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Original Article

Time Trends in Self-Rated Health and Disability in Older Spanish People: Differences by Gender and Age

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Abstract

Background: To analyse time trends in self-rated health in older people by gender and age and examine disability in the time trends of self-rated health.

Methods: The data used come from the Spanish National Health Surveys conducted in 2001, 2003, 2006 and 2011-12. Samples of adults aged 16 yr and older were selected. Multivariate logistic regression was used to assess the association between age, gender, socio-economic status, marital status, disability and self-rated health across period study.

Results: Women exhibited lower (higher) prevalence of good self-rated health (disability) compared to men. The multivariate analysis for time trends found that good self-rated health increased from 2001 to 2012. Overall, variables associated with a lower likelihood of good self-rated health were: being married or living with a partner, lower educational level, and disability.

Conclusion: Trends of good self-rated health differ by gender according to socio-demographic factors and the prevalence of disability.

Keywords: Disability, Gender, Health surveys, Older people, Self-rated health

Introduction

Demographic changes in Spain in recent years are similar to those in the majority of developed countries: an increasing proportion of older people and a decline in the percentage of young people. The 2011 Population and Housing Census in Spain (1), estimated that 17.3% of the Spanish population is more than 64 yr old and 5.2% is 79 yr or older. Demographic projections indicate that these changes will be maintained and will even grow in the future, resulting in an aging population problem: the population aged 65 and over (80 and over) in 2060 will be 32.3% (14.5%) (2). The eldest segment of the population tends to have a higher prevalence of disability but this prevalence decreases over time (3, 4).

Consequently there is a greater interest in assessing the health of older people and their health needs for social and public health policies in this age group. Self-rated Health (SRH) is a good predictor of adverse events in health (5, 6) and has been widely used as a multidimensional indicator of health and a measure of health inequalities in developed countries. In the older European population, differences in health were observed depending on socioeconomic inequalities (7-9). Other studies examined the evolution of disability in the Spanish population (3, 10), but no studies examined the relationship between health and disability based on socioeconomic inequalities in all older Spanish population.

In the epidemiological field there are several theories (expansion of morbidity, dynamic balance and compression of morbidity) that attempt to explain the impact on health of population aging. Many studies (11, 12) support the conclusion that the theory of compression of morbidity is the most plausible. However, to understand the evolution of the population's health status and its relationship with disability, it is necessary to take into account other factors such as gender and social class. If there are changes in SRH over time, it is possible to establish preventive measures. It is therefore relevant to examine factors such as gender, social class, marital status, disability and its association with SRH.

The aim of this study was to analyse the trend in the prevalence of good SRH in the Spanish population aged 65 yr or older from 2001 to 2012 and examine the effects of gender inequality, social status and disability on the trend of SRH.

Methods

Data

This cross-sectional study was conducted using individualized data taken from the Spanish National Health Surveys (SNHS) for 2001, 2003, 2006 and 2011-12. The SNHS is an on-going, home-based personal interview that examines a representative national sample of non-institutionalized people residing in main family dwellings (households) in Spain. It is conducted by the Ministry of Health and Consumer Affairs and the National Statistics Institute (INE). The sample design was a three-stage stratified sampling, where the first-stage units are census tracts (grouped into seven strata according to the size of the municipality in the census tract), the second stage units were family households and third stage units consist of a selected adult in every household. The census tracts were chosen with a probability proportional to size in each stratum, households were selected with equal probability using systematic sampling, and the adults in each household had an equal probability of being selected. To meet the survey's stated aim of being able to furnish estimates with a certain degree of reliability at both national and regional levels the following samples of adults aged 16 yr and older were selected in the SNHS: 21,067 in 2001; 21,650 in 2003; 29,478 in 2006; and 21,007 in 2011-12. In this study, the sample consisted of 24,203 subjects aged 65 yr and older (4338 (19.9%) in 2001, 6134 (25.3%) in 2003, 7835 (32.4%) in 2006, and 5896 (24.4%) in 2011-12). A more detailed description of the SNHS methodology can be found in previous study (13).

The variables included in the current study were created on the basis of several items from questionnaires and they are the same in all surveys from adults aged 65 yr and older. The dependent variable, SRH, was obtained through the following question: "*In the last twelve months, would you say your health has been very good, good, fair, bad, very bad?*" The dependent variable reflects Good Self-rated Health and takes the value "1" if the answer was "good" or "very good" and "0" if the answer was "fair", "bad" or "very bad".

We also analysed socio-demographic variables such as gender, age (categorized into 4 age groups), socio-economic status represented by educational level with four categories (24, 25) (no studies, compulsory studies, post-compulsory studies and university studies), and marital status (unmarried/widowed/divorced versus married or living with a partner).

People demonstrated that they need help to carry out one or more activities of daily living have been classed as disabled person. In the SNHS, limitations were considered in four activities of daily living (ADL) (eating, getting into and out of bed, dressing up, bathing and walking around inside) (14,15) and in six instrumental activities of daily living (IADL) (preparing meals, managing money, taking medicine, shopping, making telephone calls, doing laundry or light housework and going for a walk outside) (16).

Statistical analysis

In this study, we analysed self-rated health separately for women and men and we excluded respondents with missing data for any outcome (0.4%). First, a descriptive analysis was performed for all variables of interest by age group and SNHS. Second, we compared the reported prevalence for the dependent variable and age group according to the SNHS. Thirdly, for the dependent study variable, we fitted logistic regression models by gender

to assess associated explanatory variables. Lastly, to evaluate the time trends throughout the 2001-2011-12 period multivariate logistic regression models were used. The dependent variable in the multivariate logistic regression is Good Self-rated Health and takes the value "1" if the answer was "good" or "very good" and "0" if the answer was "fair", "bad" or "very bad". Models were initially adjusted by age and by those variables that yielded significant associations within the bivariate analysis. We assessed significant interaction terms in fully adjusted models, and for significant effects, we stratified the fully adjusted models by the relevant factor.

Given the complex sample design, estimation took each observation sampling weight into account and standard errors were obtained by the Taylor linearization method in order to get more precise estimates (17, 18). Results were presented as *OR*, *P* values and 95% confidence intervals (*95%CI*). STATA 11 software was deployed for the statistical analysis.

Results

In the period studied 57.3% of older people are women. The mean age increased significantly from 73.0 to 75.3 yr for older people overall, from 72.9 to 75.7 yr for women and from 73.2 to 74.5 yr for men. Table 1 summarizes the distribution by sociodemographic variables and disability among women and men according to the SNHS conducted between 2001 and 2012.

Table 1: Frequencies statistic by gender: Spanish National Health Surveys (SNHS) 2001, 2003, 2006 and 2011-12

Women		**SNHS 2001 N=2489**	**SNHS 2003 N=3830**	**SHNS2006 N=5022**	**SHNS2011-12 N=3696**
Age Mean (SE)*		72.9 (0.12)	74.7 (0.17)	74.8 (0.14)	75.7 (0.16)
Age group (yr) (%) *	65-69	35.4	27.6	26.4	24.70
	70-74	28.1	27.9	25.8	22.80
	75-79	20.6	20.6	23.3	23.10
	≥ 80	15.9	23.8	24.5	29.40
Marital status (%)	Unmarried/widowed/divorced	47.2	50.9	49.4	49.9
	Married or living with partner	52.8	49.1	50.6	50.1
Educational level (%) †	No studies	26.6	42.0	42.0	51.70
	Compulsory studies	67.4	51.6	49.0	37.10
	Post-compulsory studies	3.4	3.8	5.8	7.10
	University studies	2.6	2.6	3.2	4.10
Disability (%) †	No	65.3	60.0	56.0	53.1
	Yes	34.8	40.0	44.0	46.9
Men		**N=1843**	**N=2304**	**N=2813**	**N=2330**
Age Mean (SE)*		73.2 (0.10)	73.8 (0.20)	74.5 (0.16)	74.5 (0.18)
Age group (%) *	65-69	31.5	31.8	26.1	31.2
	70-74	30.8	27.7	28.0	23.1
	75-79	22.5	21.1	23.2	20.0
	≥ 80	15.2	19.5	22.7	25.7
Marital status (%)	Unmarried/widowed/divorcd	19.6	19.0	20.0	20.1
	Married or living with partner	80.4	81.0	80.0	79.9
Educational level (%) †	No studies	21.3	34.8	30.4	34.1
	Compulsory studies	67.5	50.1	50.6	44.0
	Post-compulsory studies	5.5	7.3	9.0	12.9
	University studies	5.7	7.8	10.0	9.0
Disability (%) †	No	75.4	73.4	67.1	67.4
	Yes	24.6	26.7	32.9	32.6

* Significant differences between SNHS

† Significant differences between SHNS adjusted by age

Among both women and men, the prevalence of higher education level and disability significantly increased during the period studied. However, in women the prevalence of higher education level, being married or living with a partner is significantly lower than for men, while women's prevalence of disability is significantly greater than for men.

Time trends for SRH by age group and gender are summarized in Table 2. Crude time trends analysis by age group and gender showed an increase in the prevalence of good SRH over time among women and men only in age groups younger than 75 yr. The highest prevalence of good SRH was found for both genders in the SNHS conducted in 2011-12, with 39.0% for women, and 51.0% for men. Overall, women exhibited significantly lower prevalence of good SRH and greater disability as compared to men in all surveys (*Fig. 1*). Furthermore, the level of disability among women is greater than the level of SRH during the period studied, except in 2001. The multivariate analysis for time trends in women found that good SRH increased significantly from 2001 to 2011-12 (*P-value*<0.05).

Table 2: Time trends by gender and age group in good self-rated-health between 2001 and 2011-12

Women	Age group	**SNHS 2001**	**SNHS 2003**	**SHNS2006**	**SHNS2011-12**	***P*-value***
Good Self-rated-health (%) †	65-69	41.9	38.4	38.4	51.8	0.001
	70-74	35.9	34.3	35.2	44.3	0.002
	75-79	31.7	30.7	27.8	33.5	0.186
	≥ 80	30.9	27.3	30.4	28.6	0.569
	Total	36.4	33.0	33.2	39.0	<0.01
Men	Age group	**SNHS 2001**	**SNHS 2003**	**SHNS2006**	**SHNS2011-12**	***P*-value***
Good Self-rated-health (%)	65-69	52.4	50.9	56.6	62.2	0.002
	70-74	46.7	44.8	52-3	58.2	0.002
	75-79	45.3	40.9	44.3	45.1	0.640
	≥ 80	42.0	39.5	38.9	35.7	0.390
	Total	47.5	44.9	48.5	51.0	<0.05

* *P*- value for association between good SRH and the SNHS by multivariate regression models

† Significant differences in good SRH between women and men

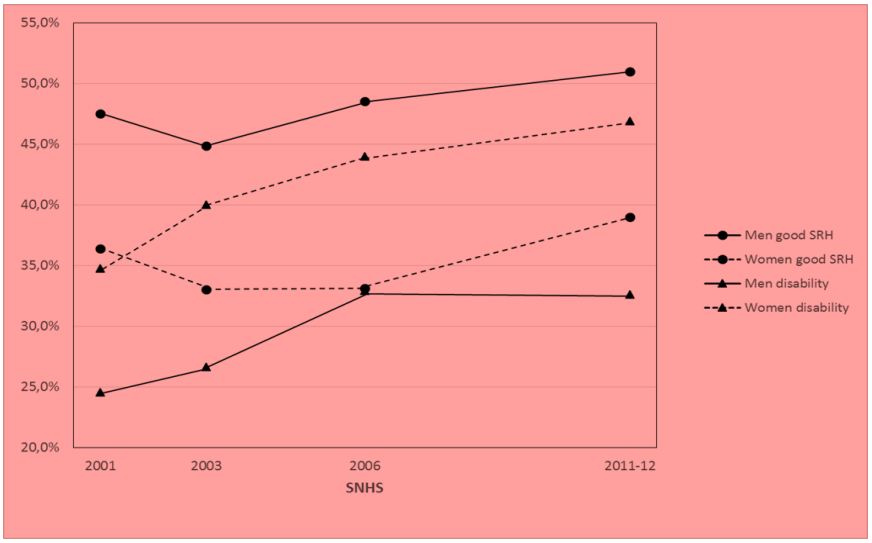

Fig. 1: Time trends of good self-rated health and disability in older people by gender

The results of the multivariate analysis to estimate time trends and associated factors for older women are summarized in Table 3. The variables significantly associated with a higher likelihood of reporting good SRH among women were: not being married or living with a partner, and higher educational level. Further, good SRH for women with disability improved during the period studied and this group of women had worse health, which deteriorated with age. Among men, SRH also improved significantly from 2001 to 2011-12 (*P*-value<0.05). The results of the multivariate analysis to estimate time trends and associated factors for older men are found in Table 3. Factors associated with better SRH in men were: not being married or living with a partner, higher educational level and no disability.

Table 3: Multivariate logistic regression models by gender in good self-rated-health between 2001 and 2011-12

Women		**OR**	**95%CI**	***P*-value**
Age group	65-69	1.00		0.49
	70-74	0.97	0.83-1.13	0.69
	75-79	0.88	0.73-1.05	0.16
	≥ 80	1.01	0.83-1.25	0.89
SNHS	2001	1.00		0.00
	2003	1.02	0.86-1.20	0.85
	2006	0.98	0.83-1.14	0.77
	2011-12	1.70	1.44-2.00	0.00
Marital status	Unmarried/widowed/divorced	1.00		
	Married or living with partner	0.84	0.75-0.94	0.00
Educational level	No studies	1.00		0.00
	Compulsory studies	1.53	1.37-1.72	0.00
	Post-compulsory studies	2.59	2.06-3.27	0.00
	University studies	3.07	2.24-4.21	0.00
Disability	No	1.00		
	Yes	0.16	0.13-0.21	0.00
Age by disability	65-69 disability	1.00		0.00
	70-74 disability	0.44	0.29-0.66	0.00
	75-79 disability	0.62	0.43-0.88	0.01
	≥ 80 disability	0.70	0.50-0.98	0.04
SNHS by disability	2001 disability	1.00		0.00
	2003 disability	2.09	1.47-2.96	0.00
	2006 disability	1.51	1.12-2.05	0.01
	2011-12 disability	2.14	1.63-2.80	0.00
Men		**OR**	**95%CI**	**P-value**
Age group	65-69	1.00		0.14
	70-74	0.93	0.78-1.10	0.37
	75-79	0.81	0.68-0.97	0.02
	≥ 80	0.91	0.75-1.11	0.35
SNHS	2001	1.00		0.00
	2003	0.94	0.82-1.09	0.43
	2006	1.23	1.07-1.41	0.00
	2011-12	1.37	1.19-1.57	0.00
Marital status	Unmarried/widowed/divorced	1.00		
	Married or living with partner	0.84	0.72-0.97	0.00
Educational level	No studies	1.00		0.00
	Compulsory studies	1.44	1.25-1.67	0.00
	Post-compulsory studies	2.08	1.65-2.61	0.00
	University studies	2.56	1.96-3.35	0.00
Disability	No	1.00		
	Yes	0.18	0.15-0.21	0.00

Discussion

The aim of the present paper was to assess health trends using SRH data for persons aged 65 or older reported in the SNHS for 2001, 2003, 2006 and 2011-12, and to explain the association of socio-demographic variables and disability with a decline or an improvement in SRH between 2001 and 2012.

This study revealed an improvement in good SRH from 2001 to 2012 in the older Spanish population and the SRH time trends show differences by gender and age. These results are not in line with other studies where good SRH remained unchanged over time (10, 19) or declined (9). Specifically, the prevalence of good SRH remained unchanged over time in the 76 or older age group, while SRH increased over time among women and men only for those younger than 76. This may be due to the fact that older people's concept of health remains stable when they encounter significant health problems, but over time this concept of good health declines (23). Furthermore, the findings of the present article also indicate that being male is linked to good SRH during the period studied. The effect of gender in the assessment of SRH is in line with that found in previous studies in widely different countries such Spain (20), China or Denmark (21), but it is contrary to the SHARE study (22) where being female has a strong protective effect against a decline in SRH. These results justify a separate analysis of the factors that influence good SRH assessment by gender.

In this research, there are two associated but contrasting common factors to time trends of good SRH for older people: socio-economic and marital status. Socio-economic status was represented by educational level, because this variable has been demonstrated to be a good indicator among older people (24-25). Higher educational level is linked to an improvement in good SRH over time, in line with other studies (3, 8, 22, 26). Moreover, married people or those living with a partner who reports a lower SRH may be reflecting the fact that people in a position of no autonomy and independence rated their health lower regardless of marital status (26).

The current study also found that disability was related with SRH. During the period under study, women presented higher levels of disability than men and this rose with increased age, which agrees with previous studies (10, 27). Moreover, the association of disability with SRH is different among women and men: disability in men was associated with poorer health regardless of age and the SNHS under consideration, while in women with disability, SRH improved throughout the 2001-2012 period. Furthermore, these women have poorer health, which deteriorated with age. These differences by gender in the association of disability with SRH may be due to the fact that Spanish women have a longer life expectancy than men and the older ones tend to have a higher prevalence of disability (4). Even though objective indicators of health and disability decline over time, this does not lead to a decline in the SRH values for older people (28).

Finally, we should recognize some limitations of our study. Firstly, the data correspond to a cross-sectional-trends study, a study design which does not permit the establishment of a cause and effect relationship due to the lack of longitudinal follow-up of the same individuals. Secondly, although the percentage of institutionalized older people in Spain is relatively small, the results found in this study cannot be generalized to the institutionalized population. Thirdly, our measure of disability is limited by the information provided by the SNHS and is a concept built from the most accepted definition of disability. In Spain there are other surveys that analyze disability more fully, but they do not allow the study of its evolution as the SNHS does (29). Lastly, there are other SNHS (1987, 1993 and 1997) considered in this study due to differences in homogeneity, seasonality and sample design regarding the SNHS from 2001. Despite these limitations, this study provides additional insights into inequalities of health over time in older adults. This is important in designing effective policies to improve population health, taking into account the specificities of the older population.

Conclusion

There is an increase in good self-rated health over time in the older Spanish population. In this population, the trend of good self-rated health differs by gender, and health inequalities are related to socio-demographic factors and the prevalence of disability. Older people, unmarried and with higher educational level and no disability exhibited better self-rated health. During the period studied, women with chronic disability tended to have better self-rated health as they age. Differences in health inequalities that arise in this population are possibly due to different cultural values and social roles assumed by individuals at this stage of life and increased life expectancy. It is therefore essential to develop specific interventions for older people in the future and especially in their last years of life. The Spanish Long-Term-Care system is still being developed, in particular through the Law on Promotion of Personal Autonomy and Care for Dependent People (LAPAD). This law has provided a public framework for caring for older people (30). Although the LAPAD has helped to improve the quality of life of dependent people, there is still some way to go for older people. The results of our study provide evidence that the health inequalities in this population should be taken into account in the development of this law and for any health care programme.

Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

Acknowledgement

The authors declare that there is no conflict of interests.

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