Declining Mortality Rate Among People With Diabetes in North Dakota, 1997–2002

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RESULTS — The percentage of decedents with diabetes in North Dakota increased over the study period from 21.3% (n = 1,225) of all deaths in 1997 to 24% (n = 1,391) of all deaths in 2002. The prevalence of diagnosed diabetes also increased from 3.5% (n = 16,538) in 1997 to 6.2% (n = 29,274) in 2002. Compared with the rate in 1997, the overall mortality rate in 2002 deceased 35% among individuals with diabetes (from 74.1 to 47.5 of 1,000) (Fig. 1).

Results from the linear regression showed that the yearly decline in the unadjusted mortality rate was 4.0 deaths per 1,000 (P = 0.03, R² = 0.73) among people with diabetes (Fig. 1). The results by sex were similar to the overall yearly average decline, although they were not significant for men (data not shown). Small samples of people with diabetes precluded us from assessing trends by age. Results from the linear regression showed that the yearly decline in the adjusted mortality rate was 2.0 deaths per 1,000 (P = 0.07, R² = 0.60) among people with diabetes (Fig. 1). The results by sex were similar to the overall yearly average decline, although they were not significant for men (data not shown).

CONCLUSIONS — The diabetes check box on North Dakota death certificates allowed us to determine whether decedents had diabetes and thus track trends in mortality among people with this disease. Age adjusting resulted in a smaller decline that was not significant. This could be due to the fact that there was indeed no decline or because our age-specific rates were not stable. We believe that the latter is the case.

Similar to our study, a population-based study in Rochester, Minnesota, showed a decline in diabetes mortality rates between 1970 and 1994. The decline was much less (13.8 vs. 35.9%) (9), but it was for an earlier time period. In contrast to our study, another study that used a national sample reported nonsignificant changes in diabetes mortality rates. From the Division of Diabetes Translation, Centers for Disease Control and Prevention, Atlanta, Georgia; and the North Dakota Department of Health, Bismark, North Dakota.

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Received for publication 7 June 2004 and accepted in revised form 27 July 2004.

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

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rates (10). The time frame of this latter study (cohorts for 1971–1975 and 1982–1984), however, was much earlier than ours.

There could be several reasons for the decline in the mortality rate among people with diabetes in North Dakota. For example, it could be due to improvements in the care that people with diabetes received, such as an increase in the proportion of individuals with diabetes who received preventive care practices. In both North Dakota and the U.S. as a whole, there have been recent improvements in rates of A1c testing, self-monitoring of blood glucose, seeing a health care professional for diabetes, receiving a dilated eye exam or foot exam, and receiving pneumococcal and influenza vaccination (11). The decline in mortality may also be due to factors we were unable to assess, including increases in aspirin therapy or improvements in blood pressure, cholesterol, and glucose control (12). We were unable to control for the duration of diabetes, and the large recent increases in the number of people with diabetes could result in an increase in the number of people with a shorter duration who have less severe disease. However, the duration of diabetes in a national survey has recently been stable (11).

Mortality trends are an important long-term indicator of the public health impact of diabetes. As efforts continue to try to stem the rising epidemic of diabetes, tracking trends in mortality will become increasingly important because more than one in three people in the U.S. are expected to develop diabetes in their lifetime (3). Unless efforts are successful to reduce the excess mortality due to diabetes, those who develop the disease will face the risk of reduced quality and length of life. Public health officials in North Dakota will need to continue to monitor trends in the mortality of people with diabetes to assess whether the declines in mortality seen in this study represent a real and continuing trend.

Figure 1—Number of deaths, unadjusted and age-adjusted death rate, and predicted death rate among people with diabetes in North Dakota, 1997–2002.

![Graph showing death rates](image1)

References

