Ten-Year Trends in Self-Rated Health Among Spanish Adults With Diabetes, 1993–2003

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OBJECTIVE — Improving health-related quality of life among individuals with diabetes is a public health goal. This study sought to assess trends in self-rated "fair" and "poor" health among Spanish adults with diabetes and to identify factors associated with fair and poor health using data from all five National Health Surveys conducted from 1993 to 2003.

RESEARCH DESIGN AND METHODS — Poisson regression analysis was used to assess the trend in fair or poor health status during the period 1993–2003 and to compare prevalences between diabetes and nondiabetes sufferers.

RESULTS — The most relevant finding of this study is that, among Spanish adults with diabetes, prevalence of fair or poor heath is more than double that of individuals without diabetes and that overall prevalence did not vary during the decade 1993–2003 (71.2 to 70.5%). The variables associated with an increased risk of self-rated fair or poor health were as follows: age 54–64 years (odds ratio [OR] 1.5) or ≥65 years (2.1), presence of comorbidity (4.3), female sex (1.2), lower educational level (1.7), obesity (1.3), and no physical activity (1.6).

CONCLUSIONS — The lack of improvement in self-rated health among Spanish adults with diabetes calls for urgent implementation of health-promotion, prevention, and diabetes-management strategies aimed at enhancing the quality of life of such individuals.

Improving health-related quality of life among individuals with diabetes is a public health goal (1). The U.S. government–published *Healthy People 2010* includes self-rated health as one of three surveillance tools that can be used to measure health-related quality of life (2). Self-rated health status is a useful indicator of a population's overall well-being because lower ratings of health status have been associated with increased mortality and morbidity (3). This study sought to assess trends in self-rated "fair," "poor," or "very poor" health among Spanish adults with diabetes and to identify factors associated with fair, poor, or very poor health.

RESEARCH DESIGN AND METHODS
— This study was undertaken using individualized data drawn from all five National Health Surveys (NHSs) conducted from 1993 to 2003 on a representative sample of Spain's population (1993, $n = 20,880$; 1995, $n = 6,400$; 1997, $n = 6,400$; 2001, $n = 21,034$; and 2003, $n = 21,650$). The NHS used multistage and stratified cluster sampling. Details of NHS methodology are described elsewhere (4,5).

Subjects were classified as diabetes sufferers if they answered affirmatively to either or both of the following questions: "Has your doctor told you that you are currently suffering from diabetes?" and "Have you taken any medication to treat diabetes in the last two weeks?"

Information regarding self-rated health was obtained from the question, "Over the last twelve months, would you say that in general your health has been very good, good, fair, poor or very poor?" Individuals who answered fair, poor, or very poor were defined as having fair or poor health status. Nonresponders (<0.3% in all the NHSs used) and those who reported "don't know" were excluded from the analysis.

We estimated age- and sex-adjusted fair or poor health status prevalences, directly standardized to the sex and age distribution of the general Spanish adult population in 2003 (6), for each survey and for adults with and without diabetes. Poisson regression analysis was used to assess the trend in fair or poor health status during the period 1993–2003 and to compare prevalences between diabetes versus nondiabetes sufferers and within each group by year of survey, age-group, and sex (7).

Multivariate logistic regression models were generated so that, using fair or poor health status as the dependent variable, we could ascertain which sociodemographic and health-related variables were independently associated in the 2003 NHS. Estimates were made using the "svy" functions of the STATA program. Statistical significance was set at $P < 0.05$ (P values are two tailed).

RESULTS
— Among Spanish adults, age- and sex-adjusted prevalence of diabetes increased from 4.6 to 6.0% in the period from 1993 to 2003. Overall, the adjusted prevalence of adult diabetes sufferers who reported having fair or poor health registered no significant change over the study period, going from 71.2% in 1993 to 70.5% in 2003 (Table 1). Moreover, these prevalences were significantly higher among diabetic versus nondiabetic subjects across both sexes and all age-groups for all the years analyzed. The greatest difference in year 2003 was found among the youngest age-group (16–44 years), in which 56.1% of those

Table 1—*Age- and sex-adjusted prevalences of self-rated fair, poor, or very poor health among adults (age >15 years) with and without diabetes included in the Spanish NHSs conducted from 1993 to 2003*

	Diabetic adults					Nondiabetic adults				
	1993	1995	1997	1999	2003	1993	1995	1997	2001	2003
Male										
Aged 16–44 years	51.97	42.43	41.17	48.99	47.99	15.39	17.61	16.59	13.26	14.61
Aged 45–64 years	55.74	57.38	52.05	56.50	59.35	32.92	34.16	34.72	26.90	31.31
Aged ≥65 years	71.92	73.67	70.76	64.07	63.11	54.34	55.7	51.2	50.47	53.44
All ages	64.24	63.33	63.71	61.39	62.27	25.36	27.42	26.14	22.56	24.90
Female										
Aged 16–44 years	58.77	54.26	48.65	58.49	64.40	21.28	22.08	19.17	19.54	19.93
Aged 45–64 years	73.66	69.22	72.61	75.18	69.22	43.77	46.25	43.87	41.75	41.58
Aged ≥65 years	76.65	76.17	74.81	79.89	83.44	60.51	62.66	58.92	61.02	63.88
All ages	74.86	74.16	73.17	78.45	78.27	33.92	35.83	32.92	33.45	34.07
Both sexes										
Aged 16–44 years	53.40	48.42	44.84	53.65	56.05	18.28	19.80	17.86	16.34	17.22
Aged 45–64 years	64.85	61.76	62.51	66.00	64.37	38.44	40.31	39.38	34.45	36.53
Aged ≥65 years	74.65	75.12	73.1	73.21	74.86	57.91	59.72	55.66	56.57	59.47
All ages	71.22	70.76	70.10	70.14	70.47	29.75	31.74	29.62	28.15	29.60

Age- and sex-adjusted prevalences were estimated according to the 2003 Spanish population (ref. 6). Poisson regression analysis was used to assess the trend for 1993–2003 and to compare prevalences.

with diabetes reported fair or poor health compared with only 17.2% of those without the disease.

Analysis by sex revealed that in almost all the years studied and for all age-groups, a significantly higher proportion of female respondents reported having fair or poor heath than male respondents. Prevalence of fair or poor heath was shown by all surveys to increase significantly with age for men and women alike. Among diabetes sufferers aged >65 years, the trend from 1993 to 2003 showed a significant reduction in prevalence among men (from 71.9 to 63.1%) and the opposite among women (from 76.7 to 83.4%).

The multivariate analysis showed that, in 2003, the variables that were independently and significantly associated with an increased risk of self-rated fair or poor health, after adjustment for all the other factors, were as follows: age 54–64 years (OR 1.5) and ≥65 years (2.1); presence of comorbidity (high blood pressure and/or heart or respiratory chronic disease) (OR 4.3); female sex (OR 1.2); lower educational level (1.7); obesity, defined as BMI ≥30 kg/m^2 (1.3); and no physical activity (1.6).

CONCLUSIONS — The most relevant finding of this study is that, among Spanish individuals with diabetes, prevalence of fair or poor heath is more than double that of individuals without diabetes, a result in line with those previously

reported by other authors (8–11). These differences in self-rated health are greatest among subjects aged 16–44 years (56.1 vs. 17.2% prevalence for those with and without diabetes, respectively). In our opinion, factors found by other authors to be linked to a worse quality of life among diabetes sufferers, i.e., type 1 diabetes, use of insulin, and disease duration, may serve to explain the larger difference observed among the younger age-group (8,11).

As described in the U.S. for the period 1996–2005, overall prevalence of fair or poor health in Spain did not vary during the decade 1993–2003, though other authors have found improvements (8,9). We feel that changes in the prevalence of comorbid conditions in general, and mental disorders in particular (anxiety/depression), may account for the age- and sex-related variations we observed in the prevalence trends (10–13).

Arguably, the main limitations of this study are as follows: 1) All of the information obtained within the interviews may be subject to recall error or the tendency of interviewees to give socially desirable responses. 2) Data on relevant variables, such as diabetes duration, type of diabetes, or insulin use, are not collected by the Spanish NHS and may act as confounding factors in certain associations.

Lack of improvement in self-rated health among Spanish adults with diabetes calls for urgent implementation of

health-promotion, prevention, and diabetes-management strategies aimed at enhancing quality of life.

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