical care and education to prevent acute complications and to reduce the risk of long-term complications.[9] Most Idaho adults with diabetes reported having health care insurance coverage (88.9%), slightly higher than the 83.4% coverage level for all adult residents, in 2003. Overall, 42.7% said they saw a health professional at least four times in the past year for their diabetes. 13.2% did not see a health professional for diabetes in the past year.[6] Areas for achieving improved medical care to prevent complications include self-monitoring of blood glucose, hemoglobin A1c, influenza vaccinations, eye exams, foot exams, and dental care.

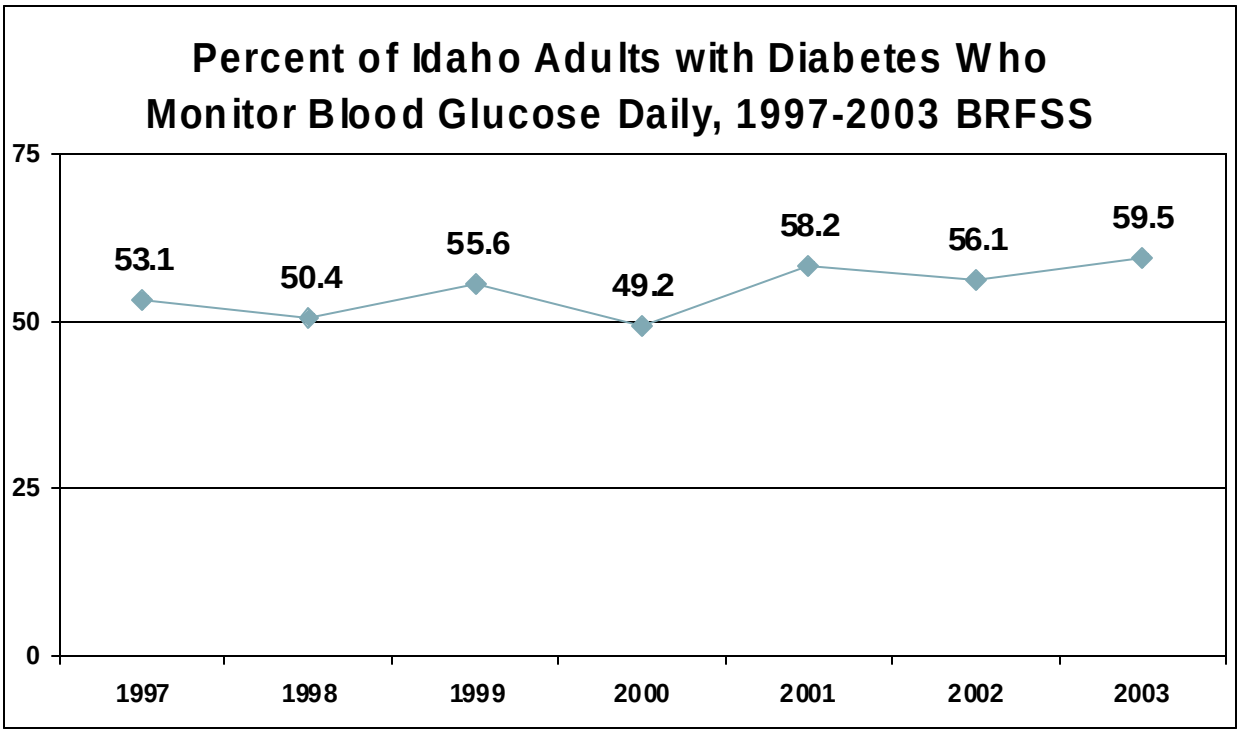
Self-Monitoring of Blood Glucose

Achieving normal glucose levels for most patients requires education, self-management, and intensive treatment programs. Self-monitoring of blood glucose (SMBG), especially in insulin treated patients, is a critical component of most treatment programs.[9]

Healthy People 2010 Guideline[11]

5-17. Increase the proportion of people with diabetes who perform self-blood-glucose-monitoring at least once daily to 60%.

ADA Recommendation: Most patients with type 1 and all those taking insulin should do SMBG three or four times daily. The frequency of SMBG for those with type 2 should be sufficient to facilitate reaching more normal glucose levels.[9]



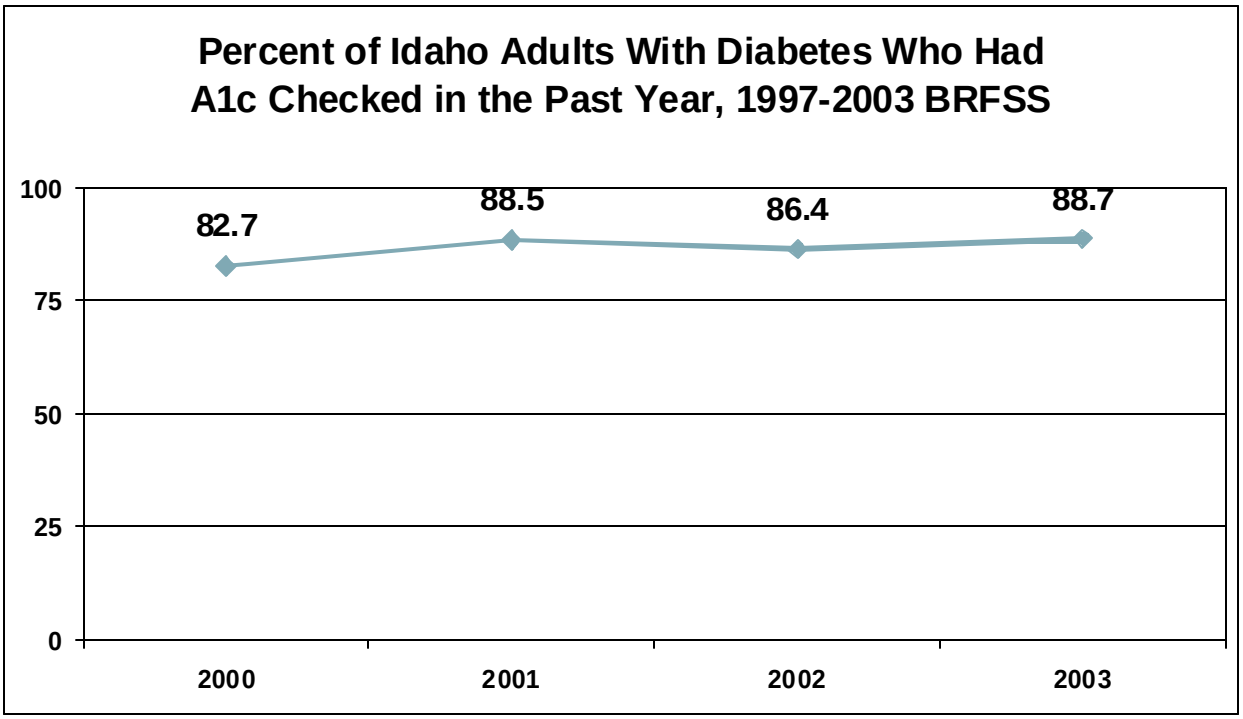
Hemoglobin A1c

Hemoglobin A1c testing can provide a measure of a patient's average glycemic level over the preceding two to three months. High A1c levels (in excess of 7.0%) have been associated with increased risk of microvascular and neuropathic complications of diabetes.[9]

Healthy People 2010 Guideline[11]

5-12. Increase the proportion of people with diabetes who have a glycosylated hemoglobin measurement at least once a year to 50%.

ADA Recommendation: Perform Hemoglobin A1c test at least two times per year in patients who are meeting treatment goals, and quarterly in patients whose therapy has changed or who are not meeting glycemic controls.[9]



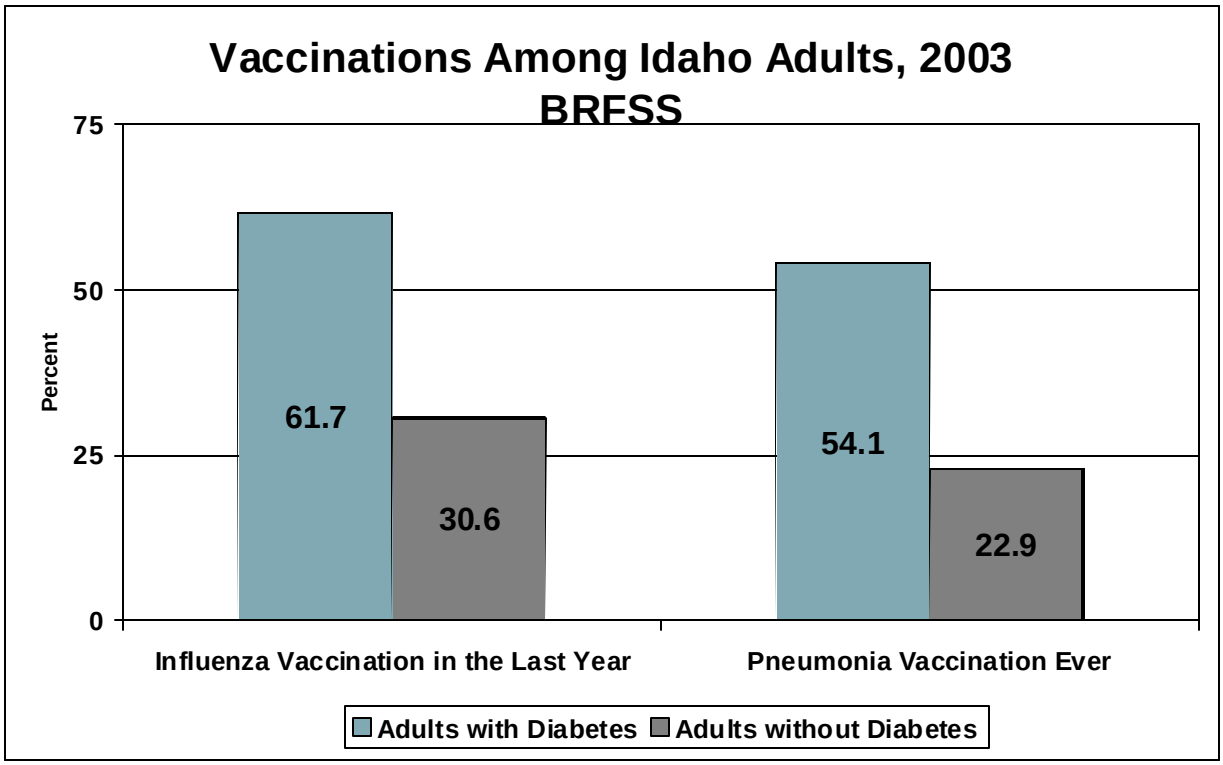
Vaccinations: Influenza and Pneumonia

Influenza and pneumococcal immunizations are effective preventive services for people with diabetes. People with diabetes are at increased risk for ketoacidosis, being hospitalized, and dying of complications from the flu and pneumonia.

Healthy People 2010 Guideline[11]

14-29. Increase the proportion of adults [with diabetes] who are vaccinated annually against influenza and ever vaccinated against pneumococcal disease, to 60%.

ADA Recommendation: Consistent with the Advisory Committee on Immunization Practices (ACIP) of the CDC's National Immunization Program, the influenza vaccine should be recommended for patients with diabetes, age greater than or equal to 6 months, beginning each September. Pneumococcal vaccine should be a one-time revaccination for individuals greater than 64 years of age previously immunized when they were less than 65 years of age if the vaccine was administered more than five years ago.[9]



Influenza vaccinations for Idaho adults with diabetes increased from 57.6% in 2002 to 61.7% in 2003, achieving the Healthy People 2010 goal of 60%. Pneumonia vaccinations increased from 42.2% in 2002 to 54.1% in 2003.

Eye and Foot Exams

Eyes: Retinopathy is a complication of diabetes that damages the eye's retina and can cause blindness. It affects half of all people diagnosed with diabetes. Diabetes is the leading cause of new cases of blindness among adults 20-74 years old. Annual dilated eye exams can prevent diabetic retinopathy.

Healthy People 2010 Guideline[11]

5-13. Increase the proportion of people with diabetes who have an annual dilated eye exam to 75%.

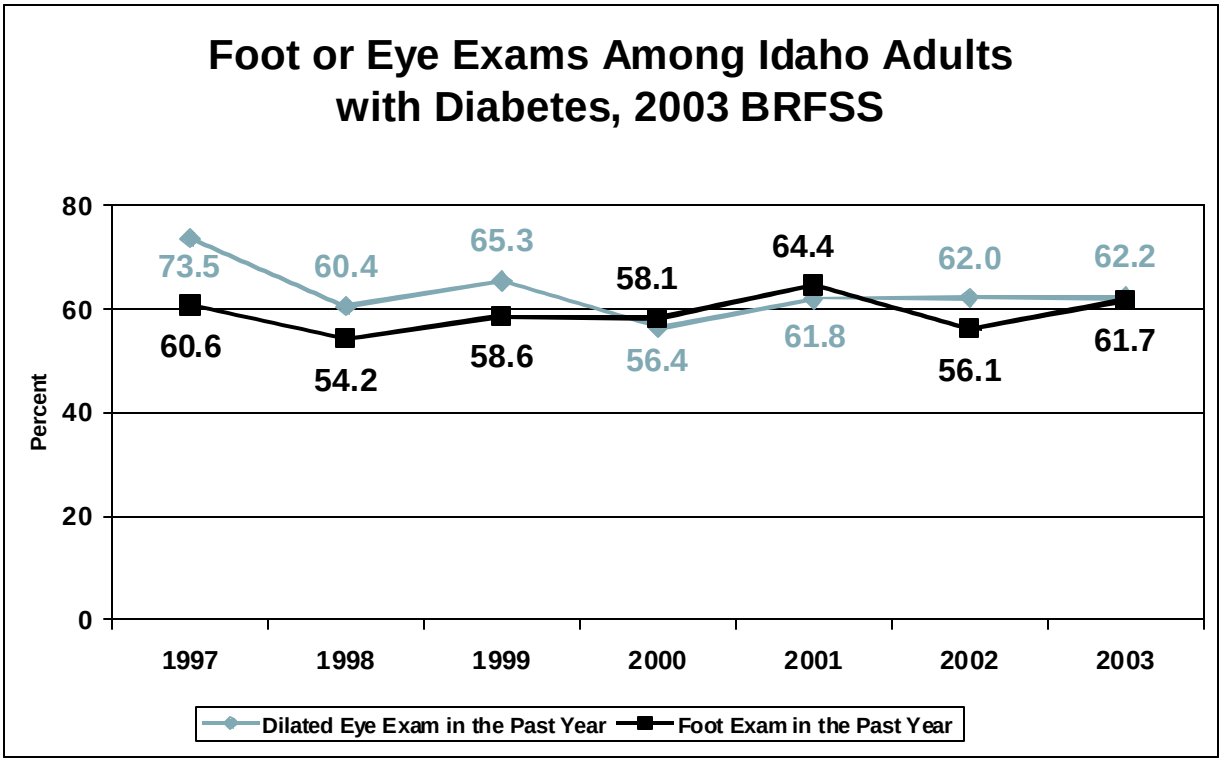
ADA Recommendation: Comprehensive dilated eye and visual examinations should be performed annually by an ophthalmologist or optometrist on all patients age ten years and older who have had diabetes for three to five years, all patients diagnosed after age 30, and any patient with visual symptoms and/or abnormalities.[9]

Feet: Foot ulcers and amputations are a major cause of morbidity, disability, and expense for people with diabetes. Early recognition and management of risk factors for foot ulcers and amputations can prevent or delay onset of these adverse outcomes. Risk identification is fundamental for effective preventive management of foot problems in people with diabetes.

Healthy People 2010 Guideline[11]

5-14. Increase the proportion of people with diabetes who have at least an annual foot examination to 75%.

ADA Recommendation: All individuals with diabetes should receive a thorough foot examination at least once a year to identify high-risk foot conditions.[9]



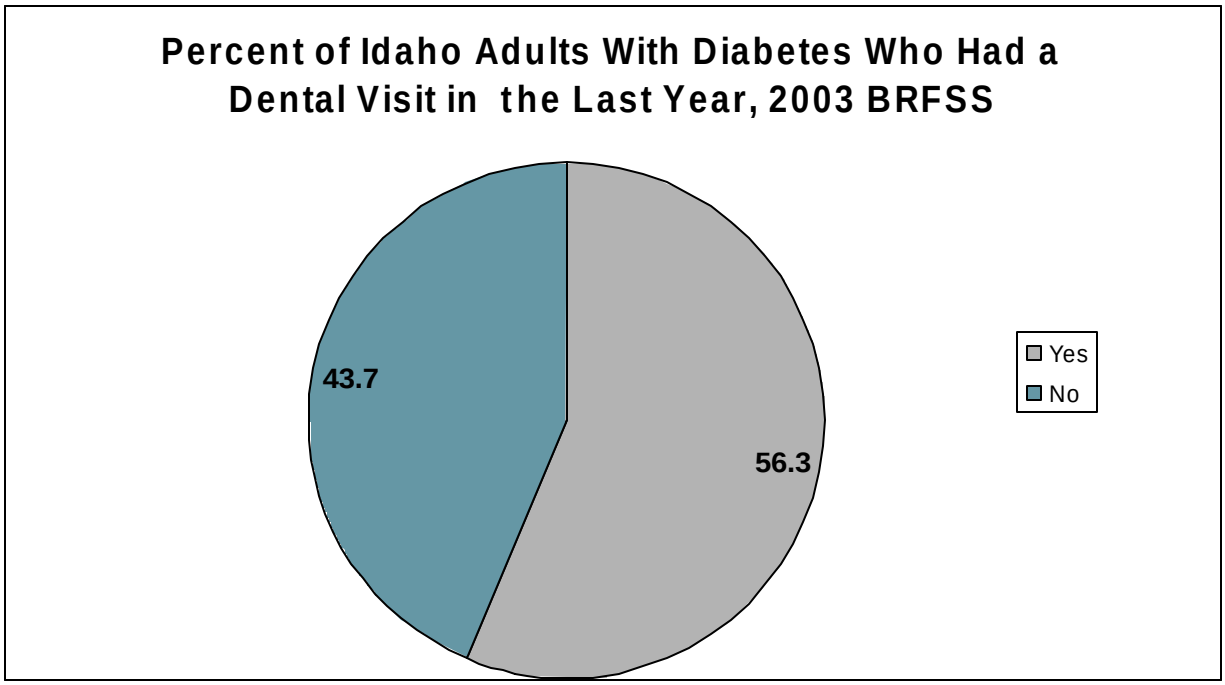
Dental Care

Oral health complications of diabetes include severe periodontitis and subsequent tooth loss, gingivitis, and dental abscesses. Periodontal infection may contribute to hyperglycemia and complicate diabetes control. Routine preventive dental care is an important part of the overall management of health for people with diabetes.[10]

Healthy People 2010 Guideline[11]

5-15. Increase the proportion of people with diabetes who have at least an annual dental examination. The target is to have 75% of people with diabetes having an annual dental exam.

CDC Guidelines: Treatment guidelines from The Centers for Disease Control and Prevention (CDC) recommend that people with diabetes see a dentist at least once every six months.[10]

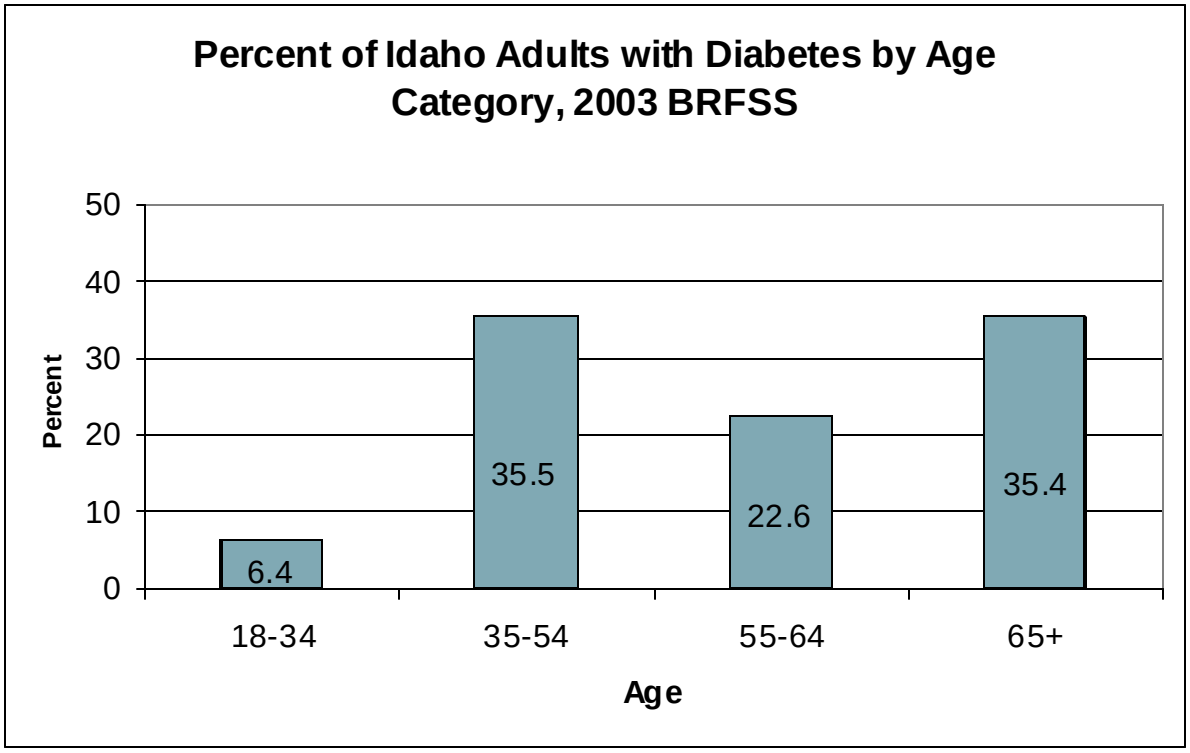


The percentage of Idaho adults with diabetes who had a dental visit in the last year decreased from 64.1% in 2002 to 56.3% in 2003.

Individuals with higher risks of developing diabetes include those with a family or gestational history of the disease, people of certain racial or ethnic groups (African Americans, Native Americans, Asians, and Hispanics), older age, obesity, physical inactivity, and the presence of high blood pressure or high cholesterol. Many of these factors can be managed or better controlled through medication, changes in diet, and/or lifestyle and behavior modifications.

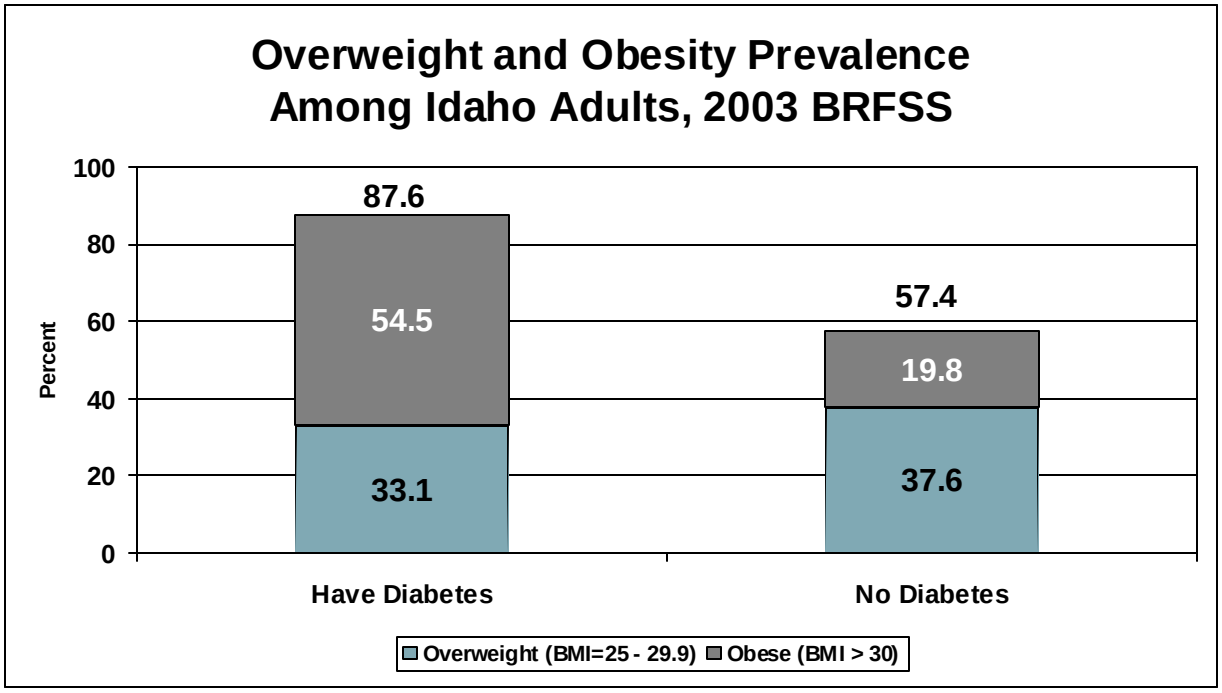
Age

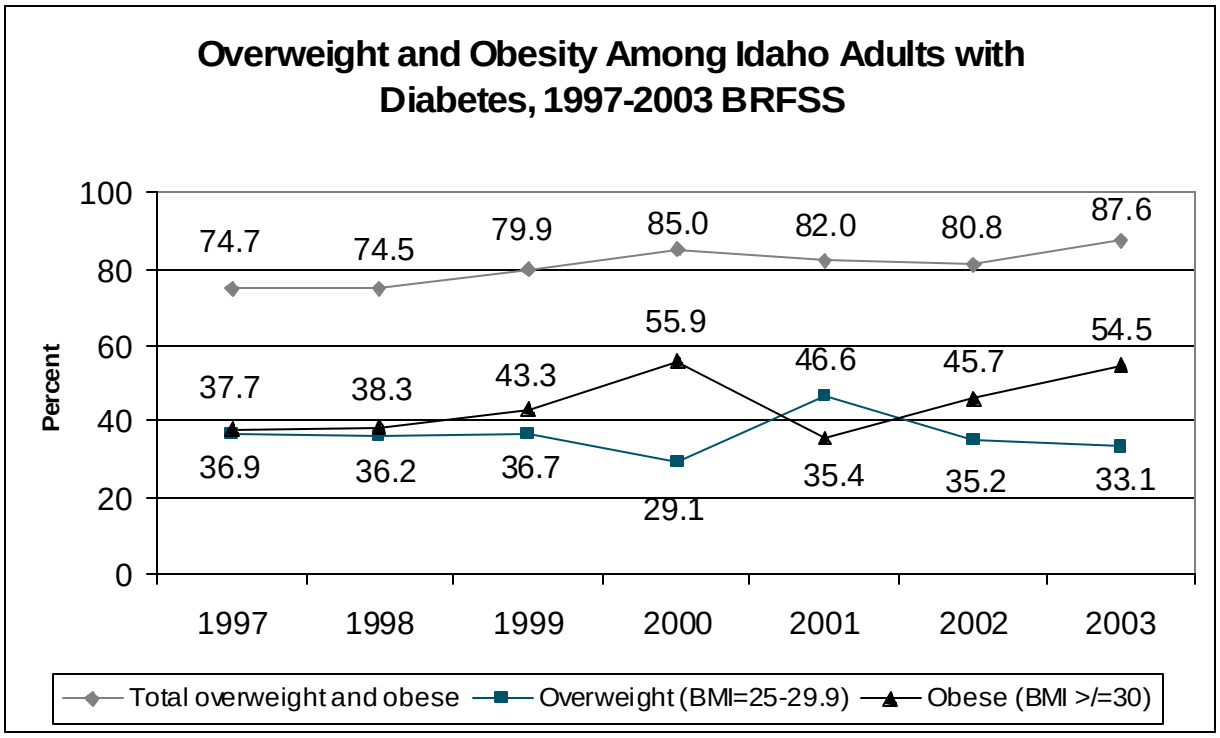
The average age of diagnosis was 49, with women (50.4%) averaging a slightly higher age of diagnosis than men (48.5%).[6]



Weight

Based on 2003 self-reported height and weight measurements, Idaho adults with diabetes are more likely to be either overweight (defined as a body mass index of 25 to 29.9) or obese (defined as a body mass index greater than or equal to 30).

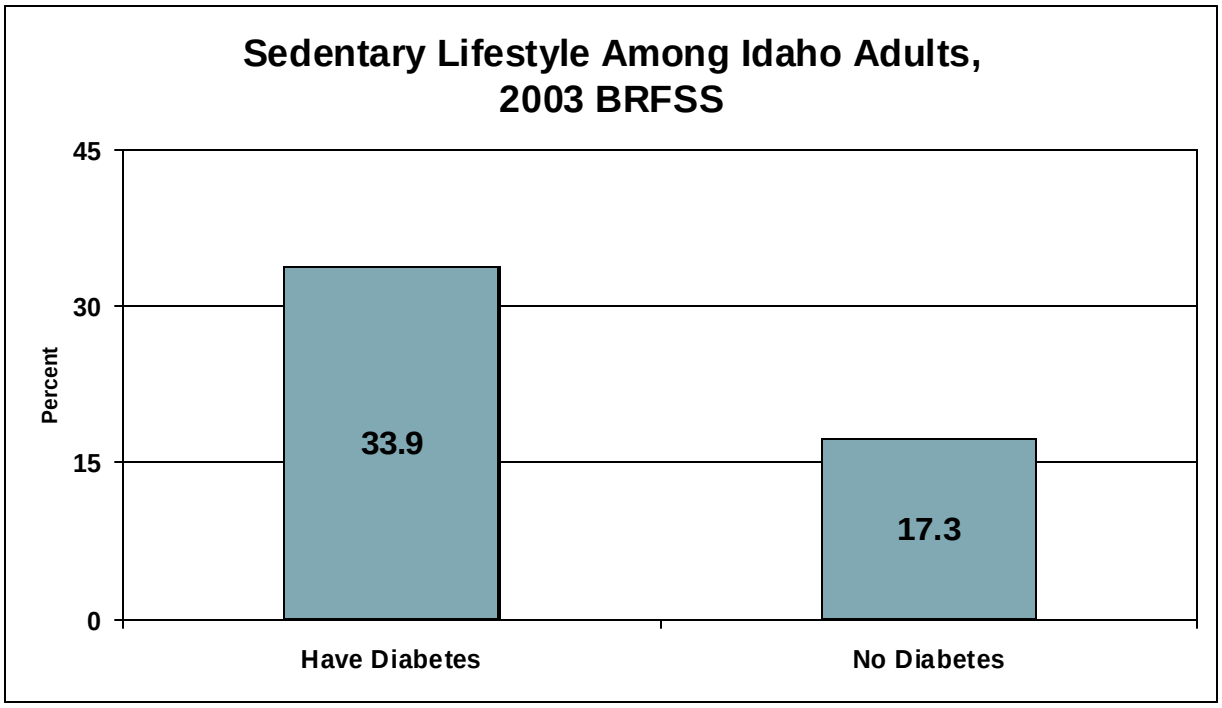




Physical Activity

Physical activity is important for people with diabetes because it can help to lower blood glucose levels, cholesterol, and blood pressure. A thorough medical exam is recommended for someone with diabetes planning to start or increase their physical activity.

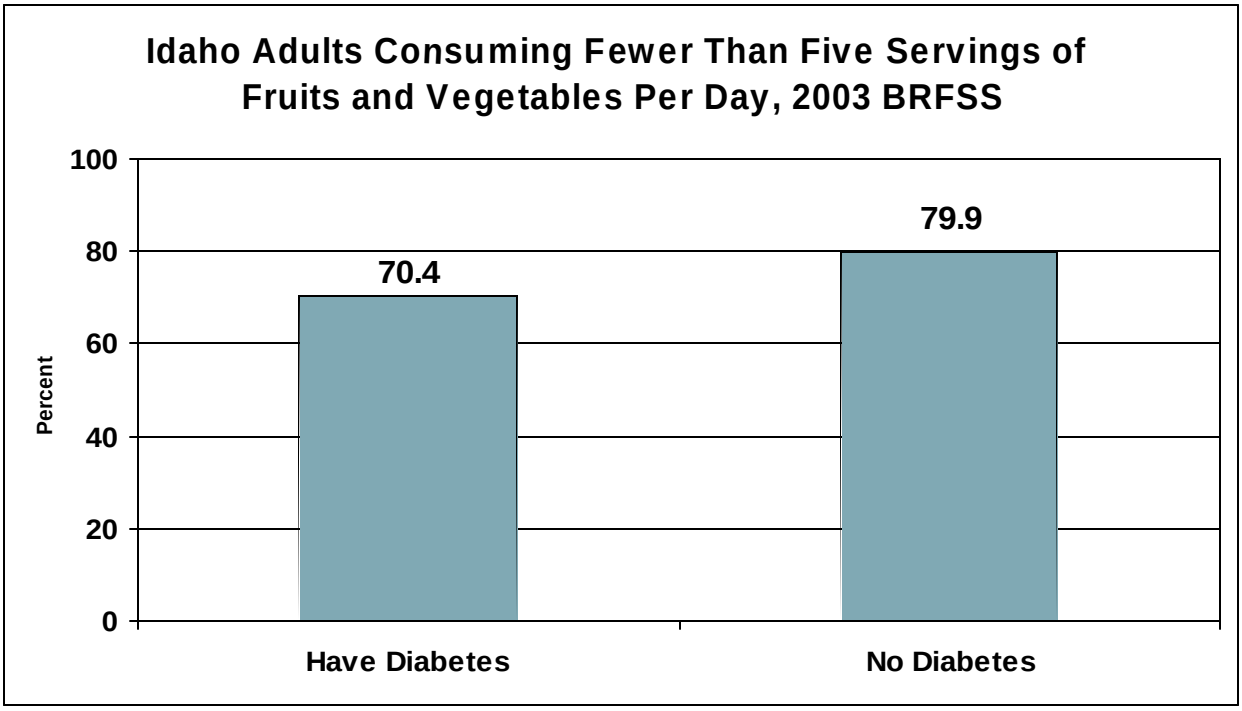
ADA Recommendation: The ADA agrees with the 1996 Surgeon General's report, recommending that all individuals with diabetes should accumulate 30 minutes of moderate (<70% of maximal heart rate) physical activity on most days of the week.[9]



The prevalence of Idaho adults with diabetes who engage in a sedentary lifestyle increased from 33.5% in 2002 to 33.9% in 2003.

Nutrition

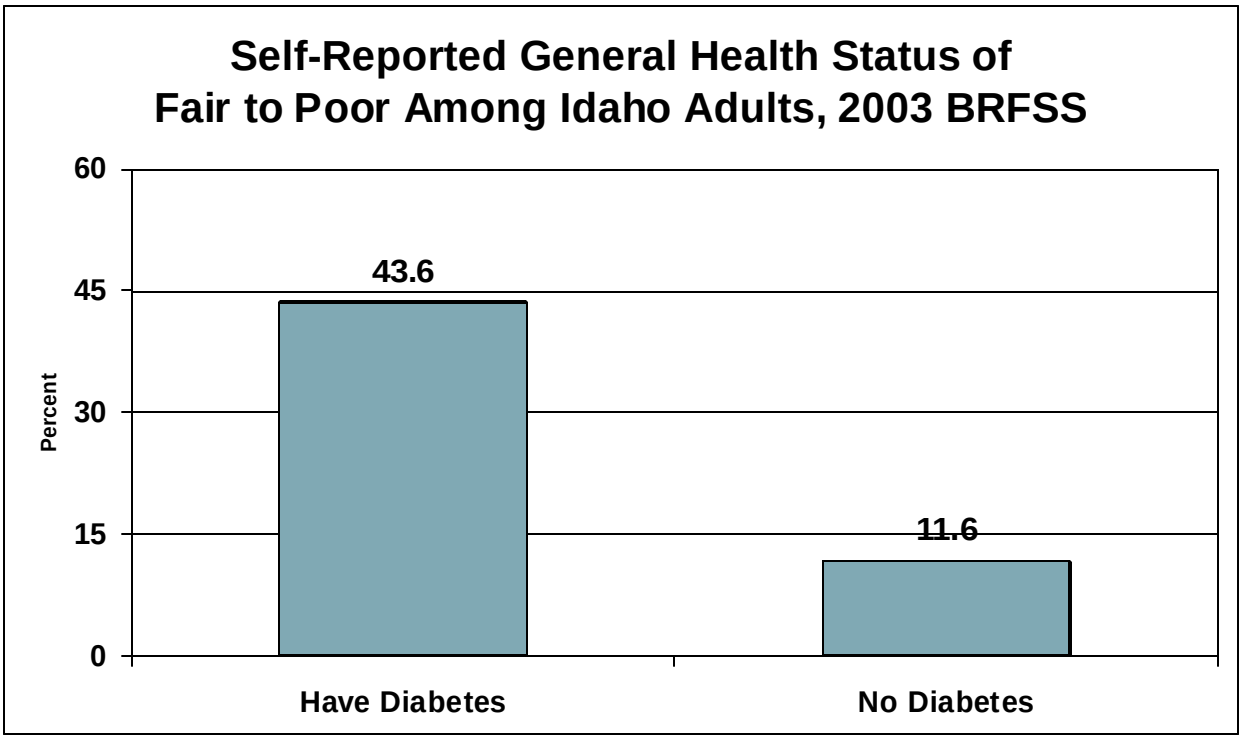
It is important for people with diabetes to consume foods from all of the food groups. Fruits and vegetables, in particular, are rich in vitamins, minerals, and fiber, and naturally low in calories.



The prevalence of Idaho adults with diabetes consuming fewer than five servings of fruits and vegetables per day decreased from 75.3% in 2002 to 70.4% in 2003.

General Health

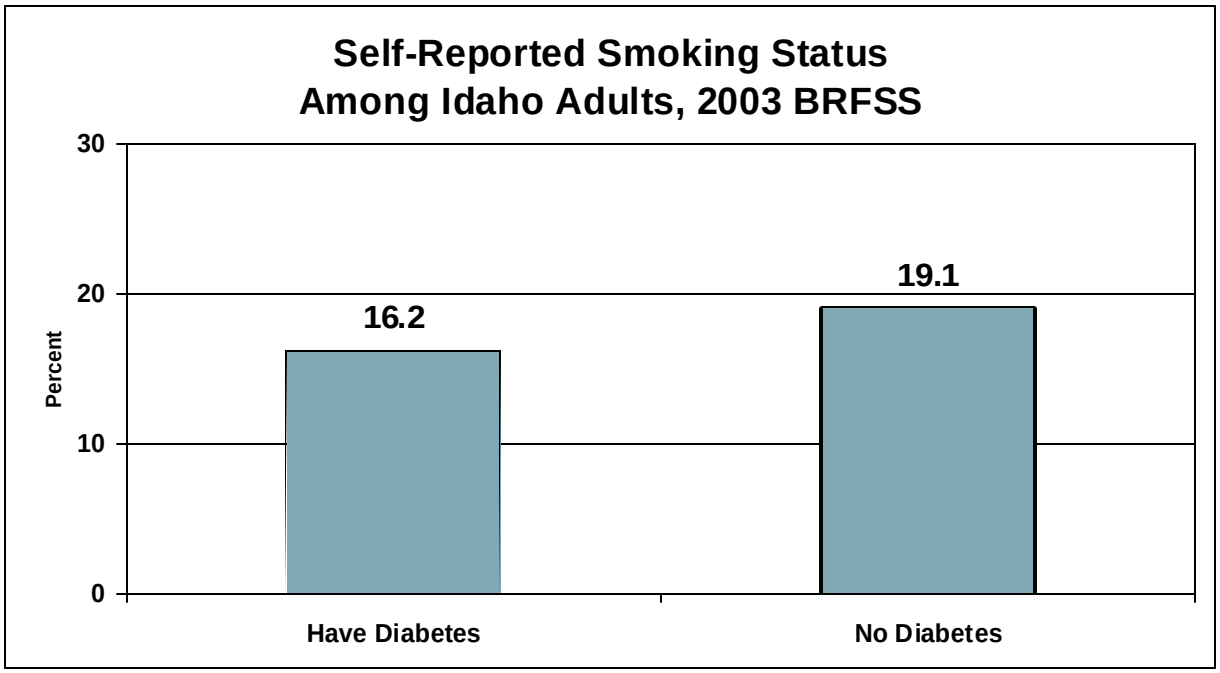
Diabetes is a complex disease that affects many aspects of daily life. It is difficult to expect people with diabetes to maintain continuous self-management of the disease and its complications when they report only a fair or poor rating of their own general health.



Smoking

Tobacco use, in combination with diabetes, is significantly detrimental to health. Because smoking increases cholesterol and blood pressure, people with diabetes who smoke are at increased risk for developing kidney disease, heart disease, stroke, blindness, neuropathy, foot ulcers and infections, and require amputations of the feet or legs. Smoking cessation is very important for people with diabetes.

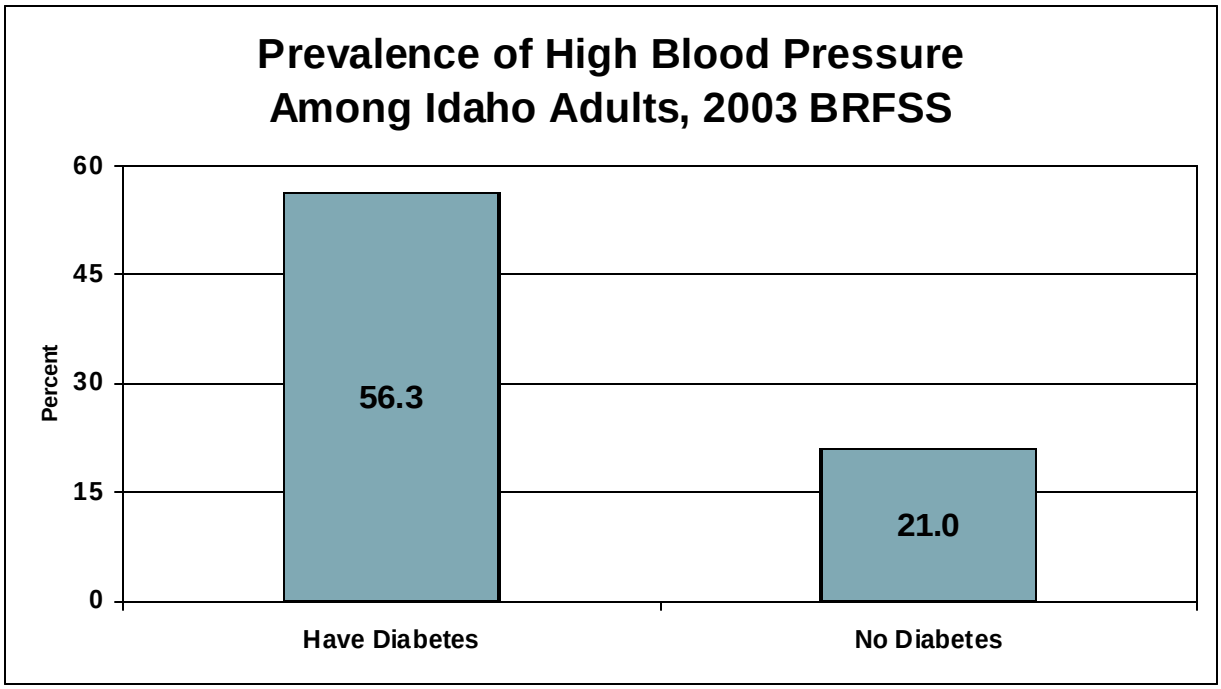
ADA Recommendation: The ADA recommends that all people with diabetes should quit smoking. Care providers should address "the four A's" with every patient with diabetes - Ask, Assess, Advise, and Assist.[9]



Blood Pressure

Because many Idaho adults with diabetes are either overweight or obese, they are also more likely to have high blood pressure.[6] Therefore, it is essential for people with diabetes to have regular blood pressure measurements and to be treated for high blood pressure.

ADA Recommendation: The ADA recommends that patients with diabetes be treated to maintain a blood pressure of less than 130 systolic and 80 diastolic.[9]

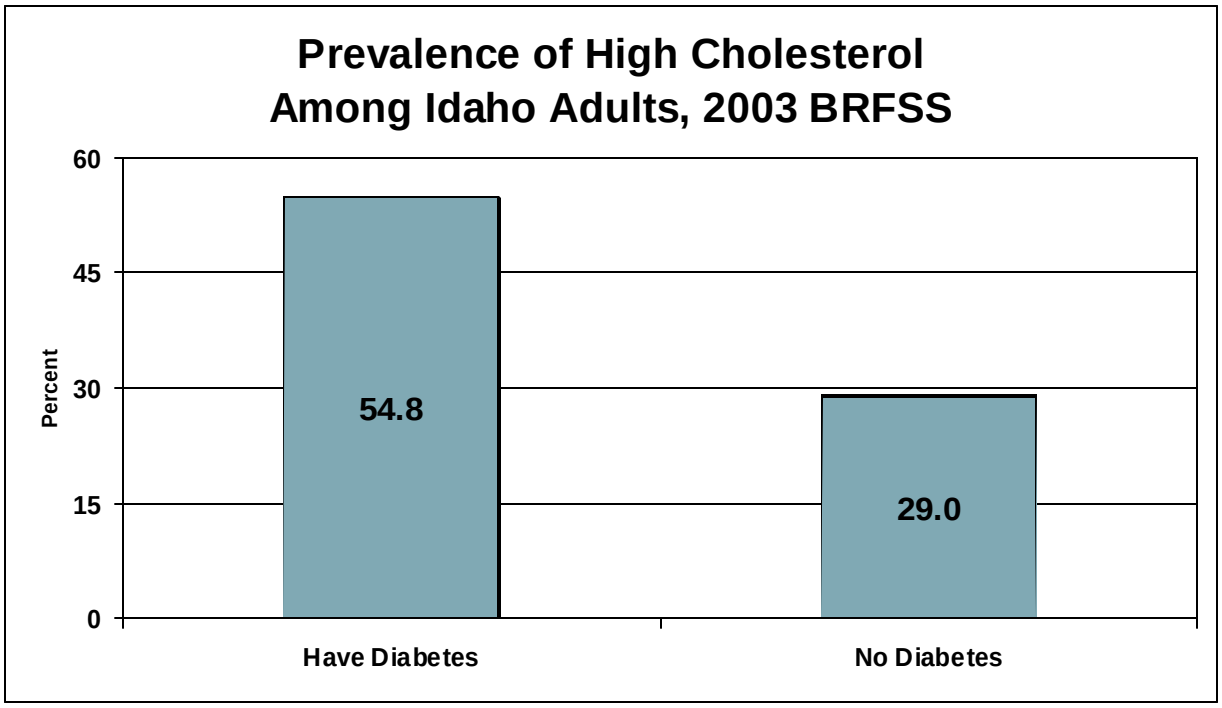


Cholesterol

Over half (54.8%) of Idaho adults with diabetes who have had their blood cholesterol checked have ever been told by a health professional that their cholesterol level is high, compared with 29.0% of those without diabetes.[6]

ADA Recommendation: The ADA recommends that:

- Patients with diabetes should lower LDL cholesterol levels to <100 mg/dl.
- Patients with diabetes should lower triglyceride levels to <150 mg/dl.
- Patients with diabetes should raise HDL cholesterol levels to >40 mg/dl.[9]

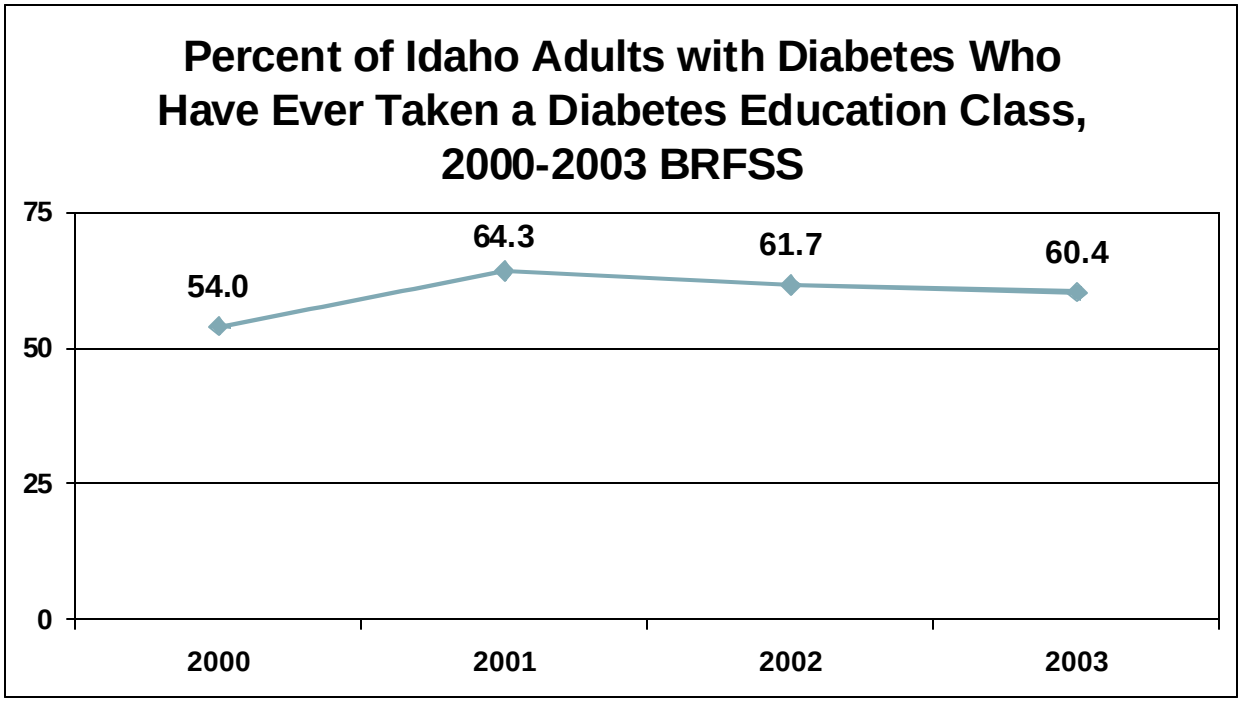


Diabetes can be a devastating disease with several possible complications. However, diabetes can be prevented. Encouraging people at risk for developing diabetes to participate in regular physical activity and healthy eating habits can help prevent the development or delay onset of the disease.

Individuals with diabetes can prevent or manage complications associated with diabetes, including foot amputations, diabetic neuropathy, and retinopathy. Diabetes Self-Management Education (DSME) is the cornerstone of care for all individuals with diabetes who want to achieve successful health-related outcomes. Participation in a DSME course has been shown to increase the likelihood of people with diabetes receiving recommended standards of preventive care as determined by the ADA.[9]

Healthy People 2010 Guideline[11]

5-1. Increase the proportion of people with diabetes who receive formal diabetes education to 60%.



Effects of Diabetes Self-Management Education on Diabetes Preventive Care

DSME is defined as an interactive, collaborative, ongoing process involving the person with diabetes, nurse and dietitian educators, physicians, pharmacists, behavioral specialists, and exercise specialists. This interactive team addresses the educational needs of the patient. All ADA recognized programs include a registered dietitian and a registered nurse who are Certified Diabetes Educators (CDE). CDE's are specialists in diabetes education and are able to provide individualized education and management guidance. ADA recognition ensures that these programs meet standards of content, management, continuing staff education, and quality improvement.

DSME promotes preventive self-care management. The 2003 BRFSS survey of Idahoans demonstrates the value of diabetes education in improving diabetes health indicators. Idaho adults with diabetes who have taken a diabetes education class are more likely to check their blood sugar at least once a day, have an annual foot exam, have their hemoglobin A1c checked in the past year, have an annual dilated eye exam, have an influenza vaccination in the last year, and have a pneumoccocal vaccination.

Preventive Care Standard	Ever taken a class on self-managing diabetes	
	Yes	**No**
Percent checking blood sugar at least once daily*	67.5%	47.8%
Percent having an annual foot exam*	68.2%	51.4%
Percent having hemoglobin A1c checked in the past year	91.7%	83.9%
Percent having an annual dilated eye exam	64.2%	59.0%
Percent having an influenza vaccination in the last year*	68.2%	51.4%
Percent having a pneumococcal vaccination ever	56.5%	50.0%

*Indicates statistically significant ($p<.05$) difference between adults with diabetes who have taken a class and those who have not taken a class.

Sources and Notes

1. U.S. Bureau of the Census, Statistical Abstract of the United States, 1998.

2. Idaho Vital Statistics 2002, Bureau of Health Policy and Vital Statistics, Idaho Department of Health and Welfare.

3. Estimates of diagnosed and undiagnosed DM are calculated based on national population estimates from the National Diabetes Fact Sheet, November 2003, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services, in conjunction with Idaho BRFSS estimates of adults diagnosed with diabetes.

4. National DM cost estimates are reported from Diabetes Care 26:917-932, 2003.

5. Idaho cost estimates of DM are calculated using national cost estimates from Diabetes Care 26:917-932, 2003.

6. Idaho Behavioral Risk Factor Surveillance System (BRFSS), 2003 Survey Data, Bureau of Health Policy and Vital Statistics, Idaho Department of Health and Welfare, 2004.

7. Behavioral Surveillance Branch, Division of Adult and Community Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 2003.

8. Bureau of Health Policy and Vital Statistics, Idaho Department of Health and Welfare, 2004.

9. American Diabetes Association, Clinical Practice Recommendations, Volume 27, Supplement 1, 2004.

10. Diabetes Care, Volume 23, No. 10, October 2000.

11. U.S. Department of Health and Human Services. Healthy People 2010. 2nd ed. Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, DC: U.S. Government Printing Office, November 2000.