Exploring the interactions between health, partnership and early life conditions[1]

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Introduction

Health status is becoming a widespread indicator in demographic studies because of its proved relationship with other socio-demographic variables. For instance, previous studies have explored health (usually self-perceived) differentials in function of marital status or partnership history (Lillard L. and Waite L., 1995; Williams K. and Umberson D., 2004). In few words, these studies agree that the first partnership has positive effects on health status of both partners and particularly on men. Also, those studies point that these benefits disappear after the interruption of the first couple even when individuals start another relationship. This approach presents a well-known shortcoming since health status in adulthood is partly determined by early life conditions (e.g. Blackwell et al., 2001; Steven A. H., 2007). Therefore the relationship between partnership and health may well be mediated by early-life conditions in a double sense: 1) by a previous effect on the final output variable (health) and 2) by a selection effect that influence partnership (i.e. individuals in good health may be more likely to find a partner).

Consequently, the aim of this study is to shed some light on the interactions between the partnership history, the health status in adulthood and the health status at early life. Spain will serve to these purposes.

Data

The Spanish sample of the third edition of the Survey of Health, Ageing and Retirement in Europe (SHARE) has been used. SHARE is the first European survey that allows the study of topics like health, health care, retirement and socio-economic status controlled for demographics variables cross-nationally. SHARE was designed as a panel survey. However, this third wave also aimed at collecting retrospective information on a number of issues among the respondents (for instance, bad health episodes, partnership history and employment history). The average of the household response rate was 61.8%, whereas the average of the individual response rate was 85.3%. In the case of Spain, the values for these rates were 53% and 73.7% respectively. The original sample of this SHARE's third edition for Spain was equal to 2048. These original samples have been depurated erasing the registers with no information on key variables or the cases with a respondent was the person required to answer to the questionnaire, in order

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to avoid the bias due to proxy respondents (Todorov and Kirchner, 2000). At the end of this process, the final Spanish sample was equal to 1873 (810 men and 1063 women). It was checked that the structure of the samples according to age groups and sex remains equal after and before removing these registers.

It is used demographic (age and gender) and socio-economic (educational status) covariates as control variables. Information about early-life health (good or poor) has been taken as indicator of the early-life conditions. The educational status has been approached using the total number of years that an individual expended studying. The variable "Partnership history" has been taken as a dynamic one (it can change over time). It means that it was possible to reconstruct the partnership situation of every individual at all the ages before of the analysis. Partnership and marriage have been taken as the same phenomenon. This variable has been categorized in two categories ("In union" and "Non in union") due to the small number of separated/divorced or widower/widow people and partnerships of second or higher order in the Spanish ample (67 people in a situation of interruption of partnership and 3 people in their second or higher relationship).

The event of experiencing bad health has been taken from the following question:

Was there a distinct period during which your health was poor compared to the rest of your life? When did this period of poor health start?

It has been restricted the biographic information of individuals to the period between the ages 16 and 64. It implies those individuals that at the moment of the survey were younger than 64 years old are right censored. When one individual experiences the event (poor health or stress), automatically is not taken into account for the next ages.

The Table 1 shows the frequencies of the different variables by age group and sex.

Table 1. Description of the sample. Third edition SHARE Survey. Spain

		Men					Women				
		Younger than 60	60-69	70-79	80 years old and over	Total	Younger than 60	60-69	70-79	80 years old and over	Total
Event of poor Health	No experience event	121	151	131	65	468	157	164	135	81	537
	Experience event	54	112	117	59	342	99	149	157	121	526
Union Status	In union	46	25	22	8	101	33	29	24	27	113
	Not in union	129	238	226	117	710	223	284	268	175	950
Childhood Health	Good Childhood Health	148	238	224	112	722	227	267	262	183	939
	Poor Childhood Health	27	25	24	12	88	29	46	30	19	124
Educational Status	Pre-primary	10	39	64	38	151	15	58	87	73	233
	Primary	59	102	133	67	361	85	137	159	111	492
	Secondary and upper	106	122	51	19	298	156	118	46	18	338

Methods

The discrete time approximation of the Survival Analysis using logistic regression models has been applied (Discrete-Time Hazard Model). The time reference is the year of occurrence (discrete time). Therefore, data are interval censured. It means that it is unknown the exact time of occurrence of the events within a one-year period.

Three hypotheses have been tested:

Hypothesis A: Partnership influences the risk of experiencing poor health regardless the previous health status (Hughes and Waite, 2009).

Hypothesis B: The risk of experiencing a period of poor health as an adult is only related with the early-life health. Therefore, the differences on health between people depending on their marital status are only explained by the previous selection performed by the marriage market.

Hypothesis C: Both effects are important to explain the differences on hazard of experiencing poor health. Therefore, we have an initial effect performed by a selection process and a continuous beneficial effect of sharing their life with a partner.

The following formulas summarize the models behind each of the three hypotheses:

Hypothesis A (Partnership history): $\beta_0 + \beta_1 X_1$ (age) + $\beta_2 X_2$ (gender) + $\beta_3 X_3$ (partnership situation over time)

Hypothesis B (Early-life health): $\beta_0 + \beta_1 X_1$ (age) + $\beta_2 X_2$ (gender) + $\beta_3 X_3$ (childhood health)

Hypothesis C (Partnership history and Early-life health): Hyp A + Hyp B

The capacity of fitting the observed data of models related to hypotheses A and B has been compared to the capacity of the model with all the set of variables (hypothesis C). Thus, they have been compared nested models using the Chi-Square test of the Analysis of Deviance.

Results

Table 2 shows the Chi-Square test from which hypothesis C should be preferred. This model owns with a higher explicative capacity about the hazard of experiencing a period of poor health in adulthood. In words, partnership history and early-life conditions entered in the same model increase its explicative capacity. This is in accordance with the idea that adult health depends on early-life conditions plus the "insults" during adulthood (Kuh and Ben-Shlomo, 1997).

It can be seen that the signs of the category "In a union" is positive in comparison with the category "Not in Union" (people who is not living with a partner), when it should be negative due to the positive effects of partnership found in previous literature. It should be clarified that it has been found similar results on previous studies (Ferrando et al., 1995; Regidor et al., 2001). The reason of this difference could be due to a process of survival's selection. It means that single people those get ages older than 50 are selected due

to their better health. Therefore, it is only possible to interview (at least, in the case of the SHARE Survey) to single population with an extra good health.

Table 2. Chi-Square test and coefficients from Discrete-time Hazard Model. Risk of poor health. Spain.

	Hypothesis A Spain	Hypothesis B Spain	Hypothesis C Spain
Intercept	-9.782 ***	-10.508 ***	-10.351 ***
Age	0.136 ***	0.154 ***	0.134 ***
Age Squared	-0.001 *	0.001 **	-0.001 *
Gender (ref: Male)			
Female	0.210 *	0.203 *	0.200 *
Partnership Situation (ref: Not in Union)			
In a Union	0.304 †		0.333 **
Childhood Health (ref: Good)			
Poor		0.497 ***	0.513 ***
Number of years studying	0.019 †	0.019 †	0.021 †
N	78542	78542	78542
Pseudo R Square	0.064	0.065	0.067
AIC	6231.05	6220.46	6217.37
Hypothesis A vs Hypothesis C (P-value)			0.000 ***
Hypothesis B vs Hypothesis C (P-value)			0.006 **

< 0.001 *** < 0.01 ** < 0.05* < 0.1 †

Note: N=number of individuals * number of years in the study

Regarding to the other variables, the signs of the coefficients of the variables of age and sex are the expected ones. The risk of experiencing bad health increases with the age whereas women have a higher risk in comparison with men. Other expected result is the higher risk of experiencing bad health during adulthood of those who had bad health at childhood. On the other hand, the sign of the variable of number of years studying is positive (a higher number of years studying are related with a high risk of experience the event). It can be seen in the description of the sample that young people are those with higher educational status. Then, the positive sign could be only due to an effect of the lower life course experienced by this population. Another possibility is that maybe the reason of the poor health of this kind of population is related to a higher risk of experiencing stress due to their work.

Discussion

The results so far get the suitability of the use of the individual's partnership history in order to study the differentials on health among adult people. The inclusion of information about the individual childhood health increases the explicative capacity of models when it is studied the event of poor health during adulthood. However, it has not been found significant results of a negative effect of partnership in Spain (people in union have a higher risk of experience bad health). Although current results are not definitive, it seems reasonable to suspect that we are in front of a selection process. Precisely the interesting circumstances in Spain during the XXth Century could explain this selection process. The Spanish Civil War and the post-war influenced on almost all the cohorts of the target population during their childhood or/and during their youth. These negative circumstances can be the reason why current surveys take selected population. Previous trials with models using the variable of the cohort of birth found that old

generations show a lower risk of experience a period of bad health in comparison with the young ones. However, a complete cohort analysis is not possible due to the small sample.

This study is actually ongoing. These results are part of the current exploratory study. For instance, it is going to be included the variable the number of children. The importance of the family in Spain is already known. This information can be used as proxy of the effect of close family network on individual's health. This variable will be used as a dynamic one because usually people do not have children at the first ages of our period of study (16-64) and it will be increase from 0 to the final number of children born alive. Another variable that will be checked is the possible influence of the different historical moments on individual's risk. It will identified whether an individual were, for instance, 30 years old during either the Civil War or post-war or before of the war or in period of better conditions. It could also increase the knowledge about the possible selection process. On the other hand, the variable "employment" has been discarded due to its huge dependency on gender (the female participation in the labor market was really small for these Spanish cohorts).

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