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Characteristics and factors associated with depression in the elderly in Spain from a gender perspective

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Introduction. Depression is a main cause of disability and it is a priority public health problem among the elderly because of its significant consequences regarding morbidity and mortality, especially in women.

Methods. We selected records of people aged 65 and over out of the 2014 European Health Survey in Spain (n=6,520). We then performed a descriptive analysis stratified by gender of relevant variables such as demographic, socioeconomic, health status, health care and health determinants. We studied its connection with the presence of depressive disorders diagnosed by the PHQ-8 questionnaire. In a second phase we adjusted logistic regression models in order to assess depressive disorders based on the significant variables.

Results. 12.6% of depressive disorders are detected (16.8% women; 7.1% men). Many of the variables are related to depressive disorders in bivariate analysis; however, only a regular or bad/very bad perceived state of health (OR_m=*6.7;* OR_w=*3.8*); bedrest; the difficulty or inability to walk; and severe (OR_m=*3.5*, OR_w=*2*) and extreme pain (OR_m=*5;* OR_w=*3.9*) remain after multivariate adjustment in both sexes. Differentially depression in women is connected with not being able to read or write, the presence of chronic disease, and lack of interest from others; and in men a moderate degree of pain.

Conclusions. The greater frequency and vulnerability of depression in elderly women may be connected to their educational level, their suffering from chronic diseases and social support. Longitudinal studies need to be undertaken to confirm the role and influence of these factors.

Keywords: Depressive disorder, Elderly, Gender role, Health surveys, Epidemiologic studies, Multivariate analysis

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Actas Esp Psiquiatr 2017;45(5):185-200

Características y factores asociados a la depresión en el anciano en España desde una perspectiva de género

Introducción. La depresión es causa principal de discapacidad y constituye en el anciano un problema prioritario de salud pública por sus relevantes consecuencias en morbimortalidad, especialmente en mujeres.

Metodología. Se seleccionan los registros de edad igual o superior a 65 años de la Encuesta Europea de Salud en España 2014 (n=6.520). Se realiza un análisis descriptivo estratificado por sexo de variables relevantes sociodemográficas, socioeconómicas, de estado de salud, asistencia sanitaria y determinantes de salud, estudiando su asociación con la presencia de trastornos depresivos diagnosticados mediante el cuestionario PHQ-8. En una segunda fase se ajustan modelos de regresión logística para evaluar los trastornos depresivos en función de las variables significativas.

Resultados. Se detectan un 12,6% de trastornos depresivos (16,8% mujeres; 7,1% hombres). Gran parte de las variables estudiadas se relacionan con los trastornos depresivos en el análisis bivariante, mientras sólo un estado regular o malo/muy malo de salud percibida *(OR_h=6,7; OR_m=3,8)*, la permanencia en cama, la dificultad o no poder caminar y el dolor severo *(OR_h=3,5; OR_m=2)* y extremo *(OR_h=5; OR_m=3,9)* permanecen después del ajuste multivariante en ambos sexos. De manera diferencial se asocian con la depresión en la mujer el no saber leer/escribir, la presencia de enfermedad crónica y la falta de interés de otras personas, y en el hombre el grado moderado de dolor.

Conclusiones. La mayor frecuencia y vulnerabilidad de depresión en mujeres ancianas puede guardar relación con el nivel educativo, la patología crónica y el apoyo social. Es

necesario emprender estudios longitudinales que ratifiquen el papel e influencia de éstos y otros factores.

Palabras clave: Trastorno depresivo, Ancianos, Rol de género, Encuestas de salud, Estudios epidemiológicos, Análisis multivariante

INTRODUCTION

According to estimates by the World Health Organization, depression is the main cause of disability due to illness in the world, both in developed and developing countries. Although this finding appears in both men and women, the latter lose 50% more years of life than men because of disability (DALY), which represents over a 13% of global DALYs[1].

The relevance of symptoms and depressive disorders in the elderly has been highlighted in recent years because of its substantial impact on the health and mortality of this population group. For this reason it is being considered a priority as a public health problem and there is a need to establish preventive and promotion of health measures[2].

Undoubtedly, the demographic and socio-economic developments of the last decades in developed countries, alongside the consequent increase in life expectancy, have contributed to enhance this phenomenon. This is consequence of the emergence of new processes associated with physical and mental decline, which means depression plays a key role in their social, economic and health implications[3]. Among these we can mention its frequent connection with various physical disorders, the increased risk of suicide and a deterioration in physical, cognitive and social functions[4].

Over 75 years, the lifetime prevalence of major depressive disorder (MDD) in the community has been estimated at 4-11%, and that of the global depressive disorders at a 10-26%[5]. Previous studies put the MDD at 1-5% for people over 65 years[6].

Although some studies point toward the neurobiological differences detected between depression in the young and in the elderly are not reflected at a clinical level[7], other works have found distinguishing features; the ones cited more frequently in the elderly are: somatic complaints, sleep and appetite disturbances, impaired concentration and psychomotor retardation, alongside the presence of more agitation and hypochondriasis; there are, however, less feelings of guilt and sexual dysfunction characteristics observed in younger patients[8].

Moreover, they have detected, in a conventional way, a higher frequency of depressive and anxiety disorders in women as opposed to the presence of externalizing disorders and substance abuse in men, which has been connected to various biological and psychosocial hypotheses. One of the most important is the association detected between depression and the increased frequency of cerebrovascular disease in middle and advanced age women[9]. However, recent studies that were examining temporal and spatial analysis in various countries and continents have observed minor differences of depressive disorders and substance abuse between both sexes in the younger cohorts. This has been associated to the "The gender roles hypothesis" and the influence of the shift in the roles traditionally played by women in past generations[10].

Several factors, both risk and protective, have been linked to depression in the elderly. Among the first within the biological sphere are: female sex, substance abuse, chronic pain, sleep disturbances, a wide variety of medical conditions and iatrogenic causes, such as the use of drugs with depressogenic effects. In the psychosocial area have been cited: social isolation, marital status other than married, disability, perception of poor health, low socioeconomic status and negative life events such as bereavement and economic losses[11]. Within the group of protectors good physical health and cognitive functioning, social contact and meaningful participation in social activities have been described[6].

Given the current relevance and characteristics presented by depressive disorders in the elderly, this paper aims to identify and describe the major socio-demographic factors, socioeconomic, health status, health determinants and health care partners in Spain from a gender perspective. In order to achieve this, we have studied the data contained in the European Health Survey for Spain in the year 2014 (EESE-2014).

METHODOLOGY

Source of information and its main features

Microdata files (adults' files) at national level EESE-2014, which were issued by the National Statistics Institute (INE) in electronic form[12]. The EESE-2014 is a five-yearly research project aimed at people aged 15 and over who reside in family households throughout the country. Its main objective is to provide information about the health of the Spanish population, harmonized and analogous at a European level, in order to plan and assess health policies. Specifically its objectives are the assessment of status and health problems, knowledge about accessibility and use of health services, as well as health determinants.

The areas of research EESE-2014 are governed by European Union regulation No. 141/2013, under the

population and geographical frameworks defined above, and data collection throughout 2014.

The design features a three-stage sample with stratification of the first stage units, which correspond to the census sections used according to city size; the second stage units comprise the main family housing and the third stage units are those eligible persons living at that household (15 years or over).

A nationwide sample is formed by the 37,500 dwellings distributed through 2,500 census tracts, with 15 households selected in each section. Each stage the sample is made following equiprobable selection methods.

Selection of the study population

Out of the 22,842 records originally contained in the adults' file in the EESE-2014, those with an age under 65 years are selected; which means the study population consists of 6,520 records.

Study variables

The sociodemographic variables considered for study are: gender, age, country of birth, cohabitation with a partner; the Socioeconomic variables: education level, social class based on the reference person's occupation, Do they receive a contributive pension?; variables connected to health: perceived health status in the last 12 months, long-term illness or chronic health problems, traffic accident in the last 12 months, need for bedrest in the last two weeks, difficulty walking 500 meters unassisted, degree of pain suffered in the past 4 weeks; variables connected to health care: hospital admissions, use of emergency services, lack of medical care due to waiting lists in the past 12 months; variables connected to health determinants: body mass index (BMI), type of physical activity carried out in their main occupation, do they currently smoke?, frequency of alcohol intake in the last 12 months, to what extent are other people interested in what happens to you?, and connected to mental health: prevalence of active depression history.

In relation to the original design (Annex 1) recoding and grouping of categories in the following variables are: cohabitation with a partner, education level, social class based on the reference person's occupation, do they receive a contributive pension?, perceived state of health in the last 12 months, frequency of alcohol intake in the last 12 months, to what extent are others interested in what happens to you? and prevalence of active depression history.

In order to provide greater consistency to the results, we have considered categories of variables such as "do not know", "no evidence" and "no answer" as lost values, since their values represent low residual percentages for all variables.

The variable "social class based on the reference person's occupation" is based on the list of occupations of the National Classification of Occupations 2011 (CNO-2011) as proposed by the Working Group Determinants of the Spanish Society of Epidemiology, where they assign social class depending on the occupation[13].

The variable "prevalence of depression history" has derived from applying the *Patient Health Questionnaire depression scale (PHQ-8)* in the mental health sub-module EESE-2014. It was done in order to assess the prevalence of depression according to the criteria found in the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV). This instrument has proved its worth in diagnosing and assessing the severity of depressive disorders observed in large clinical trials. The questionnaire allows the person to assess a number of problems or situations within the last two weeks. Depending on the total score and answered items, we can establish the absence of depression or the presence of it, whether as severe depression or another type of depression[14].

Statistic analysis

In a first stage, a cross-sectional descriptive study was performed calculating the prevalence of depressive disorders (major depressive disorder and other depressive disorders) based on the weighted analysis calculated with the variable we know as *adult lift factor*. The relationship between depressive disorders and the variables we selected, using the appropriate statistical techniques according to the either qualitative or quantitative nature of the variables, are studied. We presented their frequency distribution and studied their central tendency and dispersion measures. In the bivariate analysis we used either $\chi 2$ test or Fisher's exact test to compare proportions and for we used Student's t test to compare means. The level of statistical significance was considered at $p<0.05$.

In a second phase we adjusted the logistic regression models that evaluate the presence of depressive disorders (dependent variable), according to the other variables described (independent variables). We took as selection criterion a statistically significant relationship with the dependent variable set in the bivariate analysis. The results are presented as odds ratios (ORs) with corresponding confidence intervals.

In all the analysis we performed stratification by sex providing differentiated results. We used the SPSS v 21.0 program to analyse the data.

RESULTS

According to the weighted results, 12.6% have a depressive syndrome, 6.2% of that being a major depressive disorder (MDD) and the other 6.4% being other depressive disorders. Women have a greater frequency of this condition than men (16.8% vs 7.1%; p<0.001). Table 1.

Out of the 6,520 people who comprise the study population, 3,896 (59.8%) were women and 2,624 (40.2%) men. The overall mean age was 75.9 years (SD: 7.6 a), being higher in women (76.5) than in men (75.0) (p<0.001). Approximately, a 98% were born in Spain, for both men and women. The cohabitation with a partner is higher in men (68.0% vs 35.1%; p<0.001). In all socioeconomic variables considered (education level, social class and receiving a contributive pension) values are more favorable for men than women (p<0.001). The state of health perception is more positive among men (p<0.001), while chronic problems, the need for bedrest, walking difficulties and the degree of

Table 1 Presence of depressive and descriptive characteristics of the sample by sex. European Health Survey in Spain 2014. People≥65 years. (N=6,520; nm=2,624; nw=3,896)

Variable*	Men N (%)	Women N (%)	p
Depressive disorders**	187 *(7.1)*	660 *(16.8)*	*<0.001*
Sociodemographic variables			
Edad media [DE]	75.0 *[7.2]*	76.5 *[7.8]*	*<0.001*
Country of birth			*0.990*
Spain	2,570 *(97.9)*	3,816 *(97.9)*	
Foreign country	54 *(2.1)*	80 *(2.1)*	
Coupledom			*<0.001*
Yes	1,780 *(68.0)*	1,365 *(35.1)*	
No	838 *(32.0)*	2,527 *(64.9)*	
Socioeconomic variables			
Education level			*<0.001*
Does not read nor write	69 *(2.6)*	242 *(6.2)*	
Primary education	1,749 *(66.7)*	2,969 *(76.2)*	
Highschool education	366 *(13.9)*	364 *(9.3)*	
Professional/University education	440 *(16.8)*	321 *(8.2)*	
Social level			*<0.001*
Managers	423 *(16.2)*	475 *(13.0)*	
Skilled workers	1,878 *(71.8)*	2,517 *(68.9)*	
Unskilled workers	314 *(12.0)*	662 *(18.1)*	
Receiving a contributive pension?			*<0.001*
Yes	2,533 *(99.1)*	2,887 *(93.5)*	
No	22 *(0.9)*	200 *(6.5)*	
Variables related to health status			
Perceived state of health in the last 12 months			*<0.001*
Very good / Good	1,334 *(50.8)*	1,516 *(38.9)*	
Moderate	870 *(33.2)*	1,501 *(38.5)*	
Bad / Very bad	420 *(16.0)*	879 *(22.6)*	
Perceived state of health in the last 12 months			*<0.001*
Very good / Good	2,251 *(85.8)*	3,499 *(89.8)*	
Moderate	373 *(14.2)*	396 *(10.2)*	
Bad / Very bad			

Table 1 Continuation

Variable*	Men N (%)	Women N (%)	p
Variables related to health status			
Traffic accidents in the last 12 months			*0.301*
Yes	25 *(1.0)*	28 *(0.7)*	
No	2,596 *(99.0)*	3,866 *(99.3)*	
Need for bedrest in the last 2 weeks			*<0.001*
Yes	165 *(6.3)*	366 *(9.4)*	
No	2,458 *(93.7)*	3,529 *(90.6)*	
Difficulty walking 500 meters			*<0.001*
No, none	1,896 *(72.3)*	2,285 *(58.7)*	
Yes, some difficulty	378 *(14.4)*	754 *(19.4)*	
Yes, much difficulty	240 *(9.1)*	564 *(14.5)*	
Is not able to do it	110 *(4.2)*	292 *(7.5)*	
Degree of pain experienced in the last 4 weeks			*<0.001*
None	1,304 *(49.8)*	1,074 *(27.6)*	
Very slight	289 *(11.0)*	367 *(9.4)*	
Slight	395 *(15.1)*	634 *(16.3)*	
Moderate	403 *(15.4)*	1,070 *(27.5)*	
Severe	196 *(7.5)*	651 *(16.7)*	
Extreme	32 *(1.2)*	94 *(2.4)*	
Variables related to health care			
Hospital admissions in the last 12 months			*0.009*
Yes	408 *(15.5)*	516 *(13.2)*	
No	2,216 *(84.5)*	3,380 *(86.8)*	
Use of emergency rooms in the last 12 months			*<0.001*
Yes	666 *(25.4)*	1,232 *(31.6)*	
No	1,958 *(74.6)*	2,664 *(68.4)*	
Lack of assistance because of waiting lists in the last 12 months			*0.029*
Yes	305 *(13.2)*	530 *(15.3)*	
No	1,999 *(86.8)*	2,932 *(84.7)*	
Variables related to health determinants			
Body mass index			*<0.001*
Underweight	16 *(0.6)*	53 *(1.6)*	
Normoweight	688 *(27.6)*	1,141 *(33.4)*	
Overweight	1,261 *(50.6)*	1,383 *(40.5)*	
Obesity	527 *(21.1)*	842 *(24.6)*	
Physical activity at work			*<0.001*
Mainly sitting most of the day	1,093 *(43.6)*	1,800 *(48.0)*	
Standing without great effort	1,044 *(41.7)*	1,634 *(43.6)*	
Walking, frequent travel	354 *(14.1)*	308 *(8.2)*	
Tasks which require great physical efforts	14 *(0.6)*	10 *(0.3)*	
Currently smoking?			*<0.001*
Yes, everyday	330 *(12.6)*	149 *(3.8)*	
Yes, but not everyday	23 *(0.9)*	7 *(0.2)*	
Not now, but in the past	1,499 *(57.3)*	380 *(9.8)*	
No, never	766 *(29.3)*	3,352 *(86.2)*	

Table 1 Continuation

Variable*	Men N (%)	Women N (%)	p
Variables related to health determinants			
Frequency alcohol intake			*<0.001*
Daily or almost daily	1,100 *(42.0)*	435 *(11.2)*	
1-6 days per week	313 *(12.0)*	234 *(6.0)*	
1-3 days per month	249 *(9.5)*	319 *(8.2)*	
Less than once a month / Never	954 *(36.5)*	2,900 *(74.6)*	
Interest shown by others			*0.544*
A lot / Some	2,492 *(96.0)*	3,686 *(95.5)*	
Moderate	58 *(2.2)*	93 *(2.4)*	
Little / None	46 *(1.8)*	82 *(2.1)*	

*: The values referred to in each variable correspond to non lost.
**: Weighted percentages adult lifting factors are presented in the survey.

pain experienced are of greater magnitude in women (p<0.001). The hospital admission rate is higher in men (p=0.009), while the use of emergency rooms is higher in women (31.6% vs 25.4%; p<0.001). The lack of assistance motivated by waiting lists is slightly higher in women (15.3 vs 13.2; p = 0.029). Among the determinants of health the BMI shows a greater presence of underweight and obesity in women, with higher values of overweight among men (p<0.001). Physical activity carried out in their main occupation is more intense in men (p<0.001). Alcohol intake and smoking are significantly higher in men (p<0.001). Finally, no differences were found in the interest shown by others from the perspective of gender (p=0.544). Table 1.

Table 2 shows the results of the study regarding the relationship between variables and the presence of depressive disorders in each sex. The average age of people with depressive disorders is higher than the age of non-depressed people, independently of their sex (p<0.001). The lack of cohabitation with a partner (in women), the lowest education level and a low social class were significantly associated with a higher rate of depressive disorders. Perceiving their state of health as bad, the existence of a chronic illness, the need for bedrest, a great difficulty walking and greatest high degree of pain are all associated significantly and positively with depressive disorders in both sexes (p<0.001). Within the framework of healthcare, being admitted into a hospital, using the emergency department and not being treated because of waiting lists in the past 12 months are categories positively connected to the existence of depressive disorders (p<0.001). Among the studied health determinants the categories associated with a higher prevalence of depression are: suffering from obesity or underweight regarding BMI (in women), a sedentary lifestyle when it comes to physical activity, no alcohol intake or less than once a month, and none or little interest from others concerning the subject (in women) (p<0.001).

The results of the multivariate analysis indicated the presence of four common variables for both sexes which are positively associated with depression, and whose categories are: perceived state of health as moderate and bad / very bad (ORm=6.7; ORw=3.8), the need for bedrest in the past 2 weeks, the inability to walk or to do so with great difficulty without help, and severe degrees (ORm=3.5, ORw=2) and end (ORm=5; ORw=3.9) of pain in the last 4 weeks. Differentially, some are positively connected to depressive disorders in women, such as not knowing how to read or write (ORw=2.5), the presence of a chronic disease (ORw=5.7), walking with some difficulty (ORw=1.6) and none or little interest from others (ORw=4); and in man a moderate degree of pain (ORm=1.9). Conversely, increasing age is negatively associated with the presence of depression only in women (ORw=0.98). Table 3.

DISCUSSION

The health of men and women is not only different for biological reasons which influence health and the risks of illness, but also uneven if we consider the concept of gender roles linked to occupations and family[15]. This fact has been observed in the state of health of the elderly in our environment, detecting inequalities in gender, social class and territories[16].

The overall frequency of depressive disorders (12.6%) and MDD (6.2%) detected in this work focused on the elderly population are within previously targeted ranges[5].

Table 2 Bivariate analysis between variables of interest and presence of depressive symptoms, according to sex. European Health Survey in Spain 2014. People≥65 years. (n=6,520; n_m=2,624; n_w=3,896)

Variable*	Presence of depressive disorders			
	Men N (%)	p	Women N (%)	p
Sociodemographic variables				
Middle ages**	77.6 vs 74.7	*<0.001*	77.8 vs 76.1	*<0.001*
Country of birth		*0.586*		*0.295*
Spain	185 *(7.3)*		650 *(17.3)*	
Foreign country	2 *(3.8)*		10 *(12.8)*	
Coupledom		*0.820*		*0.013*
Yes	129 *(7.3)*		205 *(15.2)*	
No	58 *(7.1)*		454 *(18.4)*	
Socioeconomic variables				
Education level		*0.001*		*<0.001*
Does not read nor write	9 *(13.2)*		87 *(37.0)*	
Primary education	143 *(8.3)*		506 *(17.4)*	
Highschool education	14 *(3.8)*		39 *(10.8)*	
Professional/University education	21 *(4.8)*		28 *(8.8)*	
Social level		*0.013*		*<0.001*
Managers	21 *(5.0)*		60 *(12.9)*	
Skilled workers	133 *(7.2)*		417 *(16.9)*	
Unskilled workers	33 *(10.7)*		146 *(22.5)*	
Receiving a contributive pension?		*0.053*		*0.876*
Yes	180 *(7.2)*		494 *(17.4)*	
No	4 *(20.0)*		33 *(17.0)*	
Variables related to health status				
Perceived state of health in the last 12 months		*<0.001*		*<0.001*
Very good / Good	17 *(1.3)*		72 *(4.8)*	
Moderate	53 *(6.1)*		251 *(16.9)*	
Bad / Very bad	117 *(29.3)*		337 *(40.1)*	
Diseases or chronic problems		*<0.001*		*<0.001*
Yes	185 *(8.3)*		647 *(18.8)*	
No	2 *(0.5)*		13 *(3.3)*	
Traffic accidents in the last 12 months		*0.419*		*0.448*
Yes	3 *(12.0)*		6 *(22.2)*	
No	183 *(7.1)*		654 *(17.2)*	
Need for bedrest in the last 2 weeks		*<0.001*		*<0.001*
Yes	61 *(38.4)*		151 *(43.8)*	
No	125 *(5.1)*		509 *(14.6)*	
Difficulty walking 500 meters		*<0.001*		*<0.001*
No, none	52 *(2.8)*		194 *(8.5)*	
Yes, some difficulty	26 *(6.9)*		155 *(20.9)*	
Yes, much difficulty	69 *(29.9)*		198 *(35.9)*	
Is not able to do it	40 *(40.8)*		113 *(43.3)*	

Table 2 Continuation

Variable*	Presence of depressive disorders			
	Men N (%)	p	Women N (%)	p
Variables related to health status				
Degree of pain experienced in the last 4 weeks		*<0.001*		*<0.001*
None	29 *(2.2)*		69 *(6.5)*	
Very slight	8 *(2.8)*		31 *(8.5)*	
Slight	18 *(4.7)*		73 *(11.8)*	
Moderate	44 *(11.2)*		195 *(18.5)*	
Severe	69 *(35.6)*		232 *(36.7)*	
Extreme	18 *(60.0)*		59 *(63.4)*	
Variables related to health care				
Hospital admissions in the last 12 months		*<0.001*		*<0.001*
Yes	61 *(15.2)*		129 *(25.5)*	
No	126 *(5.8)*		531 *(16.0)*	
Use of emergency rooms in the last 12 months		*<0.001*		*<0.001*
Yes	91 *(14.0)*		313 *(26.0)*	
No	96 *(5.0)*		347 *(13.2)*	
Lack of assistance because of waiting lists in the last 12 months		*<0.001*		*<0.001*
Yes	39 *(12.8)*		127 *(24.4)*	
No	141 *(7.1)*		471 *(16.3)*	
Variables related to health determinants				
Body mass index		*0.094*		*<0.001*
Underweight	1 *(6.3)*		10 *(19.6)*	
Normoweight	51 *(7.5)*		160 *(14.3)*	
Overweight	68 *(5.5)*		208 *(15.2)*	
Obesity	44 *(8.4)*		182 *(21.9)*	
Physical activity at work		*<0.001*		*<0.001*
Mainly sitting most of the day	139 *(13.0)*		452 *(25.8)*	
Standing without great effort	25 *(2.4)*		149 *(9.2)*	
Walking, frequent travel	5 *(1.4)*		27 *(8.8)*	
Tasks which require great physical efforts	0 *(0.0)*		0 *(0.0)*	
Currently smoking?		*0.920*		*0.130*
Yes, everyday	22 *(6.7)*		26 *(17.6)*	
Yes, but not everyday	1 *(4.3)*		2 *(28.6)*	
Not now, but in the past	109 *(7.4)*		49 *(13.1)*	
No, never	55 *(7.2)*		583 *(17.7)*	
Frequency alcohol intake		*<0.001*		*<0.001*
Daily or almost daily	50 *(4.6)*		51 *(11.9)*	
1-6 days per week	11 *(3.5)*		32 *(13.7)*	
1-3 days per month	10 *(4.0)*		30 *(9.4)*	
Less than once a month / Never	116 *(12.5)*		547 *(19.2)*	
Interest shown by others		*0.396*		*<0.001*
A lot / Some	174 *(7.1)*		593 *(16.3)*	
Moderate	6 *(10.3)*		22 *(24.7)*	
Little / None	5 *(10.9)*		37 *(46.8)*	

*: The values referred to in each variable correspond to non lost.
**: The average age of people with depression compared to that of people without depression is expressed

Table 3 **Logistic regression analysis (backward stepwise). Dependent variable: presence of depressive symptoms. Independent variables retained in the final models. European Health Survey in Spain 2014. People≥65 years. (n=6,520; n_m=2,624; n_w=3,896)**

Variable	OR_{men}	Confidence intervals (95%)		OR_{women}	Confidence intervals (95%)	
		Inferior	Superior		Inferior	Superior
Age	-	-	-	0.98	0.96	0.99
Education level*						
Does not read nor write	-	-	-	2.48	1.27	4.82
Primary School	-	-	-	1.54	0.89	2.68
Highschool Education	-	-	-	1.22	0.62	2.40
Perceived state of health*						
Moderate	2.75	1.41	5.38	2.28	1.56	3.32
Bad/Very bad	6.68	3.30	13.51	3.84	2.55	5.80
Diseases or chronic problems	-	-	-	5.66	1.77	18.16
Need for bedrest in the last 2 weeks	2.12	1.28	3.49	1.68	1.22	2.30
Difficulty walking 500 meters without help*						
Yes, some difficulty	1.24	0.72	2.13	1.55	1.13	2.12
Yes, much difficulty	2.97	1.79	4.92	2.02	1.42	2.89
Is not able to do it	2.92	1.46	5.83	2.49	1.56	3.97
Degree of pain experienced in the last 4 weeks*						
Very slight	0.52	0.19	1.42	1.05	0.59	1.85
Slight	1.01	0.51	2.00	1.14	0.73	1.78
Moderate	1.85	1.04	3.29	1.27	0.86	1.88
Severe	3.45	1.87	6.37	2.02	1.33	3.07
Extreme	5.02	1.79	14.10	3.85	2.02	7.35
Interest shown by others*						
Moderate	-	-	-	1.65	0.82	3.35
Little/None	-	-	-	3.99	2.11	7.53

*: The reference categories are: degree (professional / university education). perceived (Very Good / Good) state of health. difficulty walking (No. no difficulty) Degree of pain (none). interest shown by other people (Much /Something). In the rest of categorical variables (dichotomous) the reference category is absence of the studied characteristic.

However, there is great variability in results, partly explained by the use of different criteria, definitions and measuring instruments. Thus, among the different approaches there is frequent confusion between the presence of depressive symptoms and depressive disorders according to established diagnostic criteria. Because our results were based on a measuring scale of adjusted to DSM-IV criteria, differ from other research because we explored depressive symptoms in the elderly[17,18], which present considerably higher values. The approach used was not fully consensual, and in accordance with our strategy, some authors also incorporate subsyndromal depressive disorders that do not meet criteria for MDD in the geriatric population, given its high prevalence and impact on public health[19]. To avoid such discrepancies it has suggested to standardize the definition of study populations, such as the age limit considered and whether or not to include the elderly in residential regime and/or cognitive impairment[5,20].

The important difference in presentation found between men and women in our study is a phenomenon widely recognized in literature for which there have been numerous attempts at an explanation from several perspectives: biological, psychological or of a psychosocial nature, connecting it to gender roles, which seem to increase risk of depression in women[21]. It has even been suggested the possibility of gender bias in education and health care that could determine the diagnosis and treatment of diseases such as depression, with would have consequently overdiagnosed in women[22].

Some of the studied factors are differentially connected to depression in the elderly women. Both the increase in age as a protective factor and the low education level traditionally associated with depression[23], coincide with the findings of other studies conducted in our field[17,24]. These are connected to a bad educational/cultural level of these women because of their generation. The perception of low

social support, reflected by the lack of interest shown by others, is usually related to depression in old people[25]. Our results are similar to those of some authors that detect this effect only in women[26]. By contrast, cohabitation with a partner, described as a protective factor in men[17], is not an explanatory variable in this study.

Several studies have implicated several factors associated with depression, both individual and collective[27]. Psychosocial factors among the lower social classes are associated with major depression only in the bivariate analysis, while receiving a contributive pension is not explanatory, although low incomes have been considered a risk factor[28]. The existence of other resources, whether economic or personal, would be a possible explanation for this fact.

Another variable in the literature consistently associated with elderly depression is the presence of pain[29]. In our study there is an increasing gradation of this partnership in terms of pain intensity, which remains significantly above the moderate and severe levels, with a likely higher degree of disability.

A factor clearly linked to depression in the elderly is the limitation and restriction regarding physical activity, which is consistent with the explanation that reflects the need to remain in bed and walking difficulties at work. There is possibly a bidirectional influence, depression worsens the physical functionality, not mental, in elderly patients after hospital discharge[30], while medical conditions which are potentially limiting but susceptible to rehabilitation, such as stroke and hip fracture, have been connected to depression symptoms[31].

Depression not only poses a risk to the health of the elderly by itself, but also through its comorbidity, hindering the diagnosis and management of the underlying disease. In this sense, like our research detects that chronic disorders are associated with depressive disorders, such as cognitive impairments processes[32], cardiovascular disease[33] and diabetes[34] have been widely related thereto. In this line, a previous history of depression has been postulated as an independent risk factor for Alzheimer's disease[35] and suffering from depression at the end of life is associated with twice the risk of developing any type of dementia[36]. On the other hand, the severity of these chronic underlying conditions is an important predictor of the quality of life of depressed elderly patients, intervening mainly in the psychological functionalism and perceived health[37], this last variable is usually related to depression[38], as we have in our work.

It is also important to note the existence of different conceptualizations among health professionals, who may influence clinical practice of depression in the elderly[39], known as the differential management among primary care physicians, initial recipients in our centres of much of the mental pathology[40,41], who have to deal with less severe and urgent assessment of symptoms, and psychiatrists who face the largest number of immediate recommendations and specific medication[42].

A finding that may result in a paradoxical principle is the partnership between zero or very low alcohol intake and a greater depression level, since alcohol-related disorders are considered usually depressogenic[43]. We believe the key could be in the exploration of a qualitative variable, which does not evaluate the quantity consumed or alterations connected to this substance. In this regard, regular, moderate wine consumption has been linked to a better perceived and objectified state of health, less vascular inflammation and lower prevalence of depression in patients with heart failure, which could be a protective effect of this intake pattern through various mechanisms[44].

Our work has enabled us to approach, by exploring a national source of information, the frequency of depression in the Spanish elderly community, and the study of its association with some relevant factors. This study may contribute to scientific understanding of the factors associated with depression in that section of the population considering gender as a differentiating factor, not only confirming previous findings in our environment, but also detecting variables hitherto little explored. Moreover, this study is based on the exploitation of a cross health survey, which was only descriptive and exploratory, which did not allow us to establish causal relationships, but only associative ones. An obvious limitation is we used a secondary source of information, which was not specifically developed for this research. In addition, research has logically been limited to the availability of information in the EESE-2014, including the use of a pre-screening tool for depression, with non modifiable aspects. Moreover, the exclusion of the institutional environment in the design of the EESE-2014 certainly leads to an underestimation of the overall prevalence of depression in elderly population, and it is understood that the estimation is restricted to family residential areas.

CONCLUSIONS

This study has found differences between the sexes in depression among the elderly in our country; it is found more often in women and their vulnerability is connected to education, chronic diseases and social support. The high number of intervening factors and the complex interaction between them involve the need to undertake longitudinal studies that would allow us to define precisely the role and influence of each of them.

Annex 1 **Variables selected for the study with their initial categories. European Health Survey in Spain 2014 (Adults' files)**

Variables	Categories	
Sociodemographics		
Gender	1	Male
	2	Female
Country of birth	1	Born in Spain
	2	Born abroad
	8	Does not know
	9	Does not answer
Cohabitation with a partner	1	Living with spouse
	2	Living with a partner
	3	Not cohabiting as a couple
	8	Does not know
	9	Does not answer
Socioeconomics		
Education level	1	Unnecesary, less than 10 years of age
	2	Does not know how to read nor write
	3	Did not complete Primary School (Attending less than 5 years of school)
	4	Completed Primary school
	5	First stage of Secondary Education, with or without title (2nd ESO passed, EGB, Elementary Highschool studies)
	6	Highschool studies
	7	Vocational education at intermediate level or equivalent
	8	Higher level vocational education or equivalent
	9	University studies or equivalent
	98	Does not know
	99	Does not answer
Social class based on the reference person's occupation	1	Directors and managers are. 10 or more employees and professional trade associated with univ degrees
	2	Directors and managers are. <10 asal. and assoc. prof. a diplomat. univ. and prof. technical support. Ath and artist
	3	Intermediate occupations and self-employed
	4	Supervisors and skilled workers in technical occupations
	5	Qualified primary sector workers and other semi-skilled workers
	6	Unskilled worker
	98	Does not know
	99	Does not answer

Annex 1	Continuation

Variables	Categories
Socioeconomics	
Do you receive contributive pension?	1 Yes, quoted prices
	2 Yes, quote another person (pensions for widows, orphans, etc.)
	3 Yes, for both types of trading
	4 No
	8 Does not know
	9 Does not answer
Related to health status	
Perceived state of health in the last 12 monts	1 Very good
	2 Good
	3 Moderate
	4 Bad
	5 Very bad
Diseases or chronic health problems	1 Yes
	2 No
	8 Does not know
	9 Does not answer
Traffic accident in the last 12 months	1 Yes
	2 No
	8 Does not know
	9 Does not answer
Need for bedrest in the last 2 weeks	1 Yes
	2 No
	8 Does not know
	9 Does not answer
Difficulty walking 500 meters without aid	1 No, no difficulty
	2 Yes, some difficulty
	3 Yes, much difficulty
	4 I cannot do it
	8 Does not know
	9 Does not answer

Annex 1 Continuation

Variables	Categories
Related to health status	
Degree of pain experienced in the last 4 weeks	1 None
	2 Very slight
	3 Slight
	4 Moderate
	5 Severe
	6 Extreme
	8 Does not know
	9 Does not answer
Related to health care	
Hospital admissions in the last 12 months	1 Yes
	2 No
Use of emergency rooms in the last 12 months	1 Yes
	2 No
Lack of medical assistance because of waiting lists in the past 12 months	1 Yes
	2 No
	3 I have not needed health care
	8 Does not know
	9 Does not answer
Related to health determinants	
Body mass index	1 Underweight
	2 Normoweight
	3 Overweight
	4 Obesity
	9 Does not know
Physical activity at work	1 Sitting most of the day
	2 Standing most of the day without great movement or effort
	3 Walking, carrying some weight, frequent trips
	4 Performing tasks that require great physical effort
	5 Not applicable
	8 Does not know
	9 Does not answer

Annex 1 **Continuation**

Variables	Categories	
Related to health determinants		
Are you a smoker currently?	1	Yes, everyday
	2	Yes, but not daily
	3	I do not currently smoke, but I have smoked before
	4	I do not smoke and I have never smoked regularly
	8	Does not know
	9	Does not answer
Frequency of alcohol intake in the last 12 months	1	Daily or almost daily
	2	5-6 days per week
	3	3-4 days per week
	4	1-2 days per week
	5	2-3 days per month
	6	Once a month
	7	Less than once a month
	8	Not in the last 12 months, I've stopped drinking alcohol
	9	Never or only a few sips to try it.
	98	Does not know
	99	Does not answer
To what extent do others worry about your health?	1	A lot
	2	Something
	3	Moderately
	4	Little
	5	Nothing
	8	Does not know
	9	Does not answer
Related to mental health		
Prevalence of active depressive disorders	1	Mayor depressive disorder
	2	Other depressive disorders
	3	Without any depressive disorder
	9	Does not answer

ETHICAL RESPONSIBILITY

The authors state that we have not conducted any human nor animal experimentation in this research and we have not revealed patients' personal information.

CONFLICT OF INTEREST

The authors declare that there is no financial nor personal connection that could cause conflict of interest in writing this article.

REFERENCES

1. World Health Organization. The global burden of disease: 2004 update. Geneva: WHO; 2008.
2. Chapman DP, Perry GS. Depression as a major component of public health for older adults. Prev Chronic Dis. 2008;5(1):A22.
3. Stranieri G, Carabetta C. Socio-economic cultural transformations and depression in elderly people. Psychiatr Danub. 2015;27(Suppl 1):S212-5.
4. Blazer DG. Depression in late life: review and commentary. J Gerontol A Biol Sci Med Sci. 2003;58(3):249-65.
5. Luppa M, Sikorski C, Luck T, Ehreke L, Konnopka A, Wiese B, et al. Age- and gender-specific prevalence of depression in latest-life-systematic review and meta-analysis. J Affect Disord. 2012; 136(3):212-21.
6. Fiske A, Wetherell JL, Gatz M. Depression in older adults. Annu Rev Clin Psychol. 2009;5:363-89.
7. Grayson L, Thomas A. A systematic review comparing clinical features in early age at onset and late age at onset late-life depression. J Affect Disord. 2013;150(2):161-70.
8. Hegeman JM, Kok RM, van der Mast RC, Giltay EJ. Phenomenology of depression in older compared with younger adults: meta-analysis. Br J Psychiatry. 2012;200(4):275-81.
9. Rexrode KM. Emerging risk factors in women. Stroke. 2010;41(10 Suppl):S9-11.
10. Seedat S, Scott KM, Angermeyer MC, Berglund P, Bromet EJ, Brugha TS, et al. Cross-national associations between gender and mental disorders in the WHO World Mental Health Surveys. Arch Gen Psychiatry. 2009;66(7):785-95.
11. Cole MG, Dendukuri N. Risk factors for depression among elderly community subjects: a systematic review and meta-analysis. Am J Psychiatry. 2003;160(6):1147-56.
12. Instituto Nacional de estadística. Productos y servicios. Ficheros de microdatos. Encuesta Europea de Salud en España 2014. Ficheros de adultos. [cited 20 april 2016]. Available in: http://www.ine.es/prodyser/micro_enceursalud.htm.
13. Domingo-Salvany A, Bacigalupe A, Carrasco JM, Espelt A, Ferrando J, Borrell C. Propuestas de clase social neoweberiana y neomarxista a partir de la Clasificación Nacional de Ocupaciones 2011. Gac Sanit. 2013;27(3):263-72.
14. Kroenke K, Strine TW, Spitzer RL, Williams JBW, Berry JT, Mokdad AH. The PHQ-8 as a measure of current depression in the general population. J Affect Disord. 2009;114(1-3):163-73.
15. Rohlfs I, Borrell C, Fonseca MC. Género, desigualdades y salud pública: conocimientos y desconocimientos. Gac Sanit. 2000; 14(Supl. 3):60-71.
16. Gonzalo E, Pasarín MI. La salud de las personas mayores. Gac Sanit. 2004;18(Supl. 1):69-80.
17. Escobar MÁ, Botigué T, Jürschik P, Nuin C, Blanco J. Sintomatología depresiva en ancianos. La influencia del género. Rev Esp Geriatr Gerontol. 2013;48(2):59-64.
18. Djernes JK. Prevalence and predictors of depression in populations of elderly: a review. Acta Psychiatr Scand. 2006; 113(5):372-87.
19. Lavretsky H, Kurbanyan K, Kumar A. The significance of subsyndromal depression in geriatrics. Curr Psychiatry Rep. 2004; 6(1):25-31.
20. Büchtemann D, Luppa M, Bramesfeld A, Riedel-Heller S. Incidence of late-life depression: a systematic review. J Affect Disord. 2012;142(1-3):172-9.
21. Kuehner C. Gender differences in unipolar depression: an update of epidemiological findings and possible explanations. Acta Psychiatr Scand. 2003;108(3):163-74.
22. Lewis R, Lamdan RM, Wald D, Curtis M. Gender bias in the diagnosis of a geriatric standardized patient: a potential confounding variable. Acad Psychiatry. 2006;30(5):392-6.
23. Chang-Quan H, Zheng-Rong W, Yong-Hong L, Yi-Zhou X, Qing-Xiu L. Education and risk for late life depression: a meta-analysis of published literature. Int J Psychiatry Med. 2010;40(1):109-24.
24. Zunzunegui MV, Beland F, Llacer A, León V. Gender differences in depressive symptoms among Spanish elderly. Soc Psychiatry Psychiatr Epidemiol. 1998;33(5):195-205.
25. Blazer DG. Depression and social support in late life: a clear but no obvious relationship. Aging Ment Health. 2005;9(6):497-9.
26. Dalgard OS, Dowrick C, Lehtinen V, Vazquez-Barquero JL, Casey P, Wilkinson G, et al. Negative life events, social support and gender difference in depression: a multinational community survey with data from the ODIN study. Soc Psychiatry Psychiatr Epidemiol. 2006;41(6):444-51.
27. Shin JH, Do YK, Maselko J, Brouwer RJ, Song SW, Østbye T. Predictors of and health services utilization related to depressive symptons among elderly Koreans. Soc Sci Med. 2012; 75(1):179-85.
28. Areán PA, Reynolds CF III. The impact of psychosocial factors on late-life depression. Biol Psychiatry. 2005;58(4):277-82.
29. Weiner DK. Office management of chronic pain in the elderly. Am J Med. 2007;120(4):306-15.
30. Rozario PA, Morrow-Howell NL, Proctor EK. Changes in the SF-12 among depressed elders six months after discharge from an inpatient geropsychiatric unit. Qual Life Res. 2006;15(4):755-9.
31. Lieberman D, Galinsky D, Fried V, Grinshpun Y, Mytlis N, Tylis R. Geriatric Depression Screening Scale (GDS) in patients hospitalized for physical rehabilitation. Int J Geriatr Psychiatry. 1999;14(7):549-55.
32. Müller-Thomsen T, Arlt S, Mann U, Mass R, Ganzer S. Detecting depression in Alzheimer's disease: evaluation of four different scales. Arch Clin Neuropsychol. 2005 Mar;20(2):271-6.
33. Fan H, Yu W, Zhang Q, Cao H, Li J, Wang J. Depression after heart failure and risk of cardiovascular and all-cause mortality: a meta-analysis. Prev Med. 2014;63:36-42.
34. Park M, Reynolds CF 3rd. Depression among older adults with diabetes mellitus. Clin Geriatr Med. 2015;31(1):117-37, ix.
35. Ownby RL, Crocco E, Acevedo A, John V, Loewenstein D. Depression and risk for Alzheimer disease: systematic review, analysis, and metaregression analysis. Arch Gen Psychiatry. 2006;63(5):530-8.
36. Cherbuin N, Kim S, Anstey KJ. Dementia risk estimates associated with measures of depression: a systematic review and meta-analysis. BMJ Open. 2015;5(12):e008853.
37. Shmuely Y, Baumgarten M, Rovner B, Berlin J. Predictors of improvement in health-related quality of life among elderly patients with depression. Int Psychogeriatr. 2001;13(1):63-73.
38. Ambo H, Meguro K, Ishizaki J, Shimada M, Yamaguchi S, Sekita

Y et al. Depressive symptoms and associated factors in a cognitively normal elderly population: the Tajiri Project. Int J Geriatr Psychiatry. 2001;16(8):780-8.
39. Burroughs H, Lovell K, Morley M, Baldwin R, Burns A, Chew-Graham C. 'Justifiable depression': how primary care professionals and patients view late-life depression? A qualitative study. Fam Pract. 2006;23(3):369-77.
40. Baladón L, Fernández A, Rubio-Valera M, Cuevas-Esteban J, Palao DJ, Bellon JA, et al. Prevalence of mental disorders in non-demented elderly people in primary care. Int Psychogeriatr 2015;27(5):757-68.
41. Vives M, García-Toro M, Armengol S, Perez MC, Fernández JR, Gili M. Prevalence and factors associated to mental disorders in primary care attenders aged 75 and older. Actas Esp Psiquiatr. 2013;41(4):218-26.
42. Saarela T, Engeström R. Reported differences in management strategies by primary care physicians and psychiatrists in older patients who are depressed. Int J Geriatr Psychiatry. 2003; 18(2):161-8.
43. Boden JM, Fergusson DM. Alcohol and depression. Addiction. 2011;106(5):906-14.
44. Cosmi F, Di Giulo P, Masson S, Finzi A, Marfisi RM, Cosmi D, et al.; for GISSI-HF Investigators. Regular wine consumption in chronic heart failure: impact on outcomes, quality of life, and circulating biomarkers. Cir Heart Fail. 2015;8(3):428-37.