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The relation between depressive symptoms and age among older Europeans Findings from SHARE

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Abstract

Empirical evidence on the effects of age on mental health is diverse. Therefore, the paper aims to analyze the association between age and the prevalence of symptoms of depression. Based on SHARE, depressive symptoms of 28,069 persons from eleven European countries and Israel aged 50 to 84 years were analyzed using EURO-D. Multivariate regression models were applied to analyze the effect of age on depressive symptoms under control of socio-economic characteristics and health. The results indicate that EURO-D scores increased with age and were higher among women compared to men. When controlled by socio-demographic characteristics and health conditions the association between depressive symptoms and age almost vanished. The association between depression and age is driven by socio-demographic characteristics and the physical as well as cognitive health of older persons. Once controlled for these socio-demographic characteristics, age no longer had an important explanatory power on the mental health of older persons.

Keywords

Mental health, depressive symptoms, age, elderly, SHARE

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The relation between depressive symptoms and age among older Europeans. Findings from SHARE

Isabella Buber and Henriette Engelhardt

1 Introduction

Empirical evidence on the effect of age on mental health is diverse. Analyses of depression in late life (i.e., above age 65) reveal a modest effect of age (Prince et al., 1999b), a strong association between the prevalence of symptoms of depression and age (Stordal et al., 2003; Castro-Costa et al., 2007) or find no overall tendency of depression to rise with age (Trollor, Anderson, Sachdev, Brotady & Andrews, 2007; Korten & Henderson, 2000), except among the oldest old (Copeland et al., 1999b).

Moreover, international comparisons reveal striking differences in depressive symptoms among countries, and even contradictory results concerning the development of mental health with age (Blazer, 1999; Prince et al., 1999b; Copeland, 1999; Copeland et al., 1999a; EORG, 2003; EC, 2004a). These studies are primarily based on national, regional and local surveys, and less often on international comparative surveys like Eurobarometer, European Study of Epidemiology of Mental Disorders/Mental Health Disability (ESEMeD/MHEDEA 2000), or Outcomes of Depression International Network (ODIN). Thus, the majority of international comparative studies suffer from the lack of comparable data (e.g., Copeland et al., 1999a; EC, 2004a). Methodological differences between studies as well as non-representativeness of the national data did not allow us to draw any conclusions about cross-cultural and geographical variation (Beekman, Copeland & Prince, 1999; EC, 2004b).

In this paper, we analyzed the effect of age on mental health of persons aged 50 to 84 in the level of depressive symptoms and the mediating effects of marital status and education under control of limitations in activities of daily living, cognitive impairment and functional impairments in a representative sample of eleven European countries and Israel. The data allow to control for these various dimensions which might be responsible for several results of age-specific decline in symptoms of depression. The sample of twelve—mainly European—countries allow us to test both for consistency of the age-specific effect among countries as well as for country-specific effects in level of depressive symptoms.

2 Data, Variables And Analysis

2.1 Data

The study is based on the longitudinal *Survey of Health, Ageing and Retirement in Europe* (SHARE) which included detailed cross-national information on health, well-being, economic circumstances and social networks for twelve countries including Austria, Belgium, Denmark, France, Germany, Greece, Israel, Italy, the Netherlands, Sweden,

Switzerland and Spain. The data of the first wave we utilized were collected between 2004 and 2006. SHARE covered the non-institutionalized population aged 50 and older. "Release 2.0.1" comprised data on 31,115 individuals in 21,176 households, the weighted average response rate was 61.6 per cent (Börsch-Supan & Jürges, 2005; see also http://www.share-project.org).

The focus of the present study is on the mental health of persons aged 50 to 84 years. Respondents aged 85 or older were excluded due to small numbers. The current sample included 28,069 persons (12,894 men and 15,175 women). Data were weighted with a design weight that is the inverse of the probability of being included in the sample.

2.2 Variables

The central variable in our study is the EURO-D scale, a validated measure of mental health ranging from 0 to 12 (see Prince et al., 1999a for more details). The EURO-D scale is the number of depressive symptoms reported by a person and comprises the following 12 items: depression, pessimism, suicidality (death wish), guilt, sleep, interest, irritability, appetite, fatigue, concentration, enjoyment and tearfulness. Dewey and Prince (2005) suggest setting a threshold at score 3 and defining clinically significant depression as a EURO-D score higher than 3; in other words, reporting four or more depressive symptoms out of the list of twelve items mentioned above is an indicator for being clinically depressed. Nevertheless, it has to be underlined that SHARE allows only indications but does not involve medical diagnosis by a psychiatrist. The current analysis concentrated on the continuous variable EURO-D instead of the dichotomous one, as the former allows a more precise analysis that also is not dependent on a certain threshold.

The study focused on the explanatory power of age, measured in "age in years at the time of the interview". To allow for a non-linear association between age and the number of depressive symptoms, age as well as age squared were included in the regressions.

Based on the literature, we included in the analyses socio-demographic characteristics and health conditions that were found to have an effect on mental health (Alonso, Angermeyer & Lepine, 2004; Beekman, Copeland & Prince, 1999; Berkman et al., 1986, Braam et al., 2005; Cairney & Krause, 2005; Copeland et al., 1999a; Dean, Kolody, Wood & Matt, 1992; Fryers, Melzer, Jenkins & Brugha, 2005; Geerlings, Beekman, Deeg & van Tilburg, 2000; Jang, Bergman, Schonfeld & Molinari, 2007; Kessler et al., 1994; Lehtinen, Sohlman & Kovess-Masfety, 2005; Lenze et al., 2001; Prince et al., 1999b). The current study controlled for:
(a) family status (living together with a spouse or a partner; never married and living as a single; divorced and living as a single; widowed and living as a single),
(b) highest educational level (primary school: ISCED 0-1; lower secondary: ISCED 2; higher secondary: ISCED 3-4; tertiary education: ISCED 5-6),
(c) cognitive impairment (based on the orientation to date, month, year and day of week; ranging from 0 (bad orientation) to 4 (good orientation)), and
(d) limitations in activities of daily living (ADL) (no limitations versus one or more limitations).

2.3 Analysis

In a first step, the unique effect of age was analyzed for the pooled sample by comparing means of EURO-D by age as well as by confidence intervals. To complement the first descriptive results, t-tests were used to estimate mean differences in EURO-D scores between men and women, with 95% confidence intervals. Next, multivariate regression models were applied to analyze the effect of age under the control of marital status and education. In a final model cognitive impairment and limitations in activities of daily living were controlled for as well. Control variables were included stepwise so as to see the amelioration of the model with the introduction of new variables. Effects were assessed by the corresponding coefficients, the model fit was based on R^2, the percentage of variance was explained by the different models. As a general rule, for each control variable the reference category was the largest group. For highest educational level, the largest group contained persons with basic education only everywhere but in Denmark where all individuals had at least lower secondary education. In order to allow country-specific comparisons with the same references, persons with higher secondary or tertiary education were chosen to be the reference group. For Israel, no weights were available yet and therefore that country was excluded in analyses for the pooled sample. Nevertheless, Israel was included for country-specific analyses.

After calculations based on the pooled sample, all analyses were performed for the twelve countries separately to investigate country-specific effects in age as well as socio-demographic characteristics and determinants of health. Moreover, all analyses were carried out separately for men and women to control for gender-specific differences in mental health as well as for possible different effects of explanatory and control variables. Israel was included for country-specific analyses and regressions were calculated without weights here.

3 Results

3.1 Results for pooled sample

At first sight, the prevalence of depressive symptoms increased with age among men and women, with women reporting more depressive symptoms compared to men. Fig.1 depicts the mean EURO-D scores for men and women. Roughly speaking, the mean EURO-D score increased between the ages of 50 to 84 years from 2 to 3 among men and 2.5 to 4 among women. At higher ages, confidence intervals got rather broad, indicating a high variation in the number of depressive symptoms at older ages.

[Fig. 1 about here]

Table 1 includes the mean number of depressive symptoms among men and women within 5-year age groups and t-tests estimating mean differences in EURO-D scores between men and women, as well as confidence intervals for the difference. The results showed that on the one hand, women reported significantly more depressive symptoms than men; on the

other hand, the gender gap increased with age (50-54 years: difference of 0.88 symptoms; 80-84 years: difference of 1.05 symptoms).

[Table 1 about here]

Empirical evidence of these first descriptive results suggested approximating the association between age and number of depressive symptoms with a quadratic curve, not a linear one. Moreover, a comparison of a linear and a quadratic function revealed a better fit for the quadratic function. The effect of age on mental health was confirmed by the estimated coefficients of age and age squared in ordinary least-squares regression models. The estimates revealed that age had a significant negative effect and age squared had a significant positive effect on the mental health of older men and women (Table 2, model 1). The coefficients correspond to a convex curve with a minimum at age 55 for men and 56 for women, indicating that according to the quadratic approximation the number of depressive symptoms was lowest at age 55 (56) for men (women). Although the estimated coefficients for age and age squared were highly significant, the association was modest, accounting for two per cent of the variance in the EURO-D among men as well as women. As an alternative to "age in years", we included 5-year age groups, but the results remained stable and are not discussed here any more.

In a next step, socio-demographic characteristics (marital status and education) were controlled for, determinants that have been found to have an effect on mental health (Table 2, model 2). Finally, two health indicators (cognition and limitations in activities of daily living) were added to the control variables (Table 2, model 3). It turned out that the association between age and depression was still significant but less pronounced when controlling for marital status and education, and got even weaker when additionally controlling for cognitive impairment and limitations in activities of daily living. The estimated coefficients for age and age squared decreased in magnitude and remained highly significant for women. For men, only the effect of age squared was significantly different from zero at the 10 per cent level. The estimated constant was higher for women than for men in all models, indicating generally higher EURO-D scores among women. Nevertheless, the constant itself does not have a specific interpretation since it includes all unobserved characteristics, which are not included in the model specification.

[Table 2 about here]

Fig. 2 depicts the quadratic association between age and depressive symptoms for the stepwise setup of models. Both for men and women, Fig. 2 provides clear evidence for the importance of socio-demographic characteristics and indicators of physical and cognitive health for mental health, especially at old age. The curves representing the final multivariate model revealed that the increase of depression with age almost diminished for men. The corresponding curves became considerably flatter and especially for men, the curved turned into a rather constant line. Our results indicated that socio-demographic characteristics and physical as well as cognitive health absorbed most of the association between age and EURO-D scores among older persons.

[Fig. 2 about here]

Comparing R^2 of our stepwise models clearly indicated an amelioration of the model fit. Whereas the initial model including age, age squared and a constant explained two per cent of the variance in EURO-D scores, the extended model, which included additionally the mentioned control variables, turned out to fit the data much better, with 13 per cent of the variance being explained for men and 15 per cent for women. Although the model fit increased substantially, the current model could only explain part of the variance in the number of depressive symptoms.

Comparing the effect of age on EURO-D scores for men and women showed that the estimated quadratic curves for men and women representing the models with age only were quite parallel, whereas the distance between those representing the final models was smaller and decreased with increasing age. Therefore, gender differences in the levels of depression could be partly explained by socio-economic characteristics and health conditions.

3.2 Country-specific results

Including country indicators in the regression model for the pooled sample of eleven countries revealed significantly higher levels of EURO-D scores among Spanish, Italian and French older persons (Table 3). Effect coding was applied as an alternative to the dummy coding approach in order to calculate deviations of the country-specific means of EURO-D from the grand mean, i.e., the mean of all countries. Since in this paper we focus on possible country-specific differences in the association between age and EURO-D, we do not discuss the different levels of depressive symptoms of the countries included in SHARE, referring Castro-Costa et al. (2007) for a more detailed discussion.

[Table 3 about here]

In order to detect possible country-specific differences in the association between age and mental health, first the mean number of depressive symptoms among men and women was plotted for all twelve countries separately (Fig. 3a and 3b). For analyses on the country-specific level, Israel was also included at this point although weights were not available yet and regression analyses for this country therefore had to be run without weights.

We found strong differences within the countries. Among men, the number of depressive symptoms increased substantially in Austria, France, Germany, Greece, Israel, Italy, Spain and slightly in Sweden. In Belgium, Denmark, the Netherlands and Switzerland the number of depressive symptoms remained rather constant for men aged 50 to 84. Among women, EURO-D scores increased strongly with age in Austria, Germany, Greece, Israel, Italy and Spain and remained rather stable or fluctuated with increasing age in the remaining countries.

[Fig. 3a and 3b about here]

Country-specific analyses including age only revealed that all coefficients for age were negative and all coefficients for age squared were positive. Nevertheless, the coefficients

were only partly significant. Especially for Danish, French, Israeli, Italian, Spanish and Swiss men as well as French, Israeli and Dutch women the effects of age and age squared were not significant as one or both coefficients were not significantly different from zero (Tables 4a and 4b, model 1). Although the results for Israel should be treated with caution, a comparison of results with and without weights for the remaining countries revealed that the coefficients were rather stable and comparable. The model fit was modest explaining up to five per cent of the variance in EURO-D scores in the different countries.

Applying multivariate regression analyses for all countries separately indicated a strong attenuation in the association between age and depressive symptoms in all countries for both sexes. As in the analyses for the pooled sample, the corresponding coefficients lost in magnitude and significance. Among men, only for Austria, Belgium, Germany and Greece did both coefficients for age and age squared remain significantly different from zero. Among women, this was only the case for Austria, Belgium, Denmark, Greece, Italy and Sweden (Tables 4a and 4b, model 3).

[Tables 4a and 4b about here]

To visualize the results of our regression analyses, we plotted the effect of age without and under the control of socio-demographic characteristics for all twelve countries (Fig. 4a and 4b). Regarding the basic model with age and age squared both coefficients were significant for Austrian, Belgian, German, Greek and Swedish men and women as well as for Dutch men and Danish, Italian, Spanish and Swiss women. Among these groups, the estimated quadratic curve for the number of depressive symptoms increased fastest with age for Greek men and Italian, Greek and Spanish women.

The visualization of the extended model clearly showed that the corresponding curves became considerably flatter in all countries for both sexes (Fig. 4a and 4b). Therefore, the result from the pooled sample was confirmed for all twelve countries and showed the importance of socio-demographic characteristics and the indicators of physical and cognitive health for mental health in all countries included in SHARE. Even for those countries where the effect of age and age squared remained significantly different from zero, the increase of EURO-D scores with age remained rather modest. The corresponding curves were fairly flat and showed no substantial increase with age.

[Fig. 4a and 4b about here]

Comparing the estimated graphs for the basic model (with age only) and the extended model, we observed different patterns (Fig. 4a and 4b). In some countries, socio-economic characteristics and health conditions explained much of the increase of depressive symptoms with age. The association between age and EURO-D, which was initially rather strong, got much weaker, with the corresponding curves for the extended model starting at a lower level and being much flatter. This was especially the case for Greece, Israel, Italy and Spain; for the southern European countries this observation can be explained by older persons' rather low education, especially for Spanish women. In another group of countries the association between depressive symptoms and age weakened to a lesser extent, namely in Austria, Belgium, France, Germany and the Netherlands. In other countries, the graphs

representing the estimated models nearly overlapped or differed only slightly. This was the case in Denmark, Sweden and Switzerland.

4 Discussion

In this study we analyzed the association between mental health and age. In contrast to existing studies which provided mixed empirical evidence, SHARE allowed the analysis of mental health of persons living in private households in various European countries. For assessing mental health we used the EURO-D scale. The outcomes of the control variables were in line with previous research (e.g., Dean, Kolody, Wood & Matt, 1992) but they also revealed remarkable gender-specific differences. Education and family status had a protective effect on mental health and the impact of education was much stronger among women than among men. Moreover, divorced and widowed persons suffered from depressive symptoms more often than those who lived with a partner. Separate analyses for men and women revealed that divorce and widowhood had a different impact on the mental health of persons aged 50 years and older. For men, it was widowhood that had a stronger negative impact on mental health while for women it was divorce (see also Buber & Engelhardt, 2008).

The current study supported previous findings on the strong association between physical and mental health (Berkman et al., 1986; Geerlings, Beekman, Deeg & van Tilburg, 2000; Jang, Bergman, Schonfeld & Molinari, 2007) as well as on the importance of cognitive health (Jorm, 2000; Scogin & Rohling, 1989). Limitations in activities of daily living and cognitive impairment turned out to be the main determinants of mental health. The corresponding estimated coefficients were considerably large and moreover highly significant. Cognitive impairment, measured via orientation to date, month, years and day of the week, also turned out to be strongly associated with mental health problems. The effect of bad orientation was very high and its magnitude was similar to that of limitations in activities of daily living.

Especially at older ages, the initial increase in EURO-D scores could be explained by functional disability and cognitive performance. The stepwise setup of the model revealed that with the inclusion of health determinants the estimated graph got much flatter and showed only a very modest increase above age 70. With increasing age, the distance between the graphs representing the original model (including age only) and the multivariate model increased. Nevertheless, the direction of causality between physical and mental health is not clear.

Our results indicated that the association between depression and age seemed to be driven by socio-demographic characteristics and the health conditions of older persons. Marital status, educational level, limitations in activities of daily living and cognitive impairment were the main determinants of mental health of older persons. Depressive symptoms were highly correlated with the context associated with old age, such as health problems or the loss of one's partner. Once controlled for these socio-demographic characteristics and health, age itself had no explanatory power any more and seemed to be much less a factor in determining the mental health of older persons. Our results go in line with Berkman et

al. (1986) who showed that the addition of functional disability to a multivariate model substantially weakened the association between age and depressive symptoms.

Poor physical health is one of the most important risk factors for depression in older adults. Physical health problems were demonstrated to be a predictor of both the onset and the persistence of depression (Geerlings, Beekman, Deeg & van Tilburg, 2000) and one might argue that the effect of age almost vanished in our final model because limitations in activities of daily living—an indicator for physical health—were included as control variables. The stepwise introduction of control variables revealed that physical health was indeed an important aspect of mental health, in particular at old age, and the model fit increased substantially when introducing limitations in activities of daily living. Nevertheless, the association between the number of depressive symptoms and the socio-economic determinants marital status and education was strong and explained part of the decrease in mental health with age. Regarding health aspects, physical health has a stronger impact compared to cognitive functions. The association between mental health and cognition is especially strong among persons with bad orientation, i.e., persons not knowing the date, month, year and day of the week.

The current model first controlled for socio-demographic characteristics and next for health conditions. Alternatively, the control variables were introduced in a different order. It turned out that when controlling first for limitations in activities of daily living as well as for cognitive impairment and later for marital status, the results remained stable. Therefore, both aspects—socio-demographic characteristics and health conditions—are independent determinants of mental health and the association with the one group is not absorbed by the other.

The presented study revealed at first sight, a—sometimes only modest—increase with age among all countries and both sexes. After controlling for socio-economic characteristics and health conditions, the association got much less pronounced and almost disappeared. Especially in those countries with high EURO-D scores and initially strong increase of EURO-D scales with age, mental health problems at higher ages could be explained by the socio-demographic situation and health conditions of older persons. Based on US data, Cairney and Krause (2005) showed that mental health in later life is determined in part by age, gender, marital status and education. They suggest that key social factors are related to mental health in late life. Our findings for European data are in line with Cairney and Krause (2005) and moreover indicate that age is less important than social resources older persons have at their disposal.

Although the current international comparison covers a range of different aspects, other dimensions such as social support, economic and financial circumstances, working conditions or transition to retirement were left out. Moreover, we want to stress that the first wave of SHARE did not allow us to detect causalities but only associations. Nevertheless, the results are based on a representative sample of older persons living in private households in twelve countries and allowed insights at the country level as well as a cross-national comparison. Future waves of SHARE will led us shed light on causal questions as well though.

Fig. 1 Mean number of depressive symptoms by age and gender.

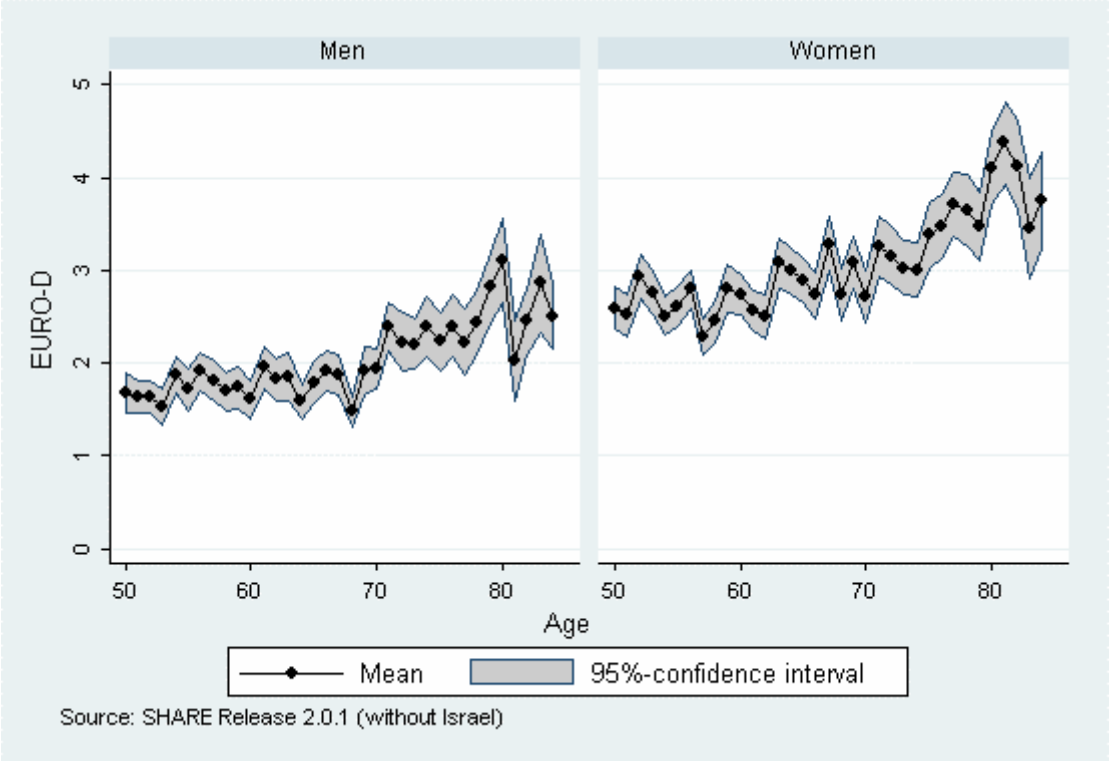

Fig. 2 Estimated effect of age on the level of depression with and without the control of socio-demographic characteristics.

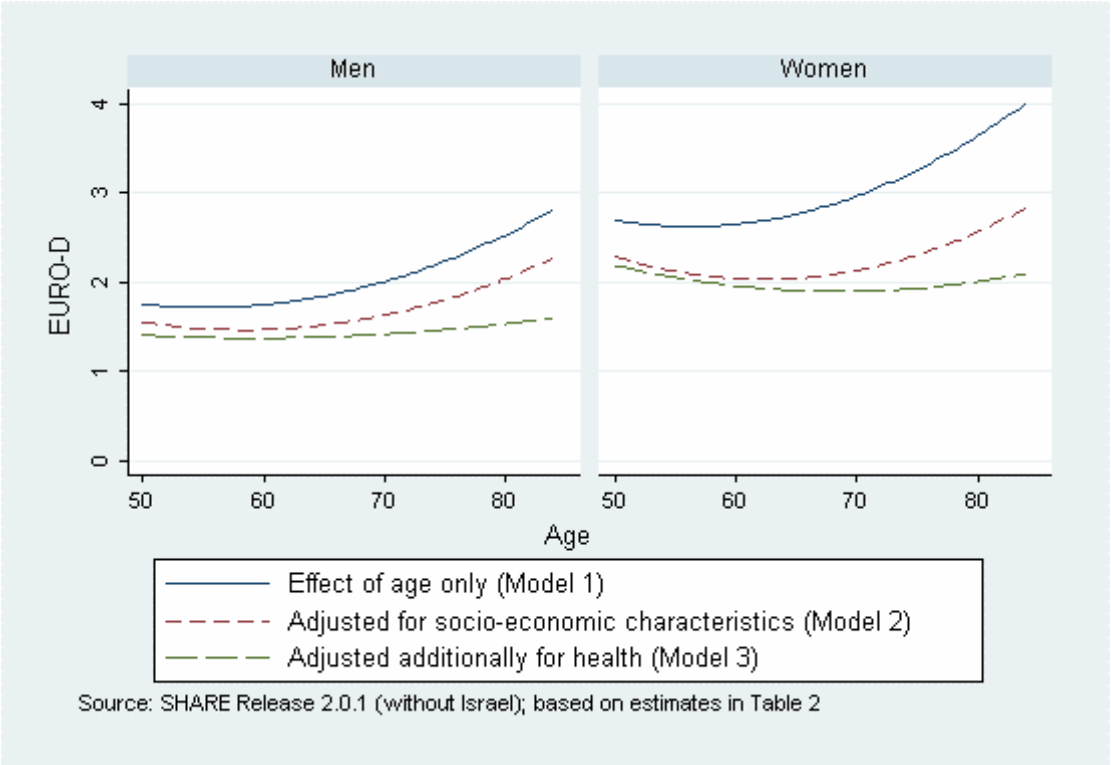

Fig. 3a Mean number of depressive symptoms by age and countries, men.

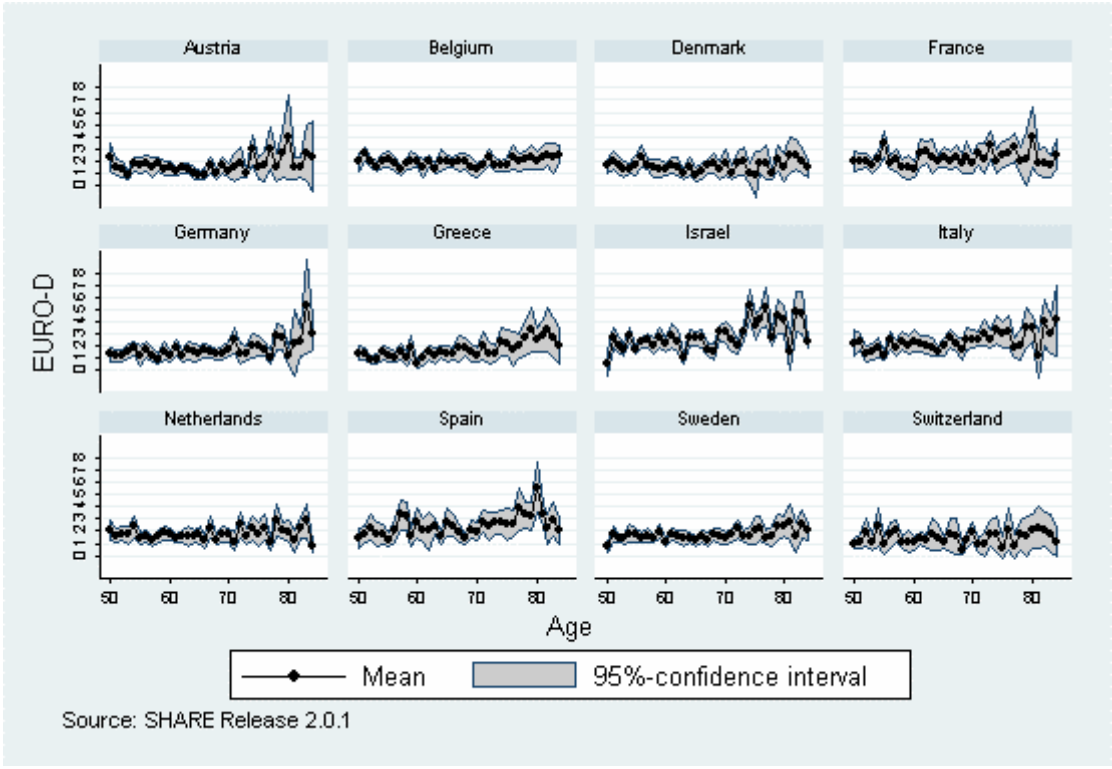

Fig. 3b Mean number of depressive symptoms by age and countries, women.

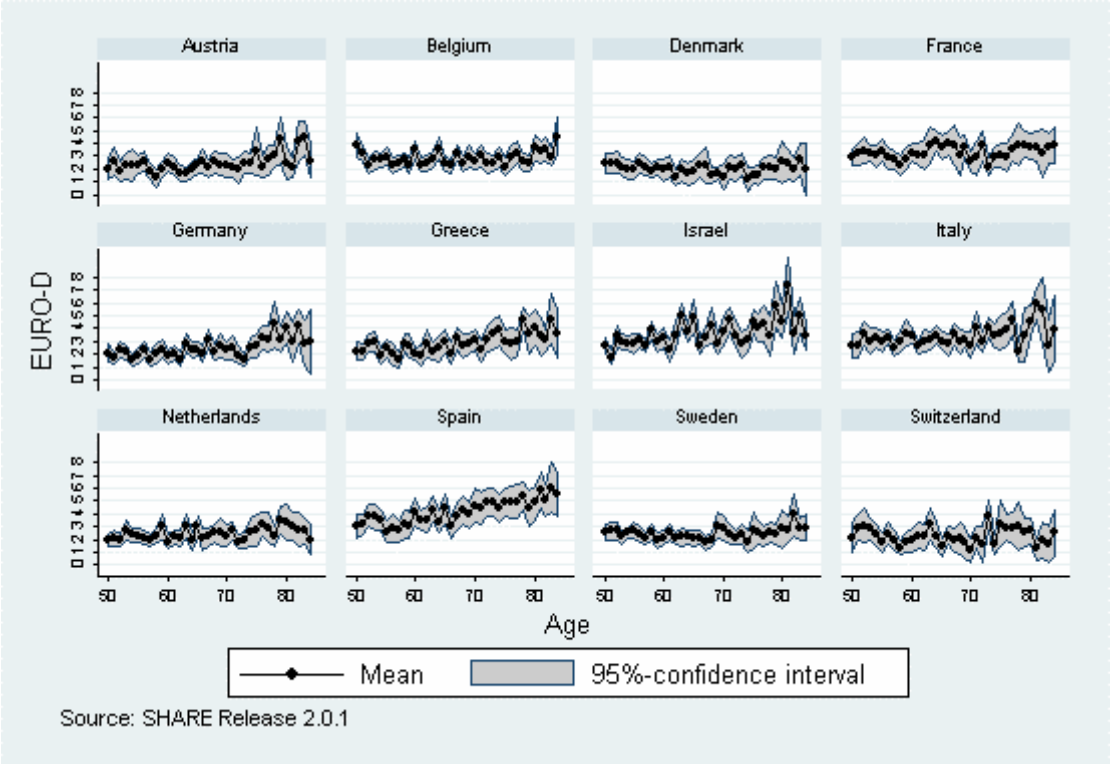

Fig. 4a Estimated effect of age on the level of depression with and without the control of socio-demographic characteristics, among men by countries.

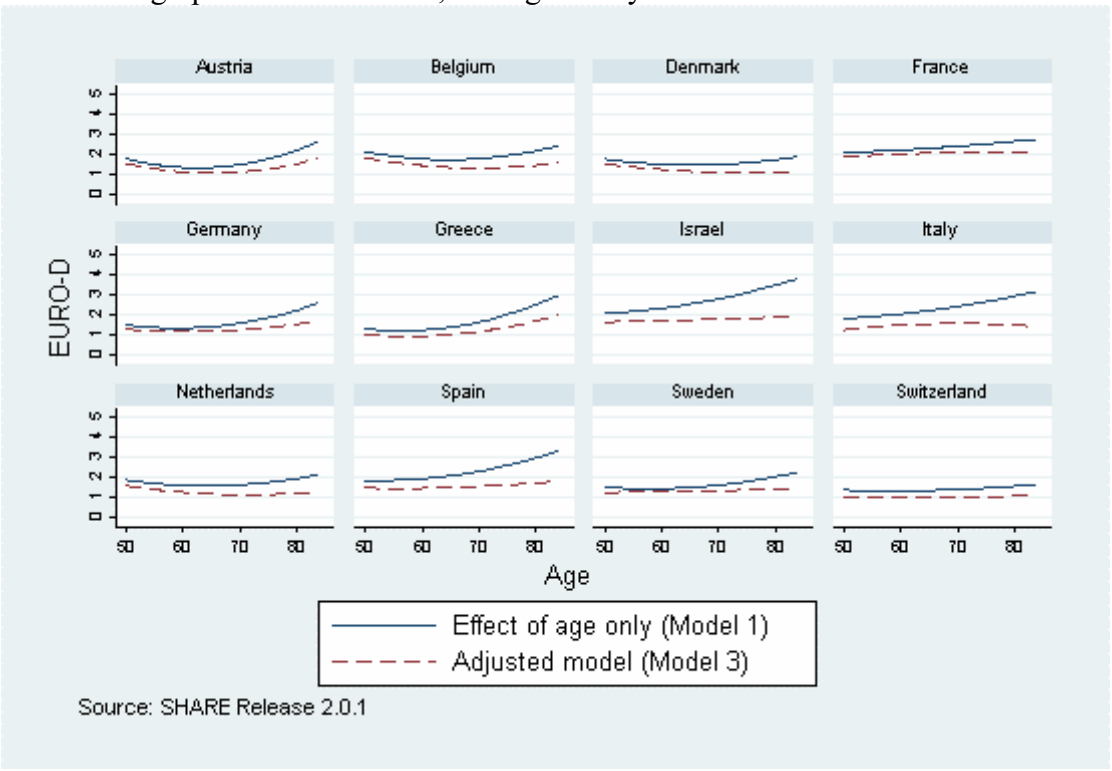

Fig. 4b Estimated effect of age on the level of depression with and without the control of socio-demographic characteristics, among women by countries.

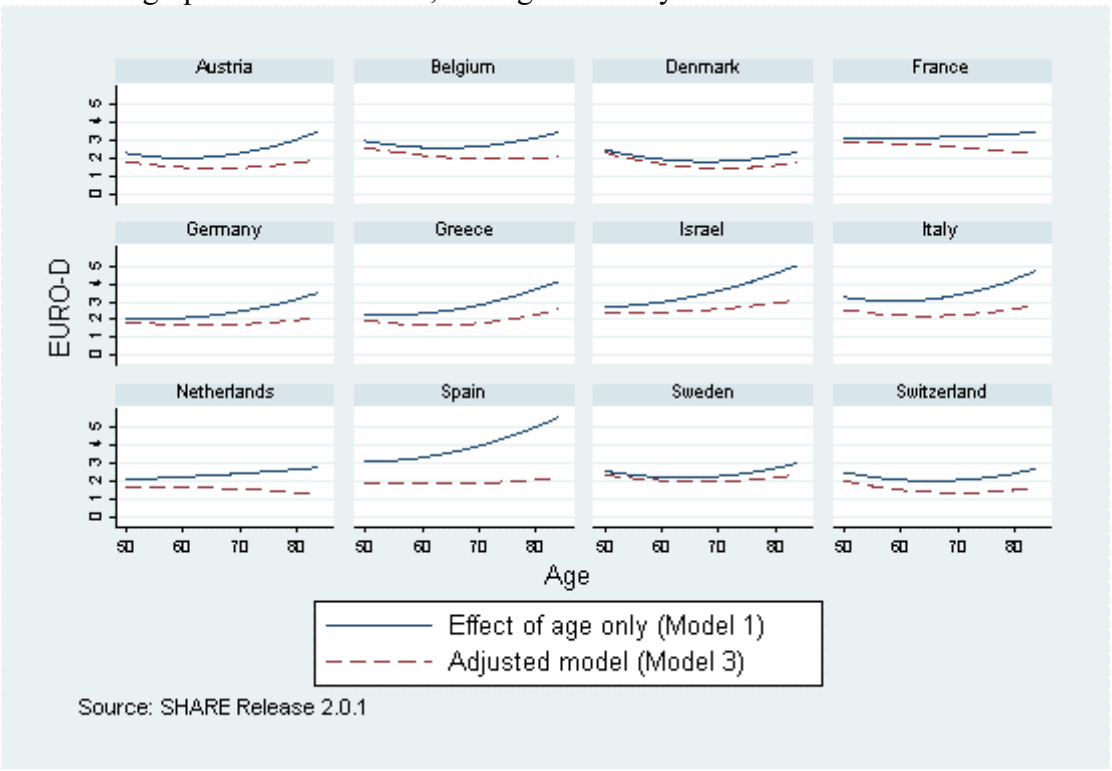

Table 1 Mean number of depressive symptoms by age groups and gender.

	SHARE		
	Men	Wome	Mean difference (95%
50-54	1.72	2.57	-0.88 (-1.00; -0.76)
55-59	1.70	2.47	-0.78 (-0.90; -0.66)
60-64	1.63	2.56	-0.94 (-1.05; -0.82)
65-69	1.76	2.66	-0.92 (-1.05; -0.79)
70-74	1.94	2.84	-0.89 (-1.04; -0.74)
75-79	2.29	3.25	-1.03 (-1.22; -0.84)
80-84	2.44	3.51	-1.05 (-1.29; -0.80)

Source: SHARE Release 2.0.1 (without Israel);

Table 2 The effect of age, marital status, education, ADL limitations, cognitive impairment and countries on EURO-D scores.

	Men			Wome		
	Model	Model	Model	Model	Model	Model
Age						
Age in years	-	-	-0.04	-	-	-
Age*age/100	0.13**	0.12**	0.04+	0.18**	0.17**	0.08**
Family status						
Living with spouse or		0	0		0	0
Never married, no partner		0.24**	0.22**		0.43**	0.35**
Divorced, no partner		0.42**	0.41**		0.46**	0.42**
Widowed, no partner		0.58**	0.53**		0.42**	0.37**
Highest educational						
Primary school		0.70**	0.56**		1.22**	1.06**
Lower secondary		0.21**	0.19**		0.51**	0.45**
Higher secondary or tertiary[a]		0	0		0	0
ADL limitations						
No limitations[a]			0			0
1 and more limitations			1.93**			1.82**
Cognitive impairment						
0 (bad orientation)			1.87**			0.15
1			1.53**			2.22**
2			0.69**			1.90**
3			0.36**			0.60**
4 (good orientation) [a]			0			0
Constant	5.77**	5.65**	2.67**	8.28**	8.60**	5.86**
R^2	0.02	0.04	0.13	0.02	0.07	0.15
N	11,741	11,727	11,719	13,707	13,687	13,675

Legend: + p<0.10; * p<0.05; ** p<0.01; *** p<0.001

Source: SHARE Release 2.0.1, pooled sample without Israel, respondents aged 50 to 84.

[a] Reference category.

Table 3 Country-specific effects on EURO-D scores.

	Men	Women
Country		
Austria	-0.14	-0.25*
Belgium	0.09	0.03
Denmark	-0.16	-0.41**
France	0.40***	0.46***
Germany	-0.08+	-0.10*
Greece	-0.17+	-0.11
Italy	0.37***	0.48***
The Netherlands	-0.01	-
Spain	0.21***	0.77***
Sweden	-0.22*	-0.20+
Switzerland	-0.30**	-0.37**
Constant	2.41**	5.04***
R^2	0.14	0.17
N	11,719	13,675

Legend: + p<0.10; * p<0.05; ** p<0.01; *** p<0.001

Source: SHARE Release 2.0.1, pooled sample without Israel, respondents aged 50 to 84.

Remark: The model additionally included age, family status, highest educational attainment, cognitive impairment and limitations in ADL.

Table 4a Country-specific effect of age, marital status, education, ADL limitations, cognitive impairment and countries on EURO-D scores, men.

	All men	AT	BE	DK	FR	DE	GR	IS	IT	NL	ES	SE	CH
Model 1 (Effect of age only)													
Age													
Age in years	-0.15***	-0.36***	-0.24**	-0.16	-0.02	-0.23**	-0.27**	-0.09	-0.06	-0.18*	-0.16	-0.14+	-0.06
Age*age/100	0.13***	0.29***	0.19**	0.12	0.03	0.20**	0.23***	0.11	0.07	0.14*	0.15+	0.12*	0.05
Constant	5.77***	12.48***	9.48***	6.53*	2.28	8.25**	8.71**	4.08	2.87	7.45**	5.95	5.42*	2.98
R^2	0.02	0.02	0.01	0.00	0.01	0.02	0.05	0.03	0.02	0.00	0.03	0.01	0.00
N	11,741	754	1,627	706	1,203	1,323	1,159	1,041	1,091	1,256	910	1,307	405
Model 3 (Extended model)													
Age													
Age in years	-0.04	-0.27**	-0.18*	-0.10	0.05	-0.13+	-0.18*	-0.00	0.11	-0.14	-0.05	0.01	-0.04
Age*age/100	0.04+	0.21**	0.13*	0.07	-0.03	0.11+	0.16*	0.01	-0.08	0.10	0.05	-0.00	0.03
Family status													
Living with spouse or partner[a]	0	0	0	0	0	0	0	0	0	0	0	0	0
Never married, no partner	0.22**	-0.15	0.31	0.20	0.52+	0.15	0.41+	1.60**	0.09	0.43+	0.36	0.35*	0.36
Divorced, no partner	0.41***	0.28	0.63**	0.53*	0.38	0.58**	0.15	0.39	0.41	0.65**	-0.12	0.17	1.18***
Widowed, no partner	0.53***	0.40+	0.73***	0.59*	0.23	0.82***	0.29	0.81*	0.56*	1.00***	0.35	0.25	0.62+
Highest educational attainment													
Primary school	0.56***	2.57+	0.33**	(dropped)	0.07	1.38	0.46***	1.02***	0.58***	0.90***	0.35+	-0.03	0.33
Lower secondary	0.19***	0.19	0.12	-0.13	-0.19	-0.00	0.13	0.63**	0.42*	0.09	0.04	0.07	0.27
Higher secondary or tertiary[a]	0	0	0	0	0	0	0	0	0	0	0	0	0
ADL limitations													
No limitations[a]	0	0	0	0	0	0	0		0	0	0	0	0
1 and more limitations	1.93***	1.85***	1.57***	1.78***	1.42***	1.78***	1.01***	2.33***	2.53***	1.43***	2.27***	1.59***	2.15***
Cognitive impairment													
0 (bad orientation)	1.87***	-1.06	1.40+	2.27**	0.40	2.72**	7.52***	2.18**	1.14+	0.36	3.11***	2.67*	(dropped)
1	1.53***	2.71***	0.96	0.46	0.68	1.76	2.90*	0.83	0.77	0.07	1.99**	4.21***	(dropped)
2	0.69***	0.81+	0.72	0.87+	0.82+	0.89*	1.77**	2.03***	0.53	0.46	0.38	1.71***	-0.64
3	0.36***	0.58**	0.38**	0.34+	0.17	0.18	0.92***	0.88***	0.40*	0.09	0.76***	0.44**	0.05
4 (good orientation) [a]	0	0	0	0	0	0	0	0	0	0	0	0	0
Constant	2.67**	9.90**	7.65**	4.97	0.12	5.07*	6.22*	1.62	-2.33	6.01*	2.90	0.84	2.21
R^2	0.13	0.14	0.10	0.13	0.06	0.13	0.12	0.22	0.17	0.10	0.20	0.15	0.12
N	11,719	753	1,625	706	1,200	1,322	1,159	1,040	1,091	1,249	908	1,306	400

Legend: + p<0.10; * p<0.05; ** p<0.01; *** p<0.001.

Source: SHARE Release 2.0.1, respondents aged 50 to 84

[a] Reference category.

Table 4b Country-specific effect of age, marital status, education, ADL limitations, cognitive impairment and countries on EURO-D scores, women.

	All women	AT	BE	DK	FR	DE	GR	IS	IT	NL	ES	SE	CH
Model 1 (Effect of age only)													
Age													
Age in years	-0.20***	-0.31**	-0.26**	-0.28*	-0.05	-0.17*	-0.23*	-0.16	-0.32**	-0.01	-0.21+	-0.25**	-0.26+
Age*age/100	0.18***	0.26**	0.21***	0.21*	0.04	0.16*	0.21**	0.17+	0.27**	0.02	0.21*	0.20**	0.20+
Constant	8.28***	11.32**	10.93***	11.29**	4.54	6.60*	8.48**	6.39	12.46***	2.08	8.30*	10.26***	10.48*
R^2	0.02	0.03	0.01	0.01	0.00	0.03	0.04	0.05	0.03	0.01	0.06	0.01	0.01
N	13,707	1,007	1,834	786	1,474	1,468	1,294	1,270	1,318	1,397	1,234	1,454	441
Model 3 (Extended model)													
Age													
Age in years	-0.12***	-0.19+	-0.17*	-0.28*	0.05	-0.13	-0.25*	-0.08	-0.21*	0.06	-0.07	-0.17*	-0.23+
Age*age/100	0.08***	0.14+	0.11+	0.19*	-0.05	0.10	0.20**	0.07	0.16*	-0.05	0.06	0.13*	0.16
Family status													
Living with spouse or partner[a]	0	0	0	0	0	0	0		0	0	0	0	0
Never married, no partner	0.35***	-0.00	0.45	-0.31	0.20	0.16	0.45	0.90*	0.32	0.81**	0.31	0.16	0.72
Divorced, no partner	0.42***	0.65**	0.71***	0.35+	0.17	0.19	0.37	0.23	1.50***	1.23***	0.64+	0.52***	0.96***
Widowed, no partner	0.37***	0.27	0.43**	0.12	0.40*	0.44**	0.30*	0.53**	-0.08	0.71***	0.94***	0.24	0.51*
Highest educational attainment													
Primary school	1.06***	0.43	0.45***	(dropped)	0.35**	1.39**	0.73***	0.80***	0.86***	0.66***	1.27***	-0.02	0.63**
Lower secondary	0.45***	0.66***	0.26*	0.50**	0.03	0.57***	0.20	-0.08	0.51*	0.30*	0.94***	-0.24	0.28
Higher secondary or tertiary[a]	0	0	0	0	0	0	0		0	0	0	0	0
ADL limitations													
No limitations[a]	0	0	0	0	0	0	0		0	0	0	0	0
1 and more limitations	1.82***	2.22***	1.33***	1.54***	1.69***	1.63***	1.53***	1.76***	2.30***	1.48***	1.92***	1.88***	1.36***
Cognitive impairment													
0 (bad orientation)	0.15	1.14	0.70	-0.90	0.31	0.69	1.99*	1.71**	-0.89	0.36	-0.07	0.52	(dropped)
1	2.22***	0.96	0.65	-0.63	2.28*	2.81***	-1.76	1.98***	0.45	0.49	3.19***	0.11	1.85
2	1.90***	1.53**	1.14*	-0.28	0.83	1.16**	1.19*	2.02***	2.25***	1.21*	2.06***	-0.09	-0.63
3	0.60***	0.78***	0.42**	-0.15	0.32+	0.83***	0.63**	0.58**	0.29	0.15	0.96***	0.36	0.47
4 (good orientation) [a]	0	0	0	0	0	0	0		0	0	0	0	0
Constant	5.86***	7.69*	8.11**	11.29**	1.58	5.81*	9.35**	4.51	9.06**	-0.14	4.09	7.80**	9.43*
R^2	0.15	0.16	0.08	0.08	0.07	0.14	0.11	0.20	0.17	0.10	0.20	0.09	0.10
N	13,675	1,005	1,832	785	1,472	1,466	1,289	1,270	1,316	1,392	1,229	1,450	439

Legend: + p<0.10; * p<0.05; ** p<0.01; *** p<0.001.

Source: SHARE Release 2.0.1, respondents aged 50 to 84.

[a] Reference category.

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