

Diabetes in U.S. Nursing Homes, 2004

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The 2004 National Nursing Home Survey collected cross-sectional data for 11,939 nursing home residents aged ≥ 65 years representing ~ 1.32 million individuals. That year, 24.6% of nursing home residents had diabetes as a primary admission and/or current diagnosis. Diabetes was present in 22.5 and 35.6% of white and nonwhite residents, respectively. Diabetic residents were admitted more often from acute care hospitals (42.5 vs. 35.3%), were more likely to have a length of stay ≤ 100 days (22.6 vs. 20.1%), and took more medications (10.3 vs. 8.4). Diabetic residents had 39% higher odds of having emergency department visits in the previous 90 days and 56% higher odds of having a pressure ulcer at the time of the survey. In the U.S. in 2004, one in four nursing home residents aged ≥ 65 years had diabetes, and diabetic residents had increased odds of several unfavorable outcomes that are important for care planning.

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There is an incomplete picture of diabetes in institutionalized populations, including older adults in nursing homes. This report defines the prevalence of diabetes in U.S. nursing homes and examines ethnic disparities, activities of daily living, reasons for admission, payment sources, length of stay (LOS), pressure ulcers, emergency department visits, and medication usage among diabetic residents.

RESEARCH DESIGN AND METHODS

The 2004 National Nursing Home Survey (NNHS) is based on data collected in 1,174 nursing homes for 13,507 residents (1). Primary diagnosis codes at the time of admission and at the time of survey (current) and up to 15 current secondary diagnosis codes were collected.

Race/ethnicity, current age, living arrangements before admission, and sources of payment were recorded. LOS was calculated at the time of the survey. Activities of daily living were collected including bed mobility, transfer, dressing, eating, toileting, personal hygiene, and bathing. Residents were coded as one of

five categories: independent, requires supervision, requires limited assistance, requires extensive assistance, or total dependence or that the activity did not occur; residents in the “total dependence” and “did not occur” categories were combined (2). Data on falls and fractures in the 6 months before the survey, emergency department visits in the 90 days before the survey, and pressure ulcers and medications at the time of the survey were recorded.

Statistical analysis

Analyses were conducted with SURVEYMEANS, SURVEYFREQ, and SURVEYLOGISTIC procedures in SAS. These account for strata, cluster, and weight variables defining the NNHS sampling methodology and were used to generate results that are generalizable to U.S. nursing home residents aged ≥ 65 years.

RESULTS— Of the 13,507 nursing home residents in the 2004 NNHS, 11,939, representing ~ 1.32 million residents, were aged ≥ 65 years. Of these, 3.6% had diabetes as the primary admission diagnosis, 5.6% had diabetes as the

primary diagnosis at the time of the survey, and 24.6% of residents, representing $\sim 324,000$ individuals, had diabetes as a primary admission and/or current diagnosis.

Diabetic nursing home residents were younger (mean age 81.7 years) than those without diabetes (84.9 years, $P < 0.0001$). Among residents aged 65–74, 75–84, and 85 years, diabetes prevalence was 36.1, 29.5, and 18.3%, respectively ($P < 0.0001$). Diabetes was present in 35.2–37.5% of nonwhite residents, compared with 22.5% among whites. Relative to whites, nonwhite residents had about twice the odds of having diabetes.

Nearly 35% of diabetic residents were admitted with circulatory problems, compared with 27.3% of nondiabetic residents ($P < 0.0001$). Diabetic residents had lower LOS (763 vs. 841 days, $P < 0.01$), and the proportion of diabetic residents with LOS ≤ 100 days was slightly higher (22.6 vs. 20.1%, $P < 0.05$) than that of nondiabetic residents. Diabetic residents used more medications (10.3) than nondiabetic residents (8.4, $P < 0.0001$).

Diabetic residents were admitted more frequently from acute care hospitals (42.5 vs. 35.3%, $P < 0.0001$). At admission, diabetic residents were less likely to pay with private insurance (10.5 vs. 12.4%, $P = 0.03$) and out-of-pocket resources (34.4 vs. 40.6%, $P < 0.0001$) and more likely to utilize Medicare (44.0 vs. 39.6%, $P < 0.001$) and Medicaid (35.7 vs. 32.6%, $P < 0.05$).

With the exception of transfers, total dependence in activities of daily living differed by only $\sim 1\%$ between diabetic and nondiabetic residents. In the 6 months before the survey, diabetic residents had slightly fewer falls and fractures (34.7 vs. 37.5%, $P = 0.03$). Altogether, 10 and 7.4% of diabetic and nondiabetic residents had emergency department visits in the 90 days before the survey. Nearly 14 and 9.4% of diabetic and nondiabetic residents had a pressure ulcer at the time of the survey, yielding 56% higher odds of ulceration among diabetic residents.

CONCLUSIONS— In 2004, approximately one in four U.S. nursing home residents aged ≥ 65 years had diabetes, a figure representing $\sim 324,000$ individuals.

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Abbreviations: LOS, length of stay; NNHS, National Nursing Home Survey.

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reports, together with our data, suggest a steady increase in diabetes as a condition of primary focus in U.S. nursing homes; in 1995, 1997, 1999, and 2004 (current data), the prevalence of diabetes as the primary current diagnosis in nursing homes was 4.4, 4.6, 5.0, and 5.6%, respectively (3–5). Ethnic disparities in diabetes prevalence that are well documented in the community (6) continue into the nursing home setting. The odds of diabetes were about two times higher in black and Hispanic nursing home residents relative to white residents. To the extent that demographic shifts and population projections will apply to nursing homes, it is likely that nonwhites, particularly persons of Hispanic origin, will become more highly represented in the nursing home population in the future (7).

Diabetic nursing home residents had a somewhat more “postacute/rehabilitation” profile than nondiabetic residents. They were admitted more often from acute care hospitals, were slightly more likely to have stays of ≤ 100 days at the time of the survey, and paid for care with Medicare more often than nondiabetic residents.

Diabetic residents were younger than their nondiabetic counterparts, and diabetes decreased as age increased. The decrease in diabetes with increasing age may reflect selective mortality associated with diabetes and/or early cardiovascular morbidity (8,9).

Our observation of fewer falls and fractures in diabetic nursing home residents is inconsistent with previous community-based research (10,11). Diabetes may play a less significant role in the risk of falls and fractures in nursing homes because residents are frailer and may share a more homogenous risk profile than elders in the community. However, diabetic nursing home residents had 56% increased odds of having a pressure ulcer at the time of the survey and were also more likely to have had an emergency depart-

ment visit in the past 90 days. It was not surprising that diabetic residents used more medications, an observation noted previously in a study of nursing home admissions (12).

Clinical practice guidelines are available for people with diabetes (13), older adults with diabetes (14), and diabetic individuals in long-term care (15,16). Nevertheless, the evidence base supporting clinical decision making for diabetes in nursing homes is sparse, partly because of the difficulty of conducting clinical trials in this population. Given the expected increase in the number and complexity of nursing home residents with diabetes in the coming decades and the paucity of clinical research providing guidance for their care, future efforts should focus on filling the knowledge gap by first defining end points that are appropriate for diabetic people in nursing homes and then designing clinical trials around these outcomes.

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