

Gender differences in mental health during the economic crisis

Margalida Gili¹, Emilio López-Navarro¹, Adoración Castro¹, Clara Homar¹, Capilla Navarro¹, Mauro García-Toro¹,
Javier García-Campayo² and Miquel Roca¹
¹ University of Balearic Islands and ² University of Zaragoza

Abstract

Background: Economic crises have a negative effect on mental health. Little evidence has been published on the impact of economic downturns on male and female. The aim of the study was to analyze gender differences in specific mental disorders in primary care during the current economic recession in Spain. **Method:** A total of 7,914 patients in 2006 and 5,876 patients in 2010 were recruited to collect sociodemographic data and the Primary Care Evaluation of Mental Disorders. **Results:** Between 2006 and 2010 the prevalence of Major Depressive Disorder increased 155.7% in men and 104.9% in women; Generalized Anxiety Disorder increased 98.3% in men and 71.3% in women; and Multisomatoform Disorder increased 100.05% in men and 37% in women. The effect of the Employment confounder was significant across all comparisons: Major Depressive Disorder Generalized Odds Ratio=2.557 for Men ($p<.001$), 2.046 for Women ($p=.002$); Generalized Anxiety Disorder Generalized Odds Ratio= 2.153 ($p<.001$) for Men, 1.546 for Women ($p<.001$); and for Non-specific Multisomatoform Disorder Generalized Odds Ratio=1.680 for Men ($p<.001$) and 1.301 for women ($p=.014$). **Conclusion:** Overall prevalence of mental disorders increased significantly between 2006 and 2010, especially in males, who are more sensitive to the effect of the current economic recession than women.

Keywords: Gender differences, mental health, economic crisis, primary care.

Resumen

Diferencias de género en salud mental durante la crisis económica. **Antecedentes:** el impacto de las crisis económicas sobre la salud mental está bien documentado, pero hay poca evidencia sobre el efecto diferencial que pueda tener entre hombres y mujeres. El objetivo fue analizar las diferencias de género en la prevalencia de trastornos mentales en atención primaria durante la recesión económica en España. **Método:** 7.914 pacientes en 2006-2007 y 5.876 en 2010-2011 fueron encuestados para recoger datos sociodemográficos y completar la entrevista Primary Care Evaluation of Mental Disorders. **Resultados:** entre 2006 y 2010 la prevalencia del Trastorno Depresivo Mayor incrementó 155,7% en hombres y un 104,9% en mujeres; el Trastorno de Ansiedad Generalizada aumentó 98,3% en hombres y 71,3% en mujeres; el Trastorno Multisomatomorfo incrementó 100,05% en hombres y 37% en mujeres. El desempleo fue significativo en todos los análisis: Trastorno Depresivo Odds Ratio Generalizados= 2.557 en hombres ($p<.001$), 2.046 en mujeres ($p=.002$); Trastorno de Ansiedad Generalizada Odds Ratio Generalizados= 2.153 ($p<.001$) en hombres, 1.546 en mujeres ($p<.001$); Trastorno Multisomatomorfo indiferenciado Odds Ratio Generalizados= 1.680 en hombres ($p<.001$) y 1.301 en mujeres ($p=.014$). **Conclusiones:** la prevalencia de los trastornos mentales se incrementó entre 2006 y 2010 en ambos sexos, pero especialmente en hombres, quienes son más sensibles a los efectos de la crisis económica.

Palabras clave: diferencias de género, salud mental, crisis económica, atención primaria.

It is important to point out that Spain has been one of the countries most severely affected by the current crisis. As the Spanish labour market collapsed at the end of 2007, creating conditions of economic hardship for many ordinary people, tax revenues, also fell sharply due to less consumption and collapsed investment, creating a budget deficit of 12% of gross domestic product (GDP) in 2009. Although Spain has low debt levels of 60% of GDP compared with the rest of the European Union (20 per cent point less than Germany) and there are feasible alternatives to cutting budgets (Weisbrot & Montecino, 2010), the International Monetary Fund and European Commission have called for what

they describe as “far-reaching” and “absolutely necessary” reforms to reduce government spending to the level set out in the Maastricht criteria (3% of GDP deficit by 2013) (Bloomerg, 2010; Day, 2011). Evidence suggests that the adverse consequences of economic downturns, such as unemployment, debt, economic hardship, impoverishment, insecurity, poor quality of life and social disruption, have a detrimental effect on mental health (Wahlbeck & McDaid, 2012; World Health Organization [WHO], 2011).

Previous research has shown that earlier periods of economic recession appear to have greater impact on mental health of men compared to women (Wahlbeck & McDaid, 2012; WHO, 2011) but it has been suggested that the growing participation of women in the labor market may reduce this differential impact (Bambra, 2010; Minton, Pickett, & Dorling, 2012). Historically, empirical analyses have mainly focused on the effects of unemployment on mental health of males and females. The role that gender plays in the relationship between unemployment and mental health has shown controversial results even in meta-analytic studies (McKee-

Ryan, Song, Wanberg, & Kinicki, 2005; Paul & Moser, 2009). Strandh, Hammarström, Nilsson, Nordenmark, and Russell (2013) studied gender differences of the impact of unemployment in mental health in two countries with different contextual situations (Sweden and Ireland). Unemployment was more negatively related to mental health among men than among women in Ireland, whereas men and women were equally affected by unemployment in Sweden. The authors concluded that the context has a major influence on the relationship between unemployment, gender and mental health.

However, the psychological effects of economic downturns seem to be more complex than the effects of unemployment alone. The gender effects of all macroeconomic changes involved in an economic crisis have been scarcely studied. Katikreddi, Niedzwiedz, and Popham (2012) determined that the current recession impacts on mental health of men within two years of the onset of crisis, but they argued that these changes and their gender patterning could not be adequately accounted for by differences in employment status. In a recent study developed in a large sample of non-institutionalized Spanish general population, Bartoll, Palència, Malmusi, Suhrcke, and Borrell (2014), using the 12-item version of the General Health Questionnaire, found an increase in the prevalence of poor mental health among men and a slight decrease among women between 2006-2007 and 2011-2012. Agudelo-Suárez et al. (2013) also reported an increase of the prevalence of poor mental health in male migrant workers, especially among the unemployed, those with low salaries, and those reporting family burden. The effect of unemployment has been replicated by Aguilar-Palacio, Carrera-Lasfuentes, and Rabanaque (2015) who also found that young males with long-term unemployment were at higher risk of suffering a mental disorder than young male workers.

Our group published a study that shows an increase in the prevalence of major depression disorder, generalized anxiety disorder, panic, somatoform and alcohol-related disorders in Spanish primary care attendees during the current economic crisis, related to unemployment, mortgage repayment difficulties and evictions (Gili et al., 2013).

The aim of the present paper was to analyze gender differences in specific mental disorders before and during the current economic crisis in primary health care units in Spain, and to study how unemployment may impact the relationship between mental health and gender. We consider gender differences are important in this topic for the purpose of determining the specific risk groups in primary care during the economic crisis and to design future public policies and tailored interventions related to mental health. Our hypothesis was that economic downturns may have a different effect in men and women.

Method

Participants

In the first survey, a nationwide sample of 2000 primary care general practitioners, proportionately distributed by regions within Spain's 17 autonomous communities was selected. A total of 1925 physicians (96.2%) agreed to participate. Each practitioner was asked to select four patients, randomized by day of week and timetable, so as to represent the consulting population. In case of refusals, the next patient was invited to participate. In the second

survey, 1300 primary care physicians were included and a total of 1175 (90.3%) agreed to participate, and each one invited five randomly selected patients to participate. A total of 7,940 patients were surveyed between January 2006 and January 2007, with a further 5,876 patients between February 2010 and April 2011. Informed consent was obtained from all participants. Studies received approval from the Local Ethics Committee and complied with Declaration of Helsinki.

Instruments

Patient information was collected by the general practitioners using a Case Report Form. The Case Report Form included gender, age, marital status, educational level, living alone or accompanied, rural or urban residence, employment status and body mass index.

Primary Care Evaluation of Mental Disorders (PRIME-MD) is a clinician-administered diagnostic instrument that was developed and validated for use in primary care settings (Spitzer, 1994). This questionnaire assesses five groups of mental disorders: mood, anxiety, somatoform symptoms, alcohol-related and eating disorders. Baca et al. (1999) set the sensitivity of PRIME-MD Spanish validation at 81.4%, and specificity at 66.1%. Sensitivity and specificity values regarding the specific mental disorders for the original standardization of the instrument are the following: Mood Disorders: sensitivity at 97.3% and specificity at 82.8%; Anxiety Disorders: sensitivity at 75% and specificity at 82.9%; Somatoform Disorders: sensitivity at 90.7% and specificity at 60%; Alcohol-related Disorders: sensitivity at 90% and specificity at 97.3%. The Eating Disorders module could not be validated in the original instrument due to insufficient number of detected cases.

Procedure

This study is based on the data of two nationwide sample cross-sectional surveys conducted in Spain in 2006-2007 (survey I) and 2010-2011 (survey II), before and during the economic crisis (Gili et al., 2013).

Data analysis

Descriptive statistical analyses were generated including means, standard deviations, and percentages of categorical baseline characteristics of the sample. Differences in baseline characteristics of participants as a function of gender were also assessed through Chi-square test, and independent sample t-test or Mann-Whitney test if parametric assumptions were not met. Those characteristics that were found to be statistically different were set as confounders in further analyses.

To determine whether the economic crisis had the same effect in men and women, a log-linear analysis was carried out for each mental disorder (presence or absence) with gender (man or woman) and year of assessment (2006-2007 and 2010-2011) as exposure factors, and sample characteristics that were found to be statistically different at baseline as confounders. In this regard, we used a factorial model because our main hypothesis was based on the potential significance of the interaction between Gender and Year, and any potential confounder was also included in the model. Although log-linear analysis does not differentiate between independent and dependent variables, the theoretical background of the study permits interpreting variables as either the exposure

or outcome variables (Horwitz, White, & Howell-White, 1996). Log-linear analysis can also assess how prevalent one category is compared to another of the same factor; and how much each factor contributes to the presence or absence of a mental disorder. Our main hypothesis was based on the potential significance of the interaction between Gender and Year, also weight of Employment confounder was reported in simple effects analysis. Additionally, entropy and concentration coefficients were calculated. The entropy coefficient assesses how much the inclusion of the confounders in the model reduces the variation of the whole set of factors, and the concentration coefficient assesses how much dispersion the confounder set induces in the whole model (Menard, 2009). Data were analysed using IBM SPSS for Windows and The R Integration Package for IBM SPSS Statistics. Statistical significance was set at 5%.

Results

Sociodemographic data of the sample are presented in Table 1. The mean age of the participants was 48.3 years ($SD= 15.07$), ranging from 18 to 98 years. The members of the sample were predominantly married (58.6%), living with someone (80.8%), and employed (91.8%). In the years 2006-2007, there were significant differences between men and women in body mass index ($t= 17.11$, $df= 7931$, $p<.001$), with men showing higher body mass index than women; family status ($\chi^2=103.42$, $df= 3$, $p<.001$), with women being more frequently widowed than men; educational

level ($\chi^2=91.94$, $df= 3$, $p<.001$), with men being more likely to have completed high school or graduated education; environment ($\chi^2=6.84$, $df= 1$, $p=.009$), with women living more frequently in urban environments than men; and a statistical trend in employment ($\chi^2=3.17$, $df= 1$, $p=.076$), with more women being unemployed. In the sample recruited in 2010-2011, there were significant differences for gender in body mass index ($t=16.03$, $df= 5874$, $p<.001$), again, with men scoring higher in this dimension than women; family status ($\chi^2=70.47$, $df= 3$, $p<.001$), widowed women were more frequent; educational level ($\chi^2=57.21$, $df= 3$, $p<.001$), with results in the same direction as the previous assessment; living accompanied ($\chi^2=12.17$, $df= 1$, $p<.001$), women were more likely to live accompanied than men; and employment ($\chi^2=63.97$, $df= 1$, $p<.001$), as registered during 2006-2007, there were more unemployed women than men.

Log linear analysis was carried out for each disorder with body mass index, family status, educational level, environment, living accompanied and employment set as confounders. Detailed results of log linear analysis are shown in Table 2. All cells had expected frequencies greater than 1, and at least 80% of cell frequencies were greater than 5, so log linear requisites were met. The likelihood-ratio analyzed through Pearson's chi-square was not significant and near zero in every outcome, so the frequencies predicted by the model are not significantly different from the observed frequencies. Entropy and concentration coefficients were below 5% except in Probable alcohol abuse/dependence, where the inclusion of the confounders reduced the variation accountable

Table 1
Demographic characteristics of the sample

	2006				2010			
	Total 2006	Men (n=3036)	Women (n=4897)	Statistics	Total 2010	Men (n=2528)	Women (n=3348)	Statistics
Age (mean, SD)	48.59 (15.47)	48.67 (15.67)	48.54 (15.67)	$t= .36 p=.715$	48.20 (14.51)	48.25 (13.84)	48.16 (15.01)	$t=.22 p=.824$
Body Mass Index (mean, SD)	25.61 (4.03)	26.58 (3.27)	25.03 (4.9)	$t= 17.11 p<.001$	25.85 (4.05)	26.81 (3.56)	25.13 (4.26)	$t= 16.03 p<.001$
Family Status (n, %)								
Single	1592 (20.1)	676 (22.27)	916 (18.7)	$\chi^2=103.42 p<.001$	1206 (20.5)	577 (22.82)	629 (18.79)	$\chi^2=70.47 p<.001$
Married/Couple	4821 (60.8)	1933 (63.67)	2888 (58.97)		3280 (55.8)	1467 (58.04)	1813 (54.15)	
Widow	841 (10.6)	196 (6.46)	645 (13.17)		614 (10.4)	176 (6.96)	438 (13.08)	
Separated/Divorced	678 (8.6)	231 (7.6)	447 (9.16)		776 (13.2)	308 (12.18)	468 (13.98)	
Educational level (n, %)								
Uncompleted/No studies	2184 (27.6)	669 (22.03)	1515 (30.94)	$\chi^2=91.94 p<.001$	1183 (20.1)	402 (15.9)	781 (23.33)	$\chi^2=57.21 p<.001$
Elementary School	1823 (23.0)	682 (22.46)	1141 (23.29)		1732 (29.5)	739 (29.23)	993 (29.66)	
High School	2271 (28.6)	960 (31.62)	1311 (26.77)		1829 (31.1)	854 (33.78)	975 (29.12)	
Colleague/Graduated	1652 (20.8)	725 (23.89)	927 (18.93)		1132 (19.3)	533 (21.08)	599 (17.89)	
Lives (n, %)								
Alone	1378 (17.4)	529 (17.42)	849 (17.34)	$\chi^2=0.01 p=.921$	1268 (21.6)	600 (23.73)	668 (19.95)	$\chi^2=12.17 p<.001$
Accompanied	6555 (82.6)	2507 (82.57)	4048 (82.66)		4608 (78.4)	1928 (76.26)	2680 (80.05)	
Home (n, %)								
Rural	2083 (26.3)	847 (27.9)	1236 (25.24)	$\chi^2=6.84 p=.009$	2615 (44.5)	1116 (44.14)	1499 (44.77)	$\chi^2=0.23 p=.63$
Urban	5850 (73.7)	2189 (72.1)	3661 (74.76)		3261 (55.5)	1412 (55.85)	1849 (55.23)	
Unemployed (n, %)								
Yes	435 (5.5)	184 (6.06)	251 (5.11)	$\chi^2=3.17 p<.001$	699 (11.9)	399 (15.78)	300 (8.96)	$\chi^2=63.97 p<.001$
No	7499 (94.5)	2852 (93.94)	4647 (94.89)		5177 (88.1)	2129 (84.22)	3048 (91.04)	

for exposure factors by 9.8%. Gender main effect analysis showed significant differences in every outcome variable. Year exposure factor was also significant for every disorder but Probable Alcohol Abuse/Dependence ($\chi^2=2.72$, $df=1$, $p=.099$) and Bulimia Nervosa ($\chi^2=2.26$, $df=1$, $p=.133$). Interaction between Gender and Year was significant for Major Depressive disorder ($\chi^2=21.39$, $df=1$, $p<.001$), Generalized Anxiety disorder ($\chi^2=4.75$, $df=1$, $p=.029$), and Non-specific Multi-somatoform Disorder ($\chi^2=7.04$, $df=1$, $p=.008$).

Analysis of simple effects of the interaction was carried out for Major Depressive disorder, Generalized Anxiety disorder and Non-specific Multi-somatoform disorder with body mass index, family status, educational level, living accompanied and employment set as confounders. Analysis of gender simple effect showed significant differences in both genders for the three disorders proposed with every p -value lower than 0.001. Between 2006 and 2010, the prevalence of Major Depressive disorder increased 155.7% in men and 104.9% in women; Generalized Anxiety disorder increased 98.3% in men and 71.3% in women; and Non-specific Multi-somatoform disorder increased 100.05%

in men and 37% in women. Detailed data about the generalized log-odd ratios of these comparisons are shown in Table 3. Also is important to point out the effect of the employment confounder across comparisons: in Major Depressive disorder, the associated Generalized Odds Ratio (GOR) was 2.557 for men ($p<.001$) and 2.046 for women ($p=.002$); in Generalized Anxiety disorder, it was 2.153 ($p<.001$) for men and 1.546 for women ($p<.001$); and in Non-Specific Multi-somatoform disorder, it was 1.680 for men ($p<.001$) and 1.301 for women ($p=.014$). Detailed data about gender simple effect analysis through generalized odds ratios are shown in Table 4.

Discussion

The main finding of our study is that the financial crisis differently affects the mental health of men and women attendees at primary health care units in Spain. Our results suggest that the prevalence of mental disorders – except for Probable Alcohol Abuse/Dependence and Bulimia Nervosa - increased significantly

Table 2
Clinical characteristics of the sample

	2006				2010			
	Total 2006	Men (n=3036)	Women (n=4897)	Statistics	Total 2010	Men (n=2528)	Women (n=3348)	Statistics
Major Depressive Disorder (n, %)								
Yes	2298 (28.9)	644	1654	$\chi^2=143.631$	2794 (47.5)	1082	1712	$\chi^2=40.117$
No	5636 (71.1)	2392	3244	$p<.001$	3082 (52.5)	1446	1636	$p<.001$
Dysthymia (n, %)								
Yes	1161 (14.6)	315	846	$\chi^2=71.368$	1474 (25.1)	505	969	$\chi^2=61.62$
No	6773 (85.4)	2721	4052	$p<.001$	4402 (74.9)	2023	2379	$p<.001$
Panic Attack Disorder (n, %)								
Yes	770 (9.7)	206	564	$\chi^2=47.844$	920 (15.7)	302	618	$\chi^2=46.263$
No	7164 (90.3)	2830	4334	$p<.001$	4956 (84.3)	2226	2730	$p<.001$
Generalized Anxiety Disorder (n, %)								
Yes	929 (11.7)	281	648	$\chi^2=28.63$	1155 (19.7)	452	703	$\chi^2=8.866$
No	7005 (88.3)	2755	4250	$p<.001$	4721 (80.30)	2076	2645	$p=.003$
Probable Alcohol Abuse/Dependence (n, %)								
Yes	710 (8.9)	551	159	$\chi^2=510.863$	520 (8.8)	412	108	$\chi^2=305.114$
No	7224 (91.1)	2485	4739	$p<.001$	5356 (91.1)	2116	3240	$p<.001$
Bulimia Nervosa (n, %)								
Yes	44 (0.6)	8	36	$\chi^2=7.555$	60 (1.0)	13	47	$\chi^2=11.278$
No	7890 (99.4)	3028	4862	$p=.006$	5816 (99.0)	2515	3301	$p<.001$
Multisomatofm Disorder (n, %)								
Yes	1111 (14.0)	295	816	$\chi^2=75.030$	1390 (23.7)	442	948	$\chi^2=93.568$
No	6823 (86.0)	2741	4082	$p<.001$	4486 (76.3)	2086	2400	$p<.001$
Non-Specific Multi-somatoform Disorder (n, %)								
Yes	1175 (14.8)	365	810	$\chi^2=30.283$	1256 (21.4)	546	710	$\chi^2=.131$
No	6765 (85.2)	2671	4088	$p<.001$	4620 (78.6)	1982	2638	$p=.717$

Table 3
Log linear analysis results

	χ^2	Entropy (%)	Concentration (%)	Gender		Year		Interaction	
				Wald	p	Wald	p	Wald	p
Major Depression Disorder	0.63	3.8	4.9	89.54	<.001	210.27	<.001	21.39	<.001
Dysthymic Disorder	0.82	2.8	2.7	67.06	<.001	107.83	<.001	3.43	.064
Panic Attack Disorder	0.88	2	1.5	40.5	<.001	66.56	<.001	2.64	.104
Generalized Anxiety Disorder	0.85	1.7	1.4	20.01	<.001	80.32	<.001	4.75	.029
Probable Alcohol Abuse/Dependence	1.06	9.8	4.9	266.96	<.001	2.72	.099	0.24	.623
Bulimia Nervosa	1.01	2.4	0.2	7.89	.005	2.26	.133	0.13	.724
Multi-somatoform Disorder	0.83	2.9	2.8	68.84	<.001	93.64	<.001	0.38	.539
Non-Specific Multi-somatoform Disorder	0.82	1	0.9	21	<.001	55.18	<.001	7.04	.008

Log linear analysis results for factorial model with gender and year of assessment as exposure factors. First row shows the effect contrasted through Wald's test

Table 4
Gender simple effect analysis through generalized odd ratios (GOR)

Level	Outcome	Major Depressive Disorder	Generalized Anxiety Disorder	Non-specific Multi-somatoform disorder
Men	GOR	2.557	1.983	2.005
	IC 95%	2.262 - 2.890	1.680 - 2.341	1.725 - 2.331
	p value	<0.001	<0.001	<0.001
Unemployment	GOR	2.557	2.153	1.680
	p value	<0.001	<0.001	<0.001
	GOR	2.049	1.713	1.370
Women	IC 95%	1.866 - 2.250	1.517 - 1.930	1.220 - 1.539
	p value	<0.001	<0.001	<0.001
	GOR	2.046	1.546	1.301
Unemployment	p value	0.002	<0.001	0.014

Only significant interactions found in the logit model have been analyzed

during the current economic crisis in both genders, but the gain is higher in men than in women for Major Depressive disorder, Generalized Anxiety disorder, and Non-Specific Multi-somatoform disorder. When both genders are compared in 2010, the prevalence ratios tend to equalize as a result of a higher increase in men. As far as we know, this is the first analysis of the impact of the precarious economic situation on the prevalence of specific mental disorders of men and women before and during the current financial crisis.

The growing sense of instability, uncertainty and loss of perspective that an economic crisis causes may lead to a sense of personal vulnerability, risk of status loss and social decline resulting in loss of hope and faith in the future (Angermeyer, Matschinger, & Schomerus, 2013) and growing rates of mental disorders. Our data suggest a relatively larger increase in the prevalence of Major Depressive Disorder, Generalized Anxiety Disorder and Somatization Disorder among men than among women during the 2006-2011 period. The findings of the current study are consistent with some previous research on the impact of the economic crisis

on mental health. Agudelo-Suárez et al. (2013) assessed changes in mental health in a sample of migrant workers after the eruption of the economic crisis in Spain; specifically, they compared the prevalence of poor mental health between 2008-2011. Their results show that prevalence was higher in unemployed men, with low salaries, and with family burden. Increase in prevalence of mental health disorders was also observed in women but the change is not significant. Bartoll et al. (2014) also reported an increase in the prevalence of poor mental health among men attributed to employment status. Among women, they noted a slight improvement in mental health, driven by younger individuals, employed and non-breadwinners. Therefore, socioeconomic inequalities in mental health became more pronounced among men but not among women.

Our findings could be explained by different factors. First, the institutional process of familiarization of family policies in the southern European countries has led to a distinctive gender regime (with informal rules) in which females were considered caretakers in a traditional family role and a single-earner family was promoted (Moreno Mínguez, 2005; Saraceno, 1995; Trifiletti, 1999). Masculine identity is intricately linked to having a job in Mediterranean and western societies and it is severely threatened by unemployment. Therefore, uncertainty and sense of vulnerability about future employment may have a higher impact on men's mental health than on women's. This explanation is related to the assumptions of the different roles and social positions of men and women. Gender roles differ across time and space. Female labor force participation in the Nordic countries has been very high for a long time; while the female labor force participation in countries such as Spain, Germany or Ireland has historically been lower. For this reason, in a situation where gender relations are characterized by a relative similarity of the roles of men and women, there may be no gender differences in the relationship between unemployment and mental health. In contrast, in a situation where there are substantial discrepancies of the roles, there may be a differential relationship between unemployment and mental health (Strandh et al., 2013). Assumption of traditional gender roles makes men more sensitive to the effect of socioeconomic changes and may contribute to increased prevalence rates of depression, anxiety and somatization rates during economic downturns.

Second, in recent decades, the economy of Spain has been based mostly on personal services, tourism and construction sector and they are exactly the areas most affected by the crisis (Instituto Nacional de Estadística, 2014a). Besides, the higher impact among men could be explained by the negative effects of the financial crisis that were strong in the construction and services sectors (Agudelo-Suárez et al., 2013). In fact, in 2009, women held only 7.8% of all construction jobs, 18% of engineering positions and 25% of industrial jobs (Instituto Nacional de Estadística, 2010; Kumar, 2010). Moreover, economic crisis had less impact on domestic and care services in private households in the informal economy (Agudelo-Suárez et al., 2013; Instituto Nacional de Estadística, 2014b).

Finally, in our study, we found that in 2006-2007 (survey I), there were more unemployed women compared with men. However, in 2010-2011 (Survey II), male unemployment rose dramatically. These findings are consistent with published data from the different labor force surveys; in 2006-2007, women suffered more unemployment than men. In that year, female unemployment rate was 11.11%, while men's was 6.02% (Instituto Nacional de Estadística, 2006). The evolution of the labor market has been more favorable for women in 2010-2011. Since 2006, women's unemployment rate rose 9 points whereas men's rose 14, with both genders reaching unemployment rates around 20% (20.79 and 19.95%, respectively) (Instituto Nacional de Estadística, 2011).

It is important to point out the role of unemployment as a confounder in the relation between loss of income and prevalence of specific mental disorders. Unemployment in men has the same increasing effect over depressive symptoms as financial crisis. This finding is in line with Riumallo-Herl, Basu, Stuckler, Courtin, and Avedano (2014), who report the relationship between job loss and increased prevalence of Major Depressive disorder, and how personal wealth might lessen the impact of unemployment over depressive symptoms. Our data also suggest that loss of job affects the prevalence of Generalized Anxiety disorder in men more than financial crisis. The explanation may lie in a combination of unemployment with reduction of personal wealth as a consequence of financial crisis. This combined factor may interact with social discrimination associated with unemployment (Angermeyer et al., 2013), and trigger a pathological worry-based lifestyle which may lead to Generalized Anxiety disorder. In essence, the loss of the traditional masculinity role of provider (Möller-Leimkühler, 2003) when combined with financial crisis and loss of income, may be a risk factor of Generalized Anxiety disorder in men.

There are some limitations in the present study that should be considered: First, the sample is not population-based. It only includes those who attended primary care, although healthcare in Spain is universal and free. Second, the conventional measures of unemployment do not capture those who shifted from full employment to being on "sick leave" or "temporarily unable to work". Finally, the season of interview was not the same: the first wave occurred between January 2006 and January 2007 but the

second wave was performed between February 2010 and April 2011. Despite these limitations, our study has important strengths: It is the first one to investigate the prevalence of specific mental disorders among men and women before and during the current economic crisis in a southern European country. Another strength is that the sample is large in each period and provides the necessary statistical power to analyse differences between genders.

In conclusion, our study supports previous evidence that economic crises are more strongly associated with decreasing mental health in men than in women. Spain has been one of the countries most severely affected by the current crisis, and the population has suffered the consequences of important unemployment rate increases, austerity policies and severe cuts of wages. So, further investigation is needed, and a third wave in the following years may provide information about medium- and long-term consequences of economic crisis on mental health and their impact on men and women. Bearing in mind that gender modulates the effect of depressive symptoms in quality of life (Gili et al., 2014) future research should address this issue and how loss of income may affect disability in both genders. The current economic crisis presents an opportunity to reinforce policies that would not only mitigate the impact of the recession on deaths and injuries arising from suicide attempts and alcohol use disorders, but would also improve global health and reduce the economic burden presented by impaired mental health and alcohol use disorders in any economic cycle (Cabello, Díaz, & Arredondo, 2012; Wahlbeck & McDaid, 2012). Our study suggests the crucial role of primary care units in providing patients with the appropriate mental health counseling and treatment and preventing problems by detecting high-risk groups. Our findings could be an important issue to plan future public policies related to mental health in primary care and to design tailored interventions for specific risk groups.

Our research provides two important evidences about this topic. First, financial crisis differently affects the mental health of men and women in Spain between 2006-2007 and 2010-2011. In particular, the prevalence of mental disorders – except for Probable Alcohol Abuse/Dependence and Bulimia Nervosa - increased significantly during the current economic crisis in both genders, but the gain is higher in men than in women for Major Depressive Disorder, Generalized Anxiety Disorder and Non-specific Multi-somatoform Disorder. When both genders are compared in 2010, the prevalence ratios tend to equalize as a result of a higher increase in men. Second, unemployment is considered a significant predictor for some particular disorders, specifically in men. These results were consistent with some previous research that assesses general mental health during similar period of time and concludes that poor mental health was more prevalent among men.

It is important to point that Spain has been one of the countries deeply affected by the current crisis and its consequences. For these reasons, future public policies related to mental health are necessary to design tailored interventions for specific risk groups in primary care during economic crisis.

References

- Agudelo-Suárez, A. A., Ronda, E., Vázquez-Navarrete, M. L., García, A. M., Martínez, J. M., & Benavides, F. G. (2013). Impact of economic crisis on mental health of migrant workers: What happened with migrants who came to Spain to work? *International Journal of Public Health*, 58(4), 627-631.
- Aguilar-Palacio, I., Carrera-Lasfuentes, P., & Rabanaque, M. J. (2015). Youth unemployment and economic recession in Spain: Influence on health and lifestyles in young people (16-24 years old). *International Journal of Public Health*, 60(4), 427-435.
- Angermeyer, M. C., Matschinger, H., & Schomerus, G. (2013). Public attitudes towards people with depression in times of uncertainty: Results from three population surveys in Germany. *Social Psychiatry and Psychiatric Epidemiology*, 48(9), 1513-1518.
- Baca, E., Sáiz, J., Agüera, L., Caballero, L., Fernández-Liria, A., Ramos, J., Gil, A., Madrigal, M., & Porras, A. (1999). Validación de la versión española del PRIME-MD: un procedimiento para el diagnóstico de trastornos mentales en atención primaria [Validation of the Spanish Version from PRIME-MD: A method for mental health diagnosis in Primary Care]. *Actas Espanolas de Psiquiatria*, 27(6), 375-383.
- Bambra, C. (2010). Yesterday once more? Unemployment and health in the 21st century. *Journal of Epidemiology and Community Health*, 64(3), 213-215.
- Bartoll, X., Palència, L., Malmusi, D., Suhrcke, M., & Borrell, C. (2014). The evolution of mental health in Spain during the economic crisis. *European Journal of Public Health*, 24(3), 415-418.
- Bloomberg (2010). Spain, Portugal deficit reductions "absolutely necessary", EUs Rehn says.
- Cabello, H. R., Díaz, L. C., & Arredondo, A. (2012). The economic impact of mental health services and the need for cost reduction programs: Suggestions from middle-income countries. *Acta Psychiatrica Scandinavica*, 126(4), 298-299.
- Day, P. (2011). Spain underperformed euro zone for 1st time in 2010. *Reuters*.
- Instituto Nacional de Estadística (2006). *Encuesta de Población Activa 2006* [Labour Force Survey 2006]. Retrieved from: <http://www.ine.es/daco/daco42/daco4211/epa0306.pdf>
- Instituto Nacional de Estadística (2010). *Hombres y mujeres en España en 2010* [Women and men in Spain in 2010]. Retrieved from: http://www.ine.es/ss/Satellite?param1=PYSDetalleGratuitas&c=INEPublicacion_C&p=1254735110672&pagename=ProductosYServicios%2FPYSLayout&cid=1259924822888&L=1
- Instituto Nacional de Estadística (2011). *Encuesta de Población Activa 2011* [Labour Force Survey 2011]. Retrieved from: <http://www.ine.es/daco/daco42/daco4211/epa0410.pdf>
- Instituto Nacional de Estadística (2014a). *Población activa por género y ocupación en España entre 2005 y 2013* [Working population by gender and occupation in Spain between 2005 and 2013]. Retrieved from: <http://www.ine.es/jaxiBD/menu.do?L=0&divi=EPA&his=3&type=db>
- Instituto Nacional de Estadística (2014b). *Encuesta de Población Activa* [Labour Force Survey]. Retrieved from: http://www.ine.es/jaxi/menu.do?type=pcaxis&path=/t22/e308_mnu&file=inebase&N=&L=0
- Gili, M., Castro, A., Navarro, C., Molina, R., Magallón, R., García-Toro, M., & Roca, M. (2014). Gender differences on functioning in depressive patients. *Journal of Affective Disorders*, 166, 292-296.
- Gili, M., Roca, M., Basu, S., McKee, M., & Stuckler, D. (2013). The mental health risks of economic crisis in Spain: Evidence from primary care centres, 2006 and 2010. *European Journal of Public Health*, 23(1), 103-108.
- Horwitz, A. V., White, H. R., & Howell-White, S. (1996). The Use of Multiple Outcomes in Stress Research: A Case Study of Gender Differences in Responses to Marital Dissolution. *Journal of Health and Social Behavior*, 37(3), 278-291.
- Katikireddi, S. V., Niedzwiedz, C. L., & Popham, F. (2012). Trends in population mental health before and after the 2008 recession: A repeat cross-sectional analysis of the 1991-2010 Health Surveys of England. *BMJ Open*, 2(5).
- Kumar A. (2010). *Women in Engineering and Technology*. London: Engineering UK.
- McKee-Ryan, F., Song, Z., Wanberg, C. R., & Kinicki, A. J. (2005). Psychological and physical well-being during unemployment: A meta-analytic study. *The Journal of Applied Psychology*, 90(1), 53-76.
- Menard, S. (2009). *Logistic Regression: From Introductory to Advanced Concepts and Applications*. Thousand Oaks: SAGE Publications.
- Minton, J. W., Pickett, K. E., & Dorling, D. (2012). Health, employment, and economic change, 1973-2009: Repeated cross sectional study. *BMJ (Clinical Research Ed.)*, 344(7856), e2316.
- Möller-Leimkühler, A. M. (2003). The gender gap in suicide and premature death or: Why are men so vulnerable? *European Archives of Psychiatry and Clinical Neuroscience*, 253(1), 1-8.
- Moreno Mínguez, A. (2005) Empleo de la mujer y familia en los regímenes de bienestar del sur de Europa en perspectiva comparada. Permanencia de modelo de varón sustentador [Employment of women and family welfare schemes in southern Europe in comparative perspective. Permanence male breadwinner model]. *REIS*, 112, 127-159.
- Paul, K. I., & Moser, K. (2009). Unemployment impairs mental health: Meta-analyses. *Journal of Vocational Behavior*, 74(3), 264-282.
- Riumallo-Herl, C., Basu, S., Stuckler, D., Courtin, E., & Avedano, M. (2014). Job loss, wealth and depression during the Great Recession in the USA and Europe. *International Journal of Epidemiology*, 1-10.
- Saraceno, C. (1995). Familismo ambivalente y clientelismo categórico en el Estado del Bienestar italiano [Ambivalent categorical family and patronage in the Italian Welfare State]. In S. Sarasa & L. Moreno (Eds.), *El Estado del Bienestar en la Europa del Sur* [The welfare state in Southern Europe] (pp. 261-288). Madrid: CSIC.
- Spitzer, R. L. (1994). Utility of a new procedure for diagnosing mental disorders in primary care. The PRIME-MD 1000 study. *JAMA: The Journal of the American Medical Association*, 272(22), 1749-1756.
- Strandh, M., Hammarström, A., Nilsson, K., Nordenmark, M., & Russel, H. (2013). Unemployment, gender and mental health: The role of the gender regime. *Sociology of Health & Illness*, 35(5), 649-665.
- Trifiletti, R. (1999). Southern European welfare regimes and the worsening position of women. *Journal of European Social Policy*, 9(1), 49-64.
- Wahlbeck, K., & McDaid, D. (2012). Actions to alleviate the mental health impact of the economic crisis. *World Psychiatry*, 11(3), 139-145.
- Weisbrot, M., & Montecino, J. (2010). *Alternatives to Fiscal Austerity in Spain*. Washington DC: Center for Economic and Policy Research.
- World Health Organization (2011). Impact of economic crises on mental health. Retrieved from: http://www.euro.who.int/__data/assets/pdf_file/0008/134999/e94837.pdf?ua=1