

# Racial and Ethnic Differences in Health Insurance Coverage for Adults With Diabetes

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**OBJECTIVE** — To evaluate the extent and types of health insurance coverage in a representative sample of adults with diabetes in the U.S.

**RESEARCH DESIGN AND METHODS** — The Third National Health and Nutrition Examination Survey included national samples of non-Hispanic whites, non-Hispanic blacks, and Mexican-Americans aged  $\geq 20$  years. Information on medical history and treatment of diabetes was obtained to determine subjects who had been diagnosed with diabetes by a physician before the survey ( $n = 1,503$ ) and subjects without diagnosed diabetes ( $n = 17,319$ ). Information on health insurance coverage was obtained via a structured questionnaire for 96% of participants.

**RESULTS** — A total of 93% of all adults with diabetes had some form of health insurance. Of these subjects, 73% had private insurance, 48% had Medicare coverage, 15% had Medicaid coverage, and 5% had Champus/Veterans Affairs coverage. Approximately 52% of adults with diabetes had multiple types of health insurance, and 54% had health care coverage through one or more government-sponsored programs. A greater proportion of non-Hispanic whites (91%) and non-Hispanic blacks (89%) than Mexican-Americans (66%) had health insurance among subjects aged 20–64 years. For those aged  $\geq 65$  years, coverage was virtually 100% for all racial and ethnic groups. Non-Hispanic whites had the highest rate of coverage through private insurance (81%), with non-Hispanic blacks having an intermediate rate (56%) and Mexican-Americans having the lowest rate (45%). Rates of coverage were similar for adults with and without diabetes in each racial and ethnic group for any type of insurance and for private insurance.

**CONCLUSIONS** — There are marked racial and ethnic differences in health insurance coverage for adults with diabetes, although these differences are similar to those for adults without diabetes. Whether these racial and ethnic disparities influence access to care, quality of care, or health outcomes for people with diabetes remains to be determined.

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Health insurance coverage is an important health policy issue in diabetes care, but few studies have examined the proportion of patients covered or the types of health insurance for people with diabetes in representative samples of the U.S. population (1–3). In addition, it is unknown whether differences in coverage by race and ethnicity

exist and whether the insurance mechanisms are different for patients with diabetes compared with people without diabetes. To explore these issues, we analyzed data from the Third National Health and Nutrition Examination Survey (NHANES III) in which detailed questionnaires on diabetes and health insurance were administered to repre-

sentative samples of adults with and without diagnosed diabetes in the U.S. population aged  $\geq 20$  years.

## RESEARCH DESIGN AND METHODS

NHANES III was conducted from 1988 to 1994 and included a representative sample of the U.S. population based on a multistage probability cluster design with oversampling of blacks and Mexican-Americans (4). A total of 18,822 people aged  $\geq 20$  years completed a household interview in which information was obtained about sociodemographic characteristics, race, and Hispanic ethnicity. Information on medical history of diabetes and diabetes therapy was used to identify individuals with diabetes who had been diagnosed by a physician before the survey ( $n = 1,608$ ). Women with diabetes diagnosed only during pregnancy ( $n = 105$ ) were eliminated from the analysis. Of the remaining 1,503 subjects with diabetes, 23 were considered to have type 1 diabetes, which was defined as subjects aged  $< 30$  years at diagnosis who had used insulin continuously or almost continuously since diagnosis. The other 1,480 subjects were considered to have type 2 diabetes. Information on health insurance coverage through private insurance, Medicare, Medicaid, and Champus/Veterans Affairs (VA) was obtained via a structured questionnaire that was completed by 1,448 (96%) subjects with diabetes (588 non-Hispanic whites, 408 non-Hispanic blacks, 415 Mexican-Americans, and 37 persons of other races or ethnicities) and 17,319 (96%) subjects without diabetes (7,396 non-Hispanic whites, 4,489 non-Hispanic blacks, 4,054 Mexican-Americans, and 642 persons of other races or ethnicities).

Statistical analyses were carried out with SAS (Cary, NC). Data were weighted to correct for the oversampling of Mexican-Americans and non-Hispanic blacks to produce estimates that were representative of the U.S. population. Standard errors and tests of statistical significance were calculated by using SUDAAN, a program that takes into account the nonran-

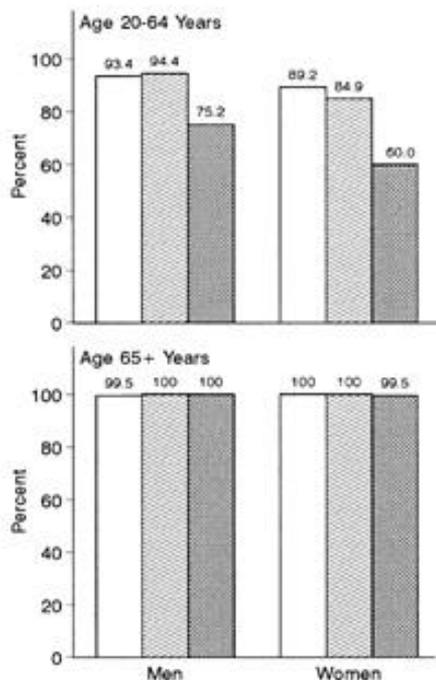
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**Abbreviations:** NHANES III, Third National Health and Nutrition Examination Survey; VA, Veterans Affairs.

A table elsewhere in this issue shows conventional and Systeme International (SI) units and conversion factors for many substances.



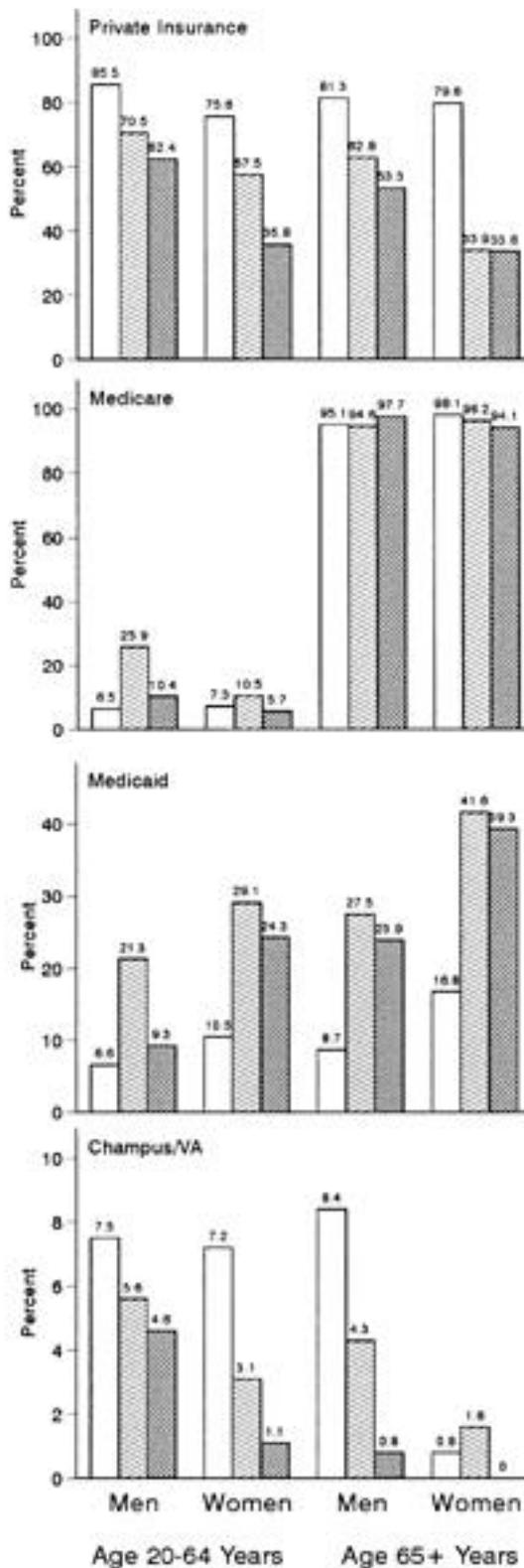
**Figure 1**—Percentage of adults with diagnosed diabetes who have some form of health insurance according to age, sex, and race or ethnicity. Subjects aged 20–64 years:  $P = 0.06$ , men versus women;  $P < 0.001$ , non-Hispanic whites (□) and non-Hispanic blacks (▨) versus Mexican-Americans (▩).

dom cluster sample design in calculating variance estimates.

**RESULTS**— For all adults with diabetes, 93% had some form of health insurance. The rate of coverage was 95% for men and 91% for women. Non-Hispanic whites (95%) and non-Hispanic blacks (93%) differed little in the proportion with health insurance, but Mexican-Americans had a lower rate of coverage (77%).

Figure 1 shows the proportions of each sex and racial and ethnic group according to age who had some form of health insurance coverage. For those aged 20–64 years, men had higher rates of coverage than women, and non-Hispanic whites and blacks had higher rates of coverage than Mexican-Americans. For subjects aged  $\geq 65$  years, coverage was virtually 100% for all sex and racial and ethnic groups.

Of the subjects with diabetes, 73% had private insurance, 48% had Medicare coverage, 15% had Medicaid coverage, and 5% had Champus/VA coverage. Figure 2 shows health insurance coverage according to type of insurance, sex, age, and race and ethnicity. For private insurance, men had higher



**Figure 2**—Percentage of adults with diagnosed diabetes who have specific types of health insurance according to age, sex, and race or ethnicity. Private insurance:  $P = 0.008$ , men versus women;  $P < 0.001$ , non-Hispanic whites (□) versus non-Hispanic blacks (▨) and Mexican-Americans (▩);  $P = 0.005$ , non-Hispanic blacks versus Mexican-Americans at age 20–64 years. Medicare:  $P = 0.005$ , non-Hispanic blacks versus non-Hispanic whites and Mexican-Americans for subjects aged 20–64 years. Medicaid:  $P < 0.001$ , men versus women;  $P < 0.01$ , non-Hispanic whites versus non-Hispanic blacks and Mexican-Americans.

**Table 1—Health insurance coverage through private insurance and government-sponsored programs for adults with diabetes**

	All races	Non-Hispanic white	Non-Hispanic black	Mexican-American
Private insurance only	39.1	40.8	35.9	29.9*
Government-sponsored only	19.6	14.7	37.3*	32.2*
Both government and private	34.3	39.8	19.8*	14.7*
No insurance coverage	7.0	4.7	7.0	23.2*†

Data are %. All races includes racial and ethnic groups not shown separately in the table; government-sponsored programs include Medicare, Medicaid, and Champus/VA. \* $P < 0.001$  vs. non-Hispanic whites; † $P < 0.001$  vs. non-Hispanic blacks.

coverage rates than women in each age and racial and ethnic group, and subjects aged 20–64 years had higher coverage rates than subjects aged  $\geq 65$  years. Non-Hispanic whites had the highest proportions with private insurance in both age-groups, with non-Hispanic blacks having an intermediate rate and Mexican-Americans having the lowest rates.

Medicare covered almost all persons aged  $\geq 65$  years (Fig. 2). Among subjects aged 20–64 years, non-Hispanic black men and women were more likely to have Medicare than non-Hispanic whites or Mexi-

can-Americans. Medicaid covered a larger proportion of women than men, and non-Hispanic blacks and Mexican-Americans were more frequently covered by Medicaid than non-Hispanic whites. Champus/VA covered a small proportion of subjects with diabetes, and non-Hispanic whites were more likely to have this type of insurance.

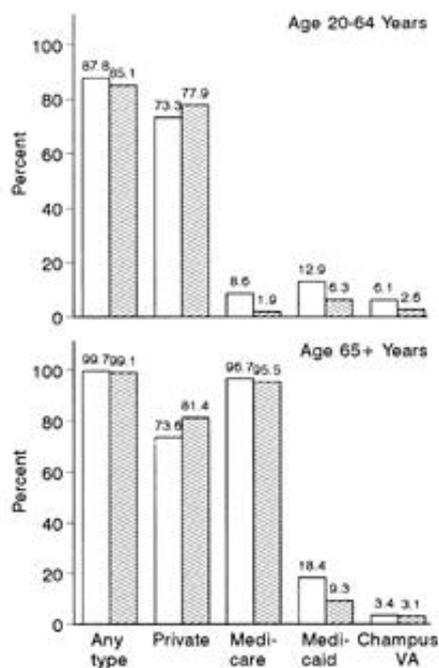
Approximately 52% of adults with diabetes had multiple types of health insurance. Of subjects with private insurance, 46% had Medicare coverage, and 9% had Medicaid and/or Champus/VA coverage. Of those with Medicare coverage, 70% had private insurance, and 24% had Medicaid and/or Champus/VA coverage. Of those with Medicaid coverage, 22% had private insurance, and 63% had Medicare coverage.

Table 1 shows the proportions of adults with diabetes who were covered by private insurance only and those who were covered by government-sponsored health insurance programs. A higher proportion of non-Hispanic whites compared with non-Hispanic

blacks and Mexican-Americans was covered by private insurance only, and a lower proportion of non-Hispanic whites was covered by government-sponsored programs only. About 54% of all persons had health care coverage through one or more of the three government health insurance programs; this percentage was similar for non-Hispanic whites (55%), non-Hispanic blacks (57%), and Mexican-Americans (47%).

Most individuals with Medicare had both Part A and Part B coverage, but a higher proportion of non-Hispanic blacks (17%) and Mexican-Americans (19%) had Part A coverage only compared with non-Hispanic whites (7%). Of those with private insurance, most had obtained this through a current or former employer; the proportion was higher for non-Hispanic blacks (85%) and Mexican-Americans (86%) than for non-Hispanic whites (67%). Virtually all persons with private insurance had coverage for hospitalizations and surgery (97–100%) and for routine physician care (92–95%). Coverage for dental care among subjects with private insurance was higher for non-Hispanic blacks (64%) and Mexican-Americans (52%) than for non-Hispanic whites (39%).

Figure 3 compares adults with and without diabetes according to various types of health insurance coverage for subjects aged 20–64 years and  $\geq 65$  years. Rates of coverage by any type of insurance and by private health insurance were similar for adults with and without diabetes for both age-groups. Medicare and Medicaid coverage were more common for individuals with diabetes aged 20–64 years,



**Figure 3—Percentage of adults with (□) and without (▨) diagnosed diabetes who have specific types of health insurance according to age. Medicare:  $P < 0.01$  for subjects aged 20–64 years. Medicaid:  $P < 0.01$  for subjects aged 20–64 and  $\geq 65$  years. All other comparisons were not significant.**

**Table 2—Comparison of health insurance coverage for adults with and without diabetes according to race and ethnicity**

Insurance type	Non-Hispanic white		Non-Hispanic black		Mexican-American	
	Diabetes	No diabetes	Diabetes	No diabetes	Diabetes	No diabetes
Aged 20–64 years						
Any type	91.4	88.5	88.7	83.0*	65.9	59.4
Private	80.8	83.8	62.9	67.4	46.2	48.8
Medicare	6.9	1.9†	16.3	3.0†	7.4	1.4*
Medicaid	8.4	3.2†	26.3	17.1*	18.8	10.5
Champus/VA	7.4	2.7	4.1	2.8	2.4	1.3
Aged $\geq 65$ years						
Any type	99.8	99.5	100.0	98.0	99.7	95.7
Private	80.3	86.7*	42.9	47.0	40.9	43.1
Medicare	96.9	96.5	95.7	91.7†	95.4	90.7
Medicaid	13.6	6.8*	37.5	22.5‡	33.6	30.6
Champus/VA	3.9	3.0	2.4	4.3	0.3	2.8

Data are %. \* $P < 0.01$ ; † $P = 0.03$ ; ‡ $P < 0.001$ , diabetes vs. no diabetes.

and Medicaid coverage was more common for individuals with diabetes aged  $\geq 65$  years.

Table 2 compares coverage for people with and without diabetes according to racial and ethnic group. For any type of insurance coverage and for private health insurance, the rates were comparable for individuals with and without diabetes among non-Hispanic whites, non-Hispanic blacks, and Mexican-Americans. Medicare and Medicaid coverage were more common among those with diabetes aged 20–64 years in each racial and ethnic group, and Medicaid coverage was more common among those with diabetes aged  $\geq 65$  years in each racial and ethnic group.

People who had no health insurance (7% of those with diabetes) were asked why they did not have private insurance. The main reasons involved cost (66%), unemployment (37%), insurance not being provided by an employer (24%), and poor health (19%). These percentages were similar to those for people without diabetes. Individuals who were covered by private health insurance were asked whether they had ever been refused insurance or had their coverage limited because of poor health. Of subjects with diabetes, 7% answered affirmatively compared with 3% of subjects without diabetes.

**CONCLUSIONS**— These data document that 93% of adults with diabetes in the U.S. have some form of health insurance, and 52% have multiple sources of insurance. Racial and ethnic differences exist in health insurance coverage, most notably the lack of any health insurance coverage for 23% of Mexican-Americans with diabetes. However, the differences by race and ethnicity are similar to those for adults without diabetes (with the exception

of a higher proportion of people with diabetes having Medicare and Medicaid coverage). Whether these racial and ethnic disparities influence access to care, quality of care, or health outcomes for people with diabetes remains to be determined.

Three previous studies on national samples of adults in 1978, 1987, and 1989 found similar percentages of people with diabetes covered by any type of health insurance and by private insurance, as in the NHANES III population sample (1–3). These studies also reported that health insurance coverage was similar for people with and without diabetes, as in NHANES III. In a study in Pittsburgh, Pennsylvania, the proportion of adults with type 1 diabetes covered by health insurance did not differ from the proportion of their nondiabetic siblings who were covered (5). No differences were found between families with a child with type 1 diabetes and families without children with diabetes regarding percentages with health insurance (6). The NHANES III findings are comparable to those of a U.S. sample survey conducted in 1996 of people aged 0–64 years. In that study, 25% of blacks and 35% of Hispanics had no health insurance compared with 15% of whites (7). These data were not analyzed by diabetes status.

Based on NHANES III, government-funded programs provide health care coverage to 54% of people with diabetes, including virtually all people aged  $\geq 65$  years. Because these government-funded insurance mechanisms cover a large proportion of patients with diabetes, diabetes involves a significant societal burden. Any changes in government reimbursement and coverage policies may have a major effect on health care for patients. Such changes are illustrated by the recent additions of Medicare coverage for diabetes

patient self-management training and blood glucose self-monitoring supplies, regardless of insulin treatment. An important but unanswered question is whether the source and nature of health insurance influences the risk of morbidity and mortality for people with diabetes.

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