Partner's depression and quality of life among older Europeans

Abstract

We aim to study among European older adults (after age 50) if partner's mental health influences the individual's well-being. A sample of married or with registered partnership couples that live together, from the latest wave of the Survey of Health, Ageing and Retirement in Europe (SHARE) is considered. More specifically, we use logistic regressions to determine the impact that partner's mental health has on an individual well-being. Besides, personal health and socio-demographic characteristics are also analysed. Differences by gender have been also considered. We shed new light on the factors determining well-being. The empirical findings show that there are important spillover effects from individual mental health to the well-being of their partners within households (OR = 1.51; 95 % C.I. 1.43, 1.59). Our results show utility and empathy between couples, regardless of being a man or a woman. Further, once controlled by the individual traditional factors (age, education or labour status), the interdependence of the closest environment is shown. These findings play a very important role in explaining the public policies that consider the social perspective of well-being in general, as well as mental health policy in particular.

Keywords Quality of life; oldest people; partner's health; SHARE; logistic regressions.

JEL Classification I10; I12; I31

Introduction

Population aging is a common circumstance in developed countries that implies new challenges. The elderly group is associated, among others, with poor health conditions that would have both direct and indirect effects. That is to say, older people must outface extraordinary physical and mental health challenges that need to be recognized. On the one hand, the direct effects encompass individual well-being and health care costs through health care and social utilization [1-3]. On the other hand, indirect effects would be associated with the corresponding spillover effects on family's health.[1] As one of the most common worldwide poor health conditions is related with mental health, in this research we determine the spillover effects from mental health within households.[2,3]

Further, our objective is to study if one partner's mental health (the partner of the respondent has depression) influence the other partner's quality of life (QoL). Hence, a cross-sectional analysis for a set of European countries (and Israel) is considered.[4] Logistic regressions are used to estimate that relationship. The main hypothesis here to be tested are: i) there is a positive association between partner's mental health conditions and QoL (after age 50). Moreover, ii) socio-demographic factors matter on QoL among the oldest people.

Data have been used from the latest wave of the Survey on Health, Ageing and Retirement in Europe (SHARE), titled Wave 6 (2015). Our findings add to the existing knowledge in the field of the well-being of the oldest people which analyses the effect of aging and health on QoL in several ways [7-8]. Some of the manuscript strengths are: the

[1] Two main items could be discussed. Firstly, individual utility is conditioned by the happiness and well-being of his/her peer. Secondly, poor mental health of the partner would imply less free time and more caregiving responsibilities for the other partner.
[2] Depression is the third leading contributor to the global disease burden [4].
[3] There is a well-known stand of literature examining several areas (education, health, or lifestyles) of spousal correlation [5]. Therefore, in Wilson [6] it has been yet analysed the families' health capital. However, at the mental health level the evidence is not enough profuse.
[4] Therefore, we consider European countries.

novelty of the topic (one of the first studies in the economic literature to adopt impact of poor mental health on the well-being of partners) and the data (the latest in the SHARE and the sample size). These contributions provide enriched information in order to understand the different relationships through which individual well-being is determined. Precisely, how it may be linked to the health status of a family member.[5]

The paper is organized as follows. In the subsequent section, methodological aspects based on the SHARE survey are presented. Next, the empirical findings are showed. Finally, main results, discussion and conclusions are stated.

Material and Methods

This study addresses whether poor partner's mental health is significantly associated with increased levels of QoL among the elderly, or not. To answer this question, we also consider the main driving factors such as health and socio-demographic ones.

Data sample

The information used in this manuscript comes from the SHARE survey. More specifically, the latest available information or Wave 6, which correspond with data from year 2015, through easySHARE (release version: 6.1.1) is considered [10-12]. This survey covers micro data for elderly from 27 European countries and Israel over the period 2004-2015.[6]

[5] Several research studies in both epidemiological and health economics literature have indicated that family background along with present socio-demographic characteristics are relevant factors for of health status in adulthood [9]. Here we would focus on current familiar effects on individual outcomes.

[6] Although SHARE database is based on six waves, cross-sectional analyses are performed in this study. We prefer to maintain a higher number of observations and so, a representative sample to be split. Also we analyse our results by gender.

However, our eligible sample due to data availability encompasses adults aged 50 years and over,[7] married or with registered partnership couples that live together,[8] over 18 countries: Austria, Belgium, Croatia, the Czech Republic, Denmark, Estonia, France, Germany, Greece, Italy, Israel, Luxembourg, Poland, Portugal, Slovenia, Spain, Sweden and Switzerland (n = 33,738).[9] Table 1 reports the distribution of our analytical sample.

[*Insert Table 1*]

Measures

In the empirical literature associated with well-being there are usually considered as explanatory factors, variables related with age, sex, marital status, education attainment, labour status, and variables related with "need" or morbidity [14-16]. Then, the selected measures considered in our model are justified and validated from the prior economics literature on family health and spillover effects.

In this study, the variables considered in our estimates are at the individual level and include relevant aspects referring to both health and socio-demographic factors. Table 2 presents the list of variables and their corresponding description and coding.

[*Insert Table 2*]

On the one hand, as dependent variable, we use *Casp_low* that is a binary one. It takes value 1 if the respondent has less than 35 points in QoL and well-being index

[7] We have considered the age 50+ as it is the starting point the SHARE survey. Nevertheless, four age intervals are contemplated in our estimates through dummies (50-59 years, 60-69 years, 70-79 years and ≥ 80 years).

[8] This study does not face the questions related with people's preference for independent living in the framework of the studies examining the subjective well-being effect of different housing alternatives for old age population. That is, questions regarding institutionalization aversion are not required here [13].

[9] Non-cluster analysis or disaggregation by area or Welfare Regimen is considered at first. We hypothesised that the expected positive association between partner's mental health and QoL is independent of the country of origin. The explanation is based on the different channels through which a family member status could affect his/her relatives. However, estimates also consider geographical information (mainly due to traditional family roots in Mediterranean countries).

(CASP-12), and zero otherwise.[10] On the other hand, as variables of control, we consider both health and socio-demographic factors.[11]

Health factors: individual and partner's health proxies are considered. At the individual level, self-perceived health by *SAH-less than good* variable is included. In order to evaluate the effect of partner's health, mental health is considered though depression.[12,13]

Socio-demographic factors: gender (where value one corresponds to females), age (four dummy variables: 50-59 years (reference category), 60-69 years, 70-79 years and ≥ 80 years; it would take one if the age of the respondent is in the corresponding age interval), educational level (measured according to international classification ISCED-97 through three dummy variables: low (reference category), middle and high; 1 if education level of the individual is in each level), employment status (1 if employed) and area of location (1 if the person lives in small town, rural area or village).

Methodology

Discrete choice models are considered due to the requirements of our dependent variable (1: CASP-12v < 35; 0: otherwise). These approaches directly predict the probability of occurrence of an event that is defined by the values of the independent variables that vary on a scale from zero to one. Thus, the predictions made with these discrete choice models must be bounded so that they fall in the range between zero and one. The general

[10] QoL is a commonly measure used for analysing well-being. This variable is collected through CASP-12 in the SHARE survey. The index (based on four subscales on control, autonomy, pleasure and self-realization) ranges between 12 and 48 being understood as: low QoL, <35; moderate, 35–37; high, 37–39; and very high, ≥ 39.
[11] For all variables of control, dummy variables are also considered.
[12] Because multicollinearity problems could bias our estimates, other health variables (in spite of being available in the SHARE survey, such as chronic illnesses) are excluded in our final model.
[13] Current marital status (married or with a registered partner) is so not considered as variable of control.

methodology that meets this condition is called the linear probability model, and it has the following functional form:

$$P_i = F(x_i, \beta) + u_i \quad (1)$$

It should be noted that *F* is the distribution function of a random variable. Then, *P* varies between zero and one. This probability is a function of a vector of explanatory variables (*x*) and a vector of unknown parameter β. In the particular case where the function *F* is the logistic one we will have the Logistic regression model (or Logit):

$$P = Prob\ (y = 1|X) = \frac{\exp(X'\beta)}{1+\exp(X'\beta)} \quad (2)$$

This logistic regression models have been used to determine the impact of health and socio-demographic factors on QoL among the European oldest people [17]. Precisely, as results are presented through *odds ratios* (denoted OR) for logistic regression with a dichotomous independent variable, the relationship between the OR and each of the regression coefficients is as follows:

$$OR = exp^{\beta_i} \quad (3)$$

This simple relationship between the estimated coefficients and the OR is the main reason why logistic regression methodology has been considered as a powerful analytic research tool [18]. The statistical analysis (full sample = 18 countries) is performed using Stata14.

Results

In this Section, we present our empirical results for the model described above based on health and socio-demographic factors (Table 4). The particular choice of the variables previously exposed, and so, through the reference category (when OR equals 1.00) is the easiest to interpret, and thus is the one that we use in this study. Furthermore, we first

summarize some descriptive analysis (Table 3) to get some idea of how our data look like.

Table 3 reports the descriptive statistics for the complete list of variables included in our models. We have found that, although small, a higher percentage of women reports low quality of life (31.11% vs. 29.41%). From this first approximation to our data, it can be also observed that there are slightly differences for SAH, but the male's partner (usually a woman) reports poor mental health more times. However, men are elder than women (67.17 vs. 65.16 mean age in years, respectively, and in both 8 for standard deviation). Also, there are more females with low educational level. Regarding variables related with labour status and area of location, there are not significant associations with gender.[14]

[*Insert Table 3*]

Table 4 presents both the logistic results for the full sample (n = 33,738), and it analyses possible gender divergences (females = 16,867); being OR used ~~in both~~ in order to show the stability of our findings.[15] Thus, in each sample, Column 1 presents the OR and Column 2 defines confidence intervals at 95% level.

[Insert Table 4]

As expected, regarding logistic regression results for full sample, findings validate our main hypotheses: partners' mental health has a large and significant association with the QoL of individuals in our estimation sample. It is corroborated the positive association between poor partner's mental health conditions and low QoL. The OR of 1.51 means that the *odds* of low quality of life are 51% higher for responders whose partners have poor mental health.

[14] In should be noticed that we considered employed (and non-employed), being the percentages similar (by gender) in both categories in the sample analysed.
[15] For each variable the likelihood is compared to the reference group.

Figure 1 shows the Receiver Operating Characteristic (ROC) analysis. That is, the ROC curves for our model that plots "sensitivity" versus "1-specificity". Hence, the area below the curve is commonly used as a measure of the predictive power of the estimated model. That is, evidence of good fit is reflected in a ROC curve that lies above the 45 degree line reference. A model with no predictive power has an area of 0.5 whereas the perfect one has an area equal to 1. The area under the curve of approximately 0.73 in our representation indicates acceptable discrimination for the model presented [18]. More precisely, it determinates that 73% of the observations are correctly classified.

[*Insert Fig. 1*]

Besides, individual health status and socio-demographic factors also matter on QoL. As expected, the higher *odds* are obtained for elder Europeans reporting less than good self-perceived health. Further, being a female also increase the probability of reporting low QoL. Thus, in order to test the robustness of our results, Table 4 also contains the estimation of the model after splitting the sample by gender. The same effect is observed for the eldest age cohort considered (≥ 80 years). Conversely, smaller *odds* are obtained for those with higher education (95% C.I.: 0.35 to 0.54), employed (OR = 0.68; 95 % C.I. 0.63, 0.74) and living in rural areas (OR = 0.58; 95 % C.I. 0.55, 0.61).

Furthermore, in order to develop a sensitivity analysis of our results, while also amplifying the variables to collect geographic information that is important, Table 5 includes the dummy "Mediterranean" in order to test if Mediterranean European countries behave different (these countries (Spain, Italy, Greece, Portugal, Slovenia and Croatia) represent 40.93% of the sample). Empirical results point out that that Mediterranean European countries are related with lower QoL. The other variables are stable in terms of both statistical significance and signs of the relationship with previous estimates.

[Insert Table 5]

In summary, the estimation of our model allows us to test that an individual with less than good self-perceived health, whose partner has poor mental health, with low education, non-employed, non-living in a rural area and living in a Mediterranean country is more likely to report low QoL. Nevertheless, caution should be used when looking at the impact of other variables, as they are mainly endogenous with respect to QoL.

Discussion

This paper investigates the impact of poor mental health of an individual in his/her partner's well-being. The share marital context has a wide set of characteristics related with health [19]. Precisely, we focus on older married or with registered partnership couples that live together from Wave 6 (SHARE survey). In other words, following recent contributions on QoL for elderly [20-21, 7], the aim of our study is to determine which are both, the health and the socio-demographic factors influencing the QoL of older Europeans (age 50+), the role of "partnership" and gender. To the best of our knowledge, this is one of the first studies to analyse the spillover impact of mental health on partner's well-being.

Based on our estimates at the individual level, we can conclude both: i) there is a positive and significant association between partner's mental health conditions and QoL (after age 50); and ii) socio-demographic factors matter on QoL among the oldest people. Because there are not too much research on peer's effect on QoL in general, and on the elderly population in particular, the present study adds a valuable knowledge to the existing literature. All in all, we could assert that our estimates are consistent with Bourassa et al. [22] that claimed the interdependence couples' QoL, and more specifically with Mendolia et al. [23] that studied how partner's mental health influence the other

partner's for the Australian case. So basically, we situate our study within those that analyses the impact of behaviour problems on caregiver' stress [24-25].

Nonetheless, potential limitations of our study must be recognized. The restrictions on the use of self-reported information data are well known, and then, generalizations from our research findings and its resultant policy suggestions should be taken with caution in a real-world setting. Besides, although one of the insights of the manuscript is that we analyse the interdependence of the closest environment on QoL, we should take in consideration that it is only a simple approximation combining a dichotomized variable; and besides, there is a lack of suitable instrumental variables in order to predict changes in partner's mental health without causing an effect on individuals' QoL. Furthermore, even though associations have been adjusted by several socio-demographic factors, other mechanisms could be the reason behind our results. In addition, regardless of working with the latest micro data available, we do not account for dynamics in our estimates. That is to say, here we present results considering only one wave of the SHARE (the latest available, Wave 6). Further analysis require exploring the evolution on individual data to gain a better understanding and so more coordinated policies. Certainly, when more data will be available, the analysis of more variables and a larger period would be interesting.

Despite these limitations, we can postulate that both the SHARE data and methodology used in this paper provide new and valid information about the impact of partner's mental health on individual well-being. Future policy decisions should consider both the direct and indirect effect of the different interventions. Precisely, here an important insight related with mental health interventions is provided.[16] Therefore, future

[16] Gender differences in depressive symptoms have been well documented, reporting the women (generally) a higher number of these systems than men. However, when looking at the elderly as our study sample, Acciai and Hardy [26] found that there is no single 'gender gap' in depression.

interventions should face the reduction or alleviation of mental problems. Likewise, reinforce social support and skills for dealing with health problems within the household.

Conclusions

Using a multinational cross-sectional sample of aging adults from the latest SHARE data, the analyses presented in this paper shed new light on how partner's (rather than individual's) conditions would matter on subjective well-being. Firstly, we have showed that poor partners' mental health predicted their spouses' QoL. Secondly, it has been observed that personal characteristics related with health and socio-demographic factors would determine QoL of older adults in European countries.

In conclusion, we believe that our estimates are consistent with those estimated in studies that address potential importance of partner's interdependence on individual QoL, adding to the literature of (elderly) well-being for European countries.[17] Our findings have powerful policy implications. Drawing attention in these issues is particularly important to develop accurate public policies, that consider the social perspective and the magnitude of spillover effects (understood as the benefits of effective mental health interventions), within the context of changing trends in Welfare States characterized by elderly population; mainly related with comorbidities and their effects on utilization of health care services and social resources. Notwithstanding, we have identified new insights on the interdependence of health within households. Further research is still needed to identify new interventions and policies that impact on mental health and inequalities across Europe [28].

[17] In this regard, in Hoppmann and Gerstorf [27] different conclusions on spousal interrelations in old age in cognition, well-being, and health were reviewed.

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TABLES

Table 1 Distribution of the SHARE analytical sample

Country	Frequency	Percentage
Austria	1,454	4.31
Belgium	2,452	7.27
Croatia	1,614	4.78
Czech Republic	2,312	6.85
Denmark	1,858	5.51
Estonia	2,270	6.73
France	1,706	5.06
Germany	2,420	7.17
Greece	2,854	8.46
Italy	3,176	9.41
Israel	836	2.48
Luxembourg	648	1.92
Poland	856	2.54
Portugal	980	2.90
Slovenia	2,226	6.60
Spain	2,960	8.77
Sweden	1,822	5.4
Switzerland	1,294	3.84
Total	*33,738*	*100.00*

Source: Authors' elaboration from easySHARE release 6.1.1 (Wave 6: 2015).

Table 2 Variables used, description and coding

	Variable	Description	Coding
Dependent variable	*Casp_low*	Low Quality of life (QoL). The CASP-12v Quality of life and well-being index. Each of its 12 items is answered using a four-point Likert-type scale, and the total score, which ranges between 12 and 48, is interpreted as follows: low QoL, <35; moderate, 35–37; high, 37–39; and very high, ≥ 39.	1: CASP-12v < 35; 0: otherwise
Health factors	*SAH-less than good*	Self-perceived health, less than good	1: less than good; 0: otherwise
	Poor mental health (partner)	Depression	1: partner of the respondent has depression; 0: otherwise
Socio-demographic factors	*Female*	Gender of respondent	1: female; 0: male
	Age	50-59 years (reference category) 60-69 years 70-79 years ≥ 80 years	1: age of respondent is in the age interval; 0: otherwise
	Loweduc	ISCED-97 coding of education, low education (reference category)	1: low education; 0: otherwise
	Mideduc	ISCED-97 coding of education, middle education	1: middle education; 0: otherwise
	Higheduc	ISCED-97 coding of education, high education	1: high education; 0: otherwise
	Employed	Current job situation	1: respondent is employed; 0: otherwise
	Rural	Area of location (place of residence)	1: respondent lives in a small town, a rural area or village; 0: otherwise

Source: Authors' elaboration.

Table 3 Descriptive statistics of the analytical sample (all countries (18); sample size (n) = 33,738; 16,871 males and 16,867 females)

	Variable	Full sample	Males	Females
Dependent variable	*Casp_low*	30.26	29.41	31.11
Health factors	*SAH-less than good*	35.60	35.90	35.31
	Poor mental health (partner)	35.26	43.01	27.50
Socio-demographic factors	*Female*	49.99	0.00	100.00
	50-59 years	25.70	19.76	31.65
	60-69 years	39.96	40.16	39.76
	70-79 years	26.02	29.29	22.75
	≥ 80 years	8.32	10.80	5.84
	Loweduc	40.01	37.95	42.07
	Mideduc	37.67	38.02	37.32
	Higheduc	22.08	23.85	20.32
	Employed	24.55	24.44	24.66
	Rural	58.92	58.94	58.90

Source: Authors' calculations based on easySHARE release 6.1.1 (Wave 6: 2015).

Notes: Percentages if variable equals value 1. *Casp_low* takes 1 if CASP-12v < 35; 0: otherwise.

Table 4 Associations of QoL and partner's mental health: logistic regressions models (*odds ratio*s and 95% confidence intervals) for all countries

	Independent variables		**Full sample (n = 33,738)**			**Males (n = 16,871)**			**Females (n=16,867)**		
			OR	**95%CI**		**OR**	**95%CI**		**OR**	**95%CI**	
Health factors	*SAH-less than good*	Yes	3.39	[3.22-3.57]	***	3.38	[3.22-3.57]	***	3.42	[3.18-3.68]	***
		No	1.00			1.00			1.00		
	Poor mental health (partner)	Yes	1.51	[1.43-1.59]	***	1.50	[1.39-1.61]	***	1.53	[1.41-1.66]	***
		No	1.00			1.00			1.00		
Socio-demographic factors	*Female*	Yes	1.13	[1.07-1.19]	***						
		No	1.00								
	Age	50-59 years	1.00			1.00			1.00		
		60-69 years	0.81	[0.75-0.87]	***	0.87	[0.78-0.99]	**	0.78	[0.71-0.86]	***
		70-79 years	0.84	[0.77-0.91]	***	0.97	[0.85-1.11]		0.75	[0.67-0.84]	***
		≥ 80 years	1.16	[1.04-1.29]	***	1.35	[1.16-1.57]	***	1.01	[0.86-1.19]	
	Education	Loweduc	1.00			1.00			1.00		
		Mideduc	0.51	[0.48-0.54]	***	0.50	[0.46-0.54]	***	0.52	[0.49-0.57]	***
		Higheduc	0.38	[0.35-0.41]	***	0.38	[0.35-0.42]	***	0.37	[0.33-0.41]	***
	Employed	Yes	0.68	[0.63-0.74]	***	0.76	[0.68-0.86]	***	0.63	[0.57-0.70]	***
		No	1.00			1.00			1.00		
	Rural	Yes	0.58	[0.55-0.61]	***	0.56	[0.52-0.61]	***	0.60	[0.56-0.65]	***
		No	1.00			1.00			1.00		

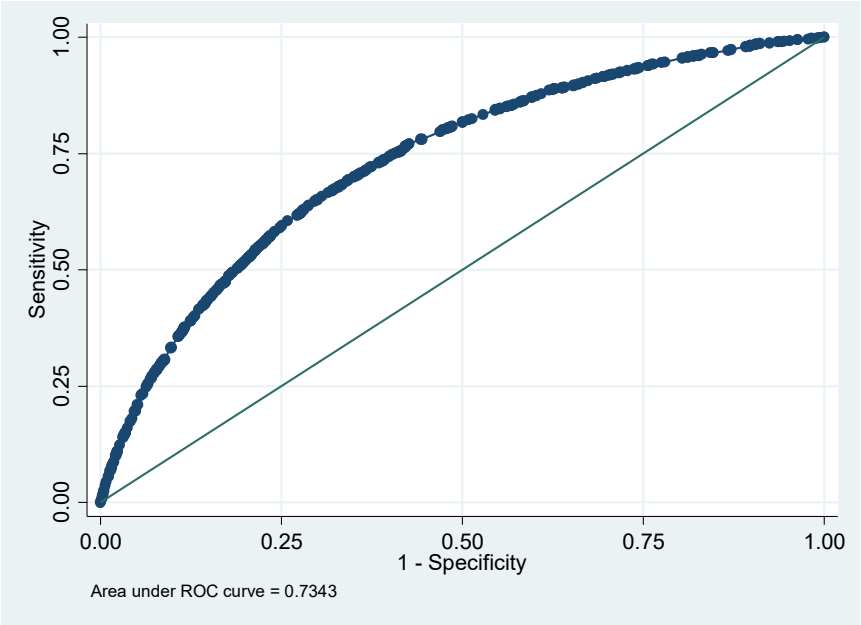
Notes: ***,** and * indicate significance at 1%, 5% and 10%, respectively. Reference category: the reverse one for each dichotomous variable. *Age* is represented through four dummy variables: 50-59 years (reference category), 60-69 years, 70-79 years and ≥ 80 years. *Education* is categorized in terms of three levels of educational attainment (*Loweduc, Mideduc and Higheduc*, with *Loweduc* being the reference category.

Table 5 Associations of QoL and partner's mental health: logistic regressions models (*odds ratio*s and 95% confidence intervals) for all countries considering geographical information

	Independent variables		Full sample (n = 33,738)			Males (n = 16,871)			Females (n=16,867)		
			OR	**95%CI**		**OR**	**95%CI**		**OR**	**95%CI**	
Health factors	*SAH-less than good*	Yes	3.59	[3.40-3.78]	***	3.57	[3.31-3.85]	***	3.62	[3.36-3.90]	***
		No	1.00			1.00			1.00		
	Poor mental health (partner)	Yes	1.56	[1.48-1.64]	***	1.53	[1.42-1.65]	***	1.60	[1.47-1.73]	***
		No	1.00			1.00			1.00		
Socio-demographic factors	*Female*	Yes	1.17	[1.11-1.23]	***						
		No	1.00								
	Age	50-59 years	1.00			1.00			1.00		
		60-69 years	0.88	[0.82-0.95]	***	0.91	[0.80-1.02]	*	0.88	[0.80-0.97]	***
		70-79 years	0.95	[0.87-1.03]		1.03	[0.90-1.18]		0.89	[0.79-0.99]	**
		≥ 80 years	1.36	[1.22-1.52]	***	1.49	[1.28-1.74]	***	1.25	[1.06-1.47]	***
	Education	Loweduc	1.00			1.00			1.00		
		Mideduc	0.66	[0.62-0.70]	***	0.63	[0.58-0.69]	***	0.69	[0.64-0.75]	***
		Higheduc	0.50	[0.47-0.54]	***	0.50	[0.45-0.56]	***	0.50	[0.45-0.56]	***
	Employed	Yes	0.74	[0.69-0.80]	***	0.80	[0.71-0.90]	***	0.71	[0.63-0.79]	***
		No	1.00			1.00			1.00		
	Rural	Yes	0.62	[0.58-0.65]	***	0.59	[0.55-0.64]	***	0.64	[0.59-0.69]	***
		No	1.00			1.00			1.00		
	Mediterranean	Yes	2.27	[2.16-2.40]	***	2.16	[2.00-2.33]	***	2.40	[2.22-2.59]	***
		No	1.00			1.00			1.00		

Notes: ***,** and * indicate significance at 1%, 5% and 10%, respectively. Reference category: the reverse one for each dichotomous variable. *Age* is represented through four dummy variables: 50-59 years (reference category), 60-69 years, 70-79 years and ≥ 80 years. *Education* is categorized in terms of three levels of educational attainment (*Loweduc, Mideduc and Higheduc*, with *Loweduc* being the reference category. *Mediterranean:* Represents area of location. It takes value 1 if the country is Spain, Italy, Greece, Portugal, Slovenia or Croatia; 0 otherwise.

Fig. 1 Receiver Operating Characteristic (ROC) analysis, Logistic model for *casp_low* (n = 33,738).



Source: Authors' calculations based on easySHARE release 6.1.1 (Wave 6: 2015).