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UB Riskcenter Working Paper Series

University of Barcelona

Research Group on Risk in Insurance and Finance www.ub.edu/riskcenter

Working paper 2015/06 \\ Number of pages 24

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Abstract (250 words)

Background: Health expectancies vary worldwide according to socioeconomic status (SES). The lower SES usually show health disadvantage and the higher SES a health advantage compared to the average. The educational level of individuals is strongly linked to their SES.

Objective: We propose to identify the evolution of SES differentials in health by gender, paying special attention to the trends for the least advantaged - low educated females. We focus on the adult Catalan population (Spain) aged 55 or older.

Methods: We measured SES through education. We used individual cross-sectional data obtained in 1994 and in 2012 from the Catalan Health Survey. We examined three comprehensive health indicators to disentangle the health and disability statuses in order to document social differences in health. We applied logistic models for each indicator, controlling for sociodemographic characteristics, health coverage and lifestyle.

Results: Low educated males and females experienced an increase in the prevalence of functional and ADL limitations. We found an increment in the likelihood of bad health and functional limitations for the low educated between 1994 and 2012. The prevalences of smoking increased for low and middle educated females, whereas low educated males suffered a 4.1% increment of sedentarism. Having smoked in the past and leading a sedentary lifestyle increased the likelihood of bad and functional limitations. In general, double health coverage reduced the effect on reporting more health problems. Our predicted probabilities show that low educated women were more likely to self-perceive their health as bad and report functional limitations than any other group in both periods.

Conclusions: Lower educated females are the most disfavored group in terms of health and personal autonomy. The gender gap between low educated men and women has reduced for self-perceiving bad health and for functional limitations between 1994 and 2012. Adopting a healthy lifestyle promotes well-being and personal autonomy. Health policies should continue to take into account that the population with lower SES is more likely to suffer from poor health and disability as they age, being the females a particularly fragile group.

Introduction

The remarkable gains in longevity in Europe in recent history raise a number of questions about the impacts on health and the quality of life of older individuals. Europeans live longer and beyond their working years, and spend decades in retirement, but a significant part of their life expectancy at advanced ages is lived with diseases and disability (Solé-Auró and Alcañiz, 2014). It is also well known that the socioeconomic status (SES) of the Europeans produces inequalities. Large variations, for instance, in health expectancies according to SES are observed over time across and within Europe (Crimmins et al., 2003; Maje et al., 2011; Mäki et al., 2013) and in the United States (Solé-Auró et al., 2014; Meara et al., 2008); but some groups have gained more than others. These dissimilarities provoke an important health concern that should promote the reduction of health gaps by SES and the increase of healthy active aging in Europe for all individuals, regardless of their education or income (Jagger at al., 2013; Rechel et al., 2013; Marmot et al., 2008; Mackenbach et al., 2008). For understanding the complex puzzle of the inequalities over time, we need to consider the gender differentials. Women experience worse health but lower mortality than men (Verbrugge, 1984; Vaupel, 2010), and gender differentials in health are due to a combination of biological, behavioral, but also social and economic differences as well as the interactions of these factors (Robine, 2011).

Determinants for a successful aging

Aging is gratifying but not to the same extent for all individuals. There are a number of components involved across our lifespan that modify our vital trajectory from birth to death. Rowe and Kahn (1987, 1997) introduced the term “successful aging”, as a multidimensional concept involving the avoidance of disability and disease, the maintenance of high physical and cognitive function, and sustained engagement in social and productive activities. In general terms, the sizeable gains in life expectancy can be regarded as a success of public

health policies, but have led to larger differences in the way old people face the last stage of life. As Aureli and Baldazzi (2002) pointed out individual's "registered age" and "biological age", the real age of their body, no longer coincide. Although marginal health returns of income are decreasing (Fritzell, 2005), economic resources play a key role on health-related quality of life at all ages, as they open the possibility to convert income into goods and services that promote a healthy life (Lundberg et al., 2010). Similarly, formal education is fundamental in how individuals face the end of their working lives and address aging, as the more educated have a richer psychological function (more mastery, efficacy, happiness) and opt for new commitments and innovative resources more than the least educated (Kubzansky et al., 1998; Von Humboldt and Leal, 2012).

In addition to income and education level, other sociodemographic characteristics, such as professional status or household, have been found to be predictors of adjustment to aging (Von Humboldt et al., 2014). Religious or spiritual beliefs, lifestyles (exercising, adequate dietary intake) and material factors (absence of financial problems or good employment status) are also important on successful aging (Schrijvers et al. 1999; Ng et al., 2009). There are other indicators, such us preserving vision or the ability to perform activities of daily living that are not essential for functioning but allow individuals to live independently in a community and directly correlate to a good valuation of old age (Jopp et al., 2008).

Socioeconomic differences in health by gender: the European context

Women live longer and spend more years with health and functioning problems than men (Vaupel, 2010). This phenomenon, men die, women suffer, is what is called the gender health-survival paradox (Oksuzyan et al., 2008). While a large body of literature shows a strong link between education and health (Dupre, 2007), it is unclear whether a low SES

equally affects the health of men and women, or if low educated women are a particularly vulnerable group.

Evidence from Nordic countries shows that a high SES is closely linked to key healthy behaviors, which enhance a longer life expectancy. For instance, in Sweden, smoking, physical inactivity and excessive body mass index (BMI) are socioeconomically stratified after the age of 50, and more prevalent among people with low SES, while socioeconomic-based inequalities are generally steeper among men than women - except for obesity (Shaw et al., 2012). However, the high tobacco consumption in other Nordic countries like Denmark produces small differences between educational groups (Mackenbach et al., 2008).

In Central and Southern Europe issues regarding culture and lifestyle seem to be more related to risk factors and hence to disease and disability than socioeconomic variables (Mäki et al., 2014). Regarding the Spanish population, Rueda (2012) explained that socioeconomic development of the living region is crucial to understand the self-perceived health status among older adults, and especially among women. However, the deterioration of self-perceived health in older people is more pronounced when people face functional dependence, when they belong to the lower socioeconomic status and when they are females (Morcillo et al., 2014). Spanish population improved in terms of self-perceived health between 1987 and 2001 but the low educated reported higher rates in bad health over time, without any distinction by gender (Regidor et al., 2006). Along the same lines, Alcañiz et al. (2015) found out that behaviors such as smoking, alcohol misuse and sedentary lifestyle, as well as limitations for activities of daily living, are associated with the risk of functional dependence, being the hazard higher for low educated individuals, and particularly for women.

In relation to chronic conditions, it is not easy to disentangle the impact of SES differentials, as it varies not only by gender, as men and women might report their health

problems differently, but also by the country context. Crimmins et al. (2011) did a real effort on explaining the gender differences in health across European countries and the U.S. and concluded that gender differences in many aspects of health are similar in direction although somewhat different in size. When we add the SES dimensionality in health, and particularly for chronic conditions, some researchers find that low educated people have higher prevalences of increased BMI and physical inactivity, associated with hypertension and hence a higher risk of cardiovascular disease (Morales-Asencio et al., 2012); plus higher inequalities in cardiovascular risk factors by social class for women compared to men (López-González et al., 2015). Fabbro et al. (2011) provide a possible reason for the more socioeconomically disadvantaged adults to be more vulnerable than other groups to develop lifestyle diseases as they age: they are less likely to be reached by health information campaigns, though some non-formal learning settings (well-being, language or cooking courses) target women with social and education restricted background. This is fully justified as the low educated men and women are more prone to adopt unhealthy behaviors compared to the most educated. For instance, as Finger et al. (2013) pointed out, individuals with only primary education show a higher intake of energy-dense food and low intakes of fruit and vegetables; they also smoke more than the general population, though females are more inclined than men to quit, whenever they find an adequate motivation like medical advice or disease prevention (Coma et al., 2003; Ramon et al., 2009).

The current analysis examines how recent trends in health and education have interacted to change health inequalities among the older population in Catalonia (Spain) over the two decades from 1994 to 2012, and how these changes affect particularly the most vulnerable group - low educated females. Overall, we expect that educational health gaps between Catalans with higher and lower education will expand, particularly for females, as there may be a widening of the socioeconomic disparities over this time period.

Methodology

Data

We used the 1994 and 2012 Catalan Health Survey (ESCA). The ESCA (Generalitat de Catalunya, 2013) is the only source of health-related micro data for Catalonia (Spain), a Mediterranean region with more than 7.5 million inhabitants in 2012. The Department of Health in Catalonia is responsible for the technical execution of this official survey, that contains wide information on sociodemographic variables, health behaviors and individual's state of health. The sample follows a stratified design, based on age, gender and geographical area. The random collection of the data is performed using personal interviews. The questionnaires of each time-period are designed to be comparable.

This cross-sectional survey was collected in 1994 and continuously during the period 2010 to 2014 (Alcañiz et al., 2014). In the last time period we combined data of the four year's available (last semester of 2010, 2011, 2012, 2013 and the first semester of 2014) to increase our sample size, and considered 2012 our midpoint year. Hence, when we refer to the year 2012 in our analysis, we include data from the years 2010 to 2014. As the aim of this study is to examine trends in SES differentials by gender when health problems start to show in the population, we focus on respondents who were 55 years of age and older. Our sample is comprised of 10,307 Catalan non-institutionalized residents (4,446 individuals in 1994 and 5,861 individuals in 2012) randomly selected aged 55 years and older.

Measures

Conceptual health framework

Health is difficult to define and operationalize because it is a multidimensional concept. Mainly, health can be defined in terms of morbidity, functional and subjective health

(Cambois et al., 2011). These various health dimensions describe the disablement process, a process from disease to disability and death (Verbrugge and Jette, 1994). The disablement process depends in part on the individual's resources (income, double health coverage,…) and environmental factors (physical, intellectual, social, behavioral,…) to maintain persons activity. Therefore, we can examine different health transitions across the process.

Indicators

We use three health indicators to disentangle the health and disability statuses in order to document social differences in health. These health measures are based on the conceptual framework of the disablement process: 1) *Self-perceived health*: we consider persons reporting being in bad or very bad health, as opposed to those who report being in excellent, very good or good health; 2) *Physical and sensory functional limitations:* our indicator of functional limitations is based on a positive answer (yes versus no) – reporting difficulty in at least one of the following five items: (i) limitations in seeing; (ii) limitations in hearing; (iii) mobility problems, such as the inability to move out of the house without receiving help from another person; (iv) walking problems, which may require using special equipment; and (v) other important mobility limitations, such as the difficulty to walk up and down a flight of stairs, and standing without using special equipment; 3) *Restrictions on activities of daily living (ADL):* difficulty in or need of assistance for eating, washing, getting dressed or toileting. ADL limitations, a more severe indicator, are usually located at the end of life in the disablement process.

When measuring socioeconomic status, there is a range of variables that have been commonly used as indirect indicators, such as family income, education or occupation (NCES, 2012). In this article we use education, as its level is considered a reliable indicator for two main reasons: it is stable after early adulthood and it is relatively easy to measure, as

respondents usually report their education attainment truthfully (Shavers, 2007). Importantly, it is less likely to be reverse causation between education and health at older ages than with other measures of socioeconomic status such as income, wealth or occupation. We consider three educational groups based on the level of education achieved, using the International Standard Classification of Education (ISCED): 0-2 for the low-educated (primary and lower secondary education), 3-4 for the middle-educated (upper secondary education) and 5-6 for the high-educated (tertiary education).

In the regression material, we include marital status as a dichotomous variable (married versus not); self-reported smoking behavior with three categories (non-smoker, past or current smoker); and the alcohol intake differentiating between at risk drinkers and moderate or non-drinkers, according to the classification provided by the Spanish Society of Family and Community Medicine (Robledo and Córdoba, 2005). Sedentary lifestyle reports individuals with no regular physical activity versus people that have some. Spain provides universal public coverage, that can be voluntarily complemented through private health insurance. Thus, we also include controls for double health coverage.

Analyses

Prevalence

We examined descriptive data on prevalence of bad self-perceived health, functional limitations (sensory plus mobility) and ADL difficulties for individuals aged 55-plus by gender, documenting differences in the prevalences of these health indicators. We standarized our samples to make comparisons in both periods, so that each population had the same age and gender structure of the Catalan population on July 1st 2013, date of the last official population register. Thus, the differences in our indicators due to a different demographic structure between 1994 and 2012 were eliminated.

Logistic regression

We applied a logistic regression model in each time period to examine trends in SES differentials by gender for our three outcomes. Sampling weights provided by the ESCA were used in the analyses to correct for age and gender deviations between our samples and the Catalan population in both years. Model 1 examines the effect on having selected health and disability indicators for each outcome controlling for age, sex, level of education, and being married. In order to see how gender differences in education mediate gender differences in the prevalence of bad health, functional limitations and ADL limitations, we included an interaction. Therefore, Model 2 includes an interaction between sex and educational level plus the double health coverage, and controls for unhealthy behaviors such us smoking (current or past), excessive drinking and sedentarism. Model 2 interactions between sex and education level are presented graphically to ease its interpretation (Figure 1). The plots show the predicted probabilities by education level and time period allowing to appreciate the gap between genders, reporting 95% confidence intervals for pairwise comparisons. As suggested by Goldstein and Healy (1995), intervals have lengths equal to 2*1.39*standard errors in order to have an average level of 5% for the type I error probability in the comparisons of group means. Analyses were conducted using Stata software, version 12 (StataCorp).

Results

Table 1 presents the sample characteristics for those aged 55-plus in 1994 and in 2012 by gender. The educational distribution through these two decades draws a different picture across generations. In 1994, a higher proportion of males and females belonged to the low educated group (88.6% and 94.4%, respectively); however, the low educated were greatly reduced in 2012 (66.8% for males and 76.6% for females). The middle educated group experienced a large increase over time and similar for both genders, due to the gross

improvements on scholarization of the population (Viñao, 1990), that did not arrive on time for the generations aged 55-plus in 1994. Even though the high educated population represented a minority all along the period, percentages increased from 4.8% and 2.0% in 1994, to 11.4% and 7.2% in 2012, for males and females, respectively. Trends on marital status showed a decrease around 4.5% for both genders in the rate of married individuals for the low educated, with no other significant variations over time.

Health behaviors changed throughout the period. Male smoking prevalence for the low educated showed a decrease of 6.6% between 1994 and 2012, whereas tobacco consumption prevalences increased 4.2% for women with a similar level of education. The largest increment of the prevalence of current smoking is for the middle educated females (8.7%). High educated women, though, showed a large raise in the prevalence of past smoking (21.5%). With respect to physical activity, only low educated males presented a 4.1% increment of sedentarism, while the rest of the groups remained stable. The percentage of population with double healthcare coverage did not undergo significant changes by gender or level of education, being the high educated men the most protected.

We also document some statistically significant variations in the prevalence of our three health indicators by education using the cross-sectional data in 1994 and in 2012. The perception of bad health for the low educated females has reduced over time (5.7%). However, they registered a 8.9% increment in the prevalence of ADL limitations, and a slight increase for functional problems (3.7%; almost significant). Meanwhile, low educated men also experienced a rise in the prevalence of functional impairment (9.2%) and ADL limitations (6.3%). Partly due to the smaller sample sizes, there is not statistical evidence of variations over time for the middle and high educated groups. In any case, certain trends are suggested by these results. For instance, the middle educated group experienced a worse perception of their health status between 1994 and 2012 for both genders. Thus, this change

was accompanied by increments on functional limitations and ADL restrictions, mainly for men. When relates to the most educated both men and women experienced a reduction of their bad self-perceived health over time. However, all high educated suffered increments on both functional limitations and ADL restrictions. In terms of prevalence, and as expected, most poor health and disability prevalences diminished from low to high educational groups; the more educated the least health or disability problems.

[Insert Table 1 about here]

Table 2 and 3 show the odds ratios (OR) of the explanatory variables indicating the effect on having fair or poor self-perceived health, functional problems and ADL limitations in 1994 and 2012.

As shown in Model 1, age and being female were positively associated to all poor health and disability variables both in 1994 and 2012, except for being female for ADL limitations in 2012. The greater the severity of the health indicator the larger the influence of age. Being female added a significant likelihood of bad self-perceived health and functional limitations, with OR over 1.34 for both periods. Being low educated significantly increased the probability of bad self-perceived health and functional limitations in both years, adding more vulnerability to the already disadvantaged situation of older women; however, these ORs decreased between 1994 and 2012, showing a reduction of the low educated health gap compared to the middle educated. Nonetheless, the most educated were not protected against these two health conditions in 1994, but they were in 2012.

In Model 2, that includes controls for health behaviors, the significant effect of being female vanishes, an indicator that health behaviors differ by gender. Having smoked in the past and leading a sedentary lifestyle were positively associated with reporting bad health for both periods. In particular, physical inactivity is strongly linked to all our health conditions,

with OR over 2.3 for bad self-perceived health and functional limitations for both years. Excessive drinking is associated with a lower likelihood of reporting poor self-perceived health and functional limitations in 1994 and it has no relevance in 2012. This may be linked to a process of the life course, as there may be an opposite propensity to heavy drinking and suffering from health conditions when age increases. Finally, double health coverage reduced the effect on reporting more health problems, except for functional limitations in 2012.

The effects of ADL limitations, a more severe situation that usually begins at more advanced ages, are somehow different and harder to be detected as the samples are smaller. In 1994, being older was significant, regardless of the gender or education level. In 2012 age remained significant and education did not protect against ADL limitations. In 2012, being female emerged as a significant risk factor, that did not exist before (Model 1). With regards to health behaviors, a sedentary lifestyle was highly associated with all health and disability indicators, both in 1994 and 2012. Possibly due to the fact that individuals tend to quit smoking when they get older and begin to have functional difficulties, being current or past smoker was associated with a lower probability of ADL limitations. Meanwhile, double health coverage decreased the likelihood of suffering ADL limitations in both years, suggesting a possible benefit of greater prevention, that helps to lessen their risk of disability or their perception of bad health.

[Insert Table 2 about here]

[Insert Table 3 about here]

It is interesting to see how the probability of health conditions varies between and within males and females over these two decades. This is explored in more detail in Figure 1, graphically presenting the results of the interactions between sex and education in 1994 and in 2012. The predicted probabilities are calculated following our full model, that includes

controls for sociodemographic characteristics, health behaviors and double health coverage. In general, differences by gender were larger in 1994 compared to 2012. Low educated women take the lead as they were more likely to self-perceive their health as bad and report functional limitations than any other group in both periods. Nevertheless, the improvement in self-perceived health for the low educated was steeper for women than for men, while the worsening in the likelihood of functional limitations was smoother for women than for men. As a result, the gender gap between low educated men and women was reduced for self-perceiving bad health and for suffering functional limitations between 1994 and 2012.

No significant changes were found for the high educated by gender over time, though the predicted probabilities of bad self-perceived health for the high educated were significantly different and lower for males than females in 2012.

Regarding individuals with intermediate education, Figure 1 shows a worsening evolution both for self-perceived health and functioning capacity. Though changes are no statistically significant, it is worth noting that the differences between the middle and the more educated seem to be increasing along the period. In 1994 females in this intermediate education stratum were the least impaired by functional limitations, with a prevalence similar to high educated women. Nonetheless, this advantageous situation seemed to vanish in 2012, as the middle educated females presented a clear worsening while prevalences for the highest educated remained flat.

Finally, education level seems to have little impact on the presence of ADL limitations. While no clear pattern can be disentangled by gender and/or education level, the predicted probability of suffering ADL limitations appear to be growing in 2012 compared to 1994 for both men and women in all education groups.

[Insert Figure 1 about here]

Conclusions

Regarding the population aged 55-plus in Catalonia (Spain), our findings reaffirm that low education is a predictor of poor self-perceived health and functional limitations, especially for females. On the contrary, high education appears as a protective factor against disease and disability. At the moment, and despite the gender equality policies promoted from long ago by the social democratic government of Spain (Lahey and de Villota, 2013), women remain less advantaged than men with a similar level of education. The SES health gap by gender seems to be about the same in 2012 than two decades ago. On the other hand, the lack of education influences men and women similarly with regards to poor self-reported health status and functional impairment, and its negative effect is about the same over time. Although we did not find significant differences in our ADLs models, the trends insinuate a worsening health effect for the low educated females larger than for the other groups.

Despite the foregoing, there are also some encouraging findings. The reduction in the predicted probabilities of bad self-perceived health is steeper for women than for men, whether they have high or low education. Thus, the increments on the likelihood of functional limitations are also more favorable for females. Therefore, the gender health gap appears to be entering a slow but promising reduction process. Moreover, in 2012 high-educated females are slightly better in terms of bad self-perceived health and functional limitations than low educated males. This finding may indicate that women can compensate for their gender disadvantage through education.

Our results for the middle educated raise a number of questions. Individuals with intermediate education are the group with the worse trajectories over time. The uptrends for every health indicator, both for men and women, make us wonder why they worsened more than the rest of the educational groups. However, part of the explanation for those observed differences may be underlying differences of the population at risk. One of them may be the

significant process of convergence that took place throughout the 20th century in Spain. Viñao (1990) remarked the large rise of schooling rates achieved by the policies that promoted the access to education for all individuals; while this convergence also affected other variables related to human development, social class disparities remained high (Escudero and Simon, 2012). Hence, a number of middle educated individuals aged 55-plus at the end of the 20th century, but also at the beginning of the 21st century, may easily belong to a low social class, with its well known implications over health and lifestyle.

Health behaviors matter differently according to each specific SES group or gender. The prevalence of smoking for the low and middle educated females was greater in 2012 than it was two decades earlier. However, an opposite trend was reported for men, and for women with higher education with regard to former smoking. This fits with the temporal gap between gender cohorts pointed out by Bilal and colleagues (2014), who remark that female-to-male smoking ratio in Spain rise over the past 50 years, while high educated females were the first to show a reduction in smoking prevalence. Sedentary lifestyle particularly affects low educated men and its prevalence presents a worrying uptrend.

We believe that higher efforts ought to be made to reduce and not just maintain health inequalities by gender and education. The health care system must take into account the vulnerability of the least advantaged and promote policies not only to avoid larger deterioration of their health and autonomy statuses, but also to equate them with more privileged groups. Particularly for women, low SES adds to gender disadvantage, resulting in one of the most disfavored groups in the population. It is somehow unsatisfying that this female fragility relates more to gender than to education, though there are a number of factors in Spanish recent history that have led to a greater physical decline of the elderly female population. Now is the time to prioritize public policies to alleviate this situation.

Adopting a healthy lifestyle promotes well-being and personal autonomy. Hence, the benefits of physical activity, moderate drinking and no smoking should be emphasized to the entire population, and particularly to the least deprived people, who may be less aware of the damages caused by unhealthy habits. After all, health policies decisions should start from the premise that the population with lower SES is more likely to suffer from poor health and disability as they age. To reconcile these patterns, we need to examine national context and policies as modify the impact of individual characteristics on health (Alder et al. 1993; Marmot et al. 2008; Mackenbach et al. 2013). At first, individual's health depends on the availability and quality of health care, prevention and protection throughout the national territory. And protective national contexts may reduce health risks by compensating for material deprivation, access to education and to health care. Therefore, to determine social determinants on health, the ways in which social policies are designed, as well as their generosity, are important because of the increase in resources that social policies entail (Lundberg et al., 2008). The economic situation might also modify the resources as well as the economic returns of education. Not only the health system, but the whole social protection system and how it is implemented drives individuals' resources to manage their own health.

There are some limitations in the present analysis that could affect our findings. The meaning of education might have changed between our time interval, as well as the health return of education. The investigation of SES differences in health would provide clarity exploiting the longitudinal nature of the datasets, but no panel data for Catalonia – neither for Spain – are available. The relatively small sample sizes for the high educated, in particular for women in 1994, makes it hard to find significant differences between this group and the middle educated. As we do not consider the nursing home population, our results only reflect the non-institutionalized individuals. The Catalan health authorities reported in 2006 that the institutionalized population was about 0.7% (Generalitat de Catalunya, 2006), so it is unlikely

that the slight increase in bad health prevalences that their inclusion may cause (Lobo et al, 2007) would be sufficient to alter our findings. Some other explanatory variables (e.g. body mass index) could have been included in the analysis, but the available information from both questionnaires – 1994 and 2012 – is not always equivalent.

While we recognize these limitations, the analysis presented here clarifies that low-educated women's health is not worsening faster than other educational groups. Women have worse health than men, no matters their education. Hence, having low education is associated to health, without gender differences. To sum up, the gender health gap has been slightly reduced; however, the educational health gap is about the same over time.

Health is a multidimensional concept, and a social, economic, and political matter. Therefore, equity in health is certainly one of the best indicators of social justice that could be found. Closing, not only maintaining, the health gap between low and high socioeconomic groups offers great potential for providing equity to all.

Acknowledgements

The authors are very grateful to the funding provided from the Spanish Ministry of Science and Innovation (ECO2013-48326-C2-1-P) and the Spanish Ministry of Economy and Competitiveness (ECO2012-35584). The authors also acknowledge the Health Catalan Department team for sharing the data.

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Table 1: Sample characteristics by sex in 1994 and 2012. Age-adjusted prevalence of health and disability indicators by gender. Individuals aged 55-plus

		Men						Women					
		Low educated		Middle educated		High educated		Low educated		Middle educated		High educated	
		Prev.	CI 95%	Prev.	CI 95%	Prev.	CI 95%	Prev.	CI 95%	Prev.	CI 95%	Prev.	CI 95%
1994	*TOTAL*	88.6	(87.2; 90.0)	6.6	(5.5; 7.7)	4.8	(3.9; 5.7)	94.4	(93.5; 95.3)	3.6	(2.9; 4.3)	2.0	(1.4; 2.6)
	Married	83.1	(81.3; 84.9)	86.8	(81.0; 92.6)	82.6	(75.0; 90.2)	58.5	(56.5; 60.5)	60.1	(49.9; 70.3)	46.2	(32.2; 60.2)
	Health behaviors												
	Current smoker	24.6	(22.6; 26.6)	30.3	(22.4; 38.2)	25.7	(17.0; 34.4)	1.3	(0.8; 1.8)	4.7	(0.3; 9.1)	6.5	(0.0; 13.4)
	Past Smoker	40.6	(38.3; 42.9)	39.0	(30.6; 47.4)	41.4	(31.5; 51.3)	1.4	(0.9; 1.9)	12.0	(5.2; 18.8)	6.7	(0.0; 13.7)
	Drinking	4.9	(3.9; 5.9)	2.1	(0.0; 4.6)	3.9	(0.0; 7.8)	1.6	(1.1; 2.1)	3.3	(0.0; 7.0)	6.6	(0.0; 13.6)
	Sedentary lifestyle	22.9	(20.9; 24.9)	29.9	(22.1; 37.7)	38.9	(29.1; 48.7)	28.7	(26.9; 30.5)	23.2	(14.4; 32.0)	16.1	(5.8; 26.4)
	Double health coverage	15.0	(13.3; 16.7)	40.4	(32.0; 48.8)	52.5	(42.5; 62.5)	16.5	(15.0; 18.0)	42.1	(31.8; 52.4)	31.6	(18.6; 44.6)
	Health and disability												
	Bad self-perceived health	43.9	(41.6; 46.2)	24.7	(17.3; 32.1)	23.3	(14.8; 31.8)	56.3	(54.3; 58.3)	31.3	(21.7; 40.9)	32.7	(19.6; 45.8)
	Functional limitations	26.9	(24.8; 29.0)	14.4	(8.4; 20.4)	17.5	(9.9; 25.1)	37.7	(35.7; 39.7)	19.1	(10.9; 27.3)	16.2	(5.9; 26.5)
	ADL limitations	3.9	(3.0; 4.8)	1.7	(0.0; 3.9)	2.3	(0.0; 5.3)	4.9	(4.0; 5.8)	4.4	(0.1; 8.7)	2.0	(0.0; 5.9)
	Sample size, N	1,746	-	131	-	96	-	2,335	-	89	-	49	-

		Men						Women					
		Low educated		Middle educated		High educated		Low educated		Middle educated		High educated	
		Prev.	CI 95%	Prev.	CI 95%	Prev.	CI 95%	Prev.	CI 95%	Prev.	CI 95%	Prev.	CI 95%
2012	*TOTAL*	66.8	(65.1; 68.5)	21.8	(20.3; 23.3)	11.4	(10.2; 12.6)	76.6	(75.1; 78.1)	16.2	(14.9; 17.5)	7.2	(6.3; 8.1)
	Married	78.6	(76.7; 80.5)	79.2	(76.0; 82.4)	79.2	(74.8; 83.6)	54.2	(52.2; 56.2)	62.5	(58.2; 66.8)	61.0	(54.5; 67.5)
	Health behaviors												
	Current smoker	18.0	(16.3; 19.7)	23.3	(20.0; 26.6)	17.8	(13.6; 22.0)	5.5	(4.6; 6.4)	13.4	(10.4; 16.4)	15.4	(10.6; 20.2)
	Past Smoker	39.6	(37.4; 41.8)	37.8	(34.0; 41.6)	45.4	(40.0; 50.8)	6.1	(5.1; 7.1)	17.8	(14.4; 21.2)	28.2	(22.2; 34.2)
	Drinking	3.5	(2.7; 4.3)	1.4	(0.5; 2.3)	2.8	(1.0; 4.6)	0.7	(0.4; 1.0)	1.2	(0.2; 2.2)	1.4	(0.0; 3.0)
	Sedentary lifestyle	27.0	(25.0; 29.0)	28.1	(24.6; 31.6)	39.2	(33.9; 44.5)	29.9	(28.0; 31.8)	28.5	(24.5; 32.5)	28.7	(22.7; 34.7)
	Double health coverage	14.6	(13.0; 16.2)	30.2	(26.6; 33.8)	51.6	(46.1; 57.1)	14.0	(12.6; 15.4)	38.4	(34.1; 42.7)	44.6	(38.0; 51.2)
	Health and disability												
	Bad self-perceived health	41.1	(38.9; 43.3)	31.4	(27.7; 35.1)	19.2	(14.9; 23.5)	50.6	(48.6; 52.6)	33.1	(28.9; 37.3)	26.5	(20.6; 32.4)
	Functional limitations	36.1	(33.9; 38.3)	22.3	(19.0; 25.6)	19.6	(15.3; 23.9)	41.4	(39.4; 43.4)	22.9	(19.2; 26.6)	20.0	(14.7; 25.3)
	ADL limitations	10.2	(8.8; 11.6)	4.9	(3.2; 6.6)	4.5	(2.2; 6.8)	13.8	(12.4; 15.2)	5.0	(3.1; 6.9)	4.0	(1.4; 6.6)
	Sample size. N	1,873	-	619	-	322	-	2,343	-	487	-	217	-

Source: ESCA 1994-2012. Note: Prev.=Prevalence; CI = Confidence interval.

Table 2: Odds ratios indicating effect on having selected health and disability indicators: 1994. Individuals aged 55-plus

Variables	Fair or poor self-perceived health		Functional limitations		ADL limitations	
	M1	M2	M1	M2	M1	M2
Constant	0.162***	0.397**	0.001***	0.002***	0.000***	0.000***
	(0.0590)	(0.170)	(0.000)	(0.001)	(0.000)	(0.000)
Sociodemographic characteristics						
Age	1.008*	0.990**	1.084***	1.061***	1.126***	1.060***
	(0.004)	(0.005)	(0.005)	(0.006)	(0.013)	(0.0146)
Sex (female)	1.704***	1.710	1.564***	1.466	1.135	2.142
	(0.130)	(0.592)	(0.138)	(0.685)	(0.262)	(1.717)
Married	1.199**	1.283***	1.015	1.129	1.143	1.399
	(0.105)	(0.116)	(0.097)	(0.115)	(0.280)	(0.354)
Education						
Low Educated	2.490***	2.282***	2.134***	2.042**	1.195	1.961
	(0.434)	(0.549)	(0.478)	(0.650)	(0.580)	(1.262)
High Educated	0.951	0.792	1.022	0.871	0.931	1.717
	(0.263)	(0.297)	(0.354)	(0.411)	(0.743)	(2.056)
*Education*Sex*						
Female*Low Educated		1.165		1.160		0.329
		(0.411)		(0.559)		(0.270)
Female*High Educated		1.486		1.665		0.523
		(0.885)		(1.237)		(0.761)
Health behaviors						
Current smoker		0.958		1.039		0.174*
		(0.131)		(0.174)		(0.165)
Past smoker		1.495***		1.157		0.413**
		(0.181)		(0.168)		(0.176)
Drinking		0.440***		0.333***		-
		(0.110)		(0.115)		-
Sedentary lifestyle		2.305***		2.618***		8.390***
		(0.206)		(0.244)		(2.933)
Double health coverage		0.715***		0.798**		0.583*
		(0.0699)		(0.0903)		(0.167)
Sample size, N	4,438	4,438	4,437	4,437	4,297	4,297
Pseudo R2	0.0278	0.0633	0.104	0.165	0.143	0.356

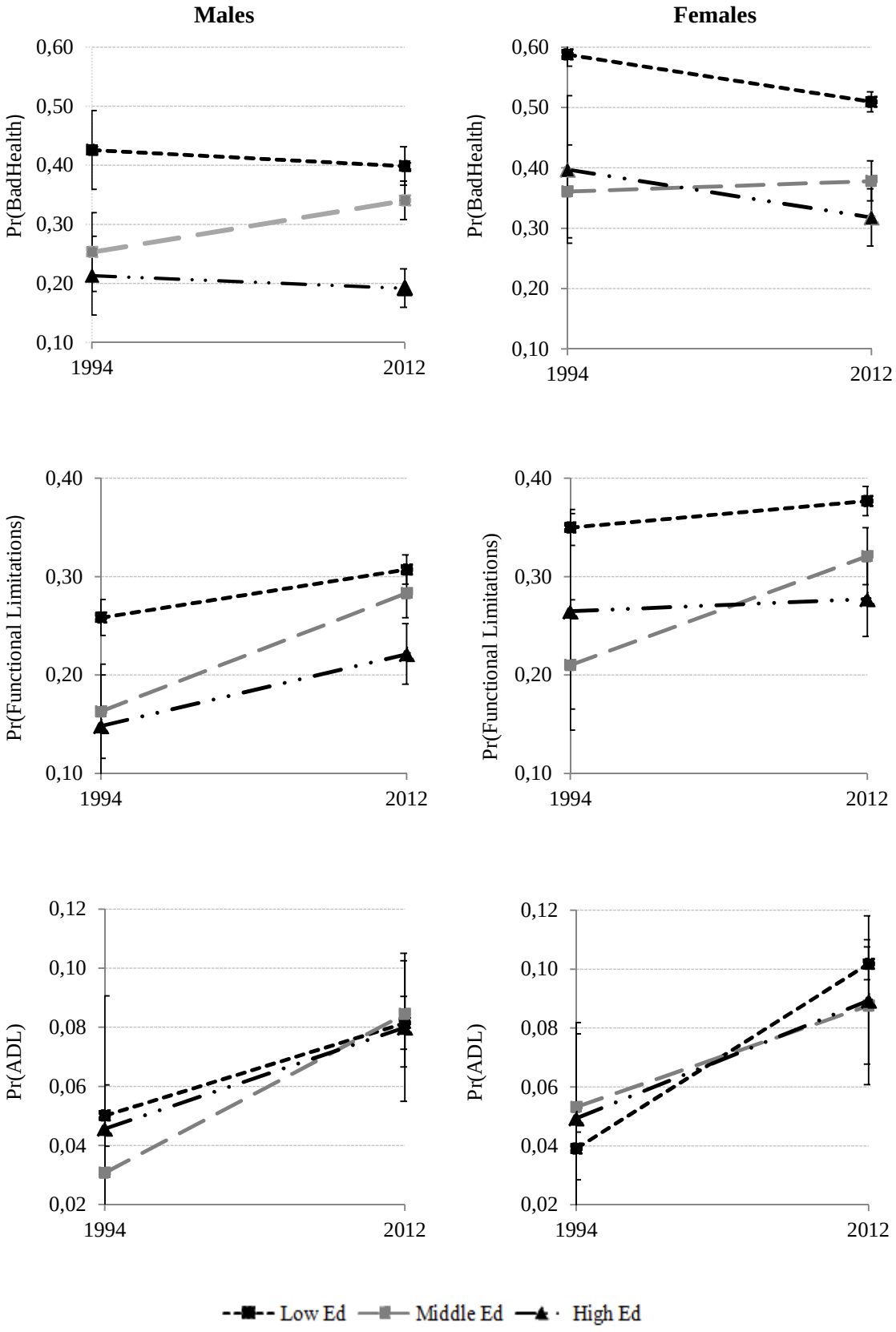
Note: M1: Model 1; M2: Model2; Standard deviation in parentheses; *** p<0.01. ** p<0.05. * p<0.1; "-" not enough data

Table 3: Odds ratios indicating effect on having selected health and disability indicators: 2012. Individuals aged 55-plus

Variables	Fair or poor self-perceived health		Functional limitations		ADL limitations	
	M1	M2	M1	M2	M1	M2
Constant	0.0573***	0.128***	0.001***	0.002***	0.000***	0.000***
	(0.0136)	(0.0355)	(0.000)	(0.001)	(0.000)	(0.000)
Sociodemographic characteristics						
Age	1.031***	1.014***	1.093***	1.070***	1.125***	1.065***
	(0.003)	(0.004)	(0.004)	(0.004)	(0.007)	(0.007)
Sex (female)	1.458***	1.195	1.339***	1.273	1.442***	1.058
	(0.091)	(0.178)	(0.096)	(0.225)	(0.171)	(0.371)
Married	0.973	1.044	0.881*	0.954	0.929	1.053
	(0.068)	(0.075)	(0.068)	(0.079)	(0.112)	(0.144)
Education						
Low Educated	1.494***	1.311**	1.209**	1.170	1.263	0.945
	(0.121)	(0.151)	(0.115)	(0.160)	(0.220)	(0.248)
High Educated	0.586***	0.435***	0.746**	0.639**	0.869	0.918
	(0.077)	(0.081)	(0.110)	(0.132)	(0.250)	(0.373)
*Education*Sex*						
Female*Low Educated		1.360*		1.194		1.348
		(0.224)		(0.232)		(0.506)
Female*High Educated		1.725**		1.179		1.124
		(0.471)		(0.359)		(0.670)
Health behaviors						
Current smoker		0.965		0.852		0.655
		(0.0990)		(0.110)		(0.192)
Past smoker		1.160*		1.265**		0.915
		(0.0966)		(0.120)		(0.178)
Drinking		0.993		1.396		1.512
		(0.233)		(0.328)		(0.830)
Sedentary lifestyle		2.738***		4.148***		12.13***
		(0.192)		(0.320)		(2.329)
Double health coverage		0.804***		0.945		0.589***
		(0.0649)		(0.088)		(0.105)
Sample size, N	5,843	5,843	5,838	5,838	5,838	5,838
Pseudo R2	0.0472	0.0869	0.148	0.228	0.198	0.369

Note: M1: Model 1; M2: Model2; Standard deviation in parentheses; *** p<0.01. ** p<0.05. * p<0.1

Figure 1: Predicted probabilities of bad self-perceived health, functional problems, and ADL limitations for males and females by education level and time period (CI: 95%)



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