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# Suicidal ideation in depressive patients: rates and predictors before and during economic crisis in Spain

*Ideación suicida en los pacientes depresivos: las tasas y los predictores antes y durante la crisis económica en España*

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## Abstract

Research on the impact of economic crisis on mental health in European countries has suggested a rise in the prevalence of mental disorders and suicidality. The aim of this research was to study if suicidal ideation (SI) in depressive patients has increased during economic crisis in Spain and what factors predicted SI at each moment. Two nationwide cross-sectional surveys were conducted in Spain before and during the economic crisis (2006 vs 2010). A Case Report Form and PRIME-MD interview were used to collect sociodemographic information and mental health of 3090 patients in 2006 and 3658 in 2010. Results indicated no general rise of SI rates among depressive patients, but differences among social groups. Specifically, SI rates increased among singles, people who did not finish academic studies, and among those older than 50 years old. Logistic regressions pointed to different predictive factors of SI in 2006 vs 2010. Being men, widowed, presence of major depression, dysthymia and PHQ overall score were significant predictors of SI in both 2006 and 2010. Being separated or divorced, unemployed or having a comorbid condition with depression were also predictors of SI in 2006. Nevertheless, the effect of academic training or schooling resulted a significant protective factor for suicide ideation during economic crisis (2010).

*Keywords:* suicidal ideation; major depressive disorder; economic crisis

## *Resumen*

La investigación sobre el impacto de la crisis económica en la salud mental en los países europeos sugiere un aumento de la prevalencia de los trastornos mentales y la tendencia suicida. El objetivo de esta investigación fue estudiar si la ideación suicida (IS) en pacientes depresivos se ha incrementado durante la crisis económica en España y cuales son los factores predictores en cada momento, pues se realizaron dos estudios transversales en todo el país antes y durante la crisis económica (2006 vs 2010). Se recogió información sociodemográfica y acerca de la salud mental en 3090 pacientes en 2006 y 3658 en 2010, a través de un Cuaderno de Recogida de Datos (CRD) y el PRIME-MD. Los resultados indicaron que la IS no aumentó en pacientes depresivos de forma general, pero se hallaron diferencias entre los diferentes grupos sociales. En concreto, las tasas de IS aumentaron entre los solteros, las personas que no terminaron estudios académicos, y entre los mayores de 50 años. Haciendo uso de regresiones logísticas, se analizan los factores predictivos de la IS en 2006 y en 2010, respectivamente. Ser hombre, haber enviudado, la presencia de depresión mayor, distimia y la puntuación global del PHQ son predictores significativos de la IS en los años 2006 y 2010. Las personas que se han separado o divorciado, que están desempleados o que tienen una condición comórbida con la depresión también presentaron mayor riesgo de IS en 2006. Sin embargo, el efecto de la formación académica o la escolarización resultó un factor significativo de protección para la ideación suicida durante la crisis económica (2010).

*Palabras clave:* ideación suicida; trastorno depresivo mayor; crisis económica

## Introduction

Suicide is an important universal public health problem. According to the World Health Organization, every year almost one million people die from suicide, with a global suicide rate in Europe of 11.4 per 100 000 population (15.0 for males and 8.0 for females)[1]. In the last years, many studies have focused on the association between suicide and economic crisis. It is well known that economic crisis have a negative impact on mental health[2,3], but the relation with suicide remains unclear. Previous studies have suggested that economic crisis may have important implication for increasing suicide rates[4,5]. Lopez-Bernal et al.[6] reported that economic crisis has been associated with a relative increase in suicide in Spain between 2005 and 2010. This result was in line with Barr et al.[7] and Avgenakis[8]. The recent recession in the UK has led to about 1000 excess suicides in England (846 among men and 155 among women)[7]. In Greece, unofficial 2010 data quoted in parliament mention a 25% rose compared with 2009[8]. Stuckler et al.[9] showed that rapid and large rises in unemployment were associated with short-term rises in suicides in working-age men and women during 1970 and 2007 in 26 European countries. Moreover, they explained that weaker labor market protections in the central and eastern European countries have made their populations very exposed to the potential for negative health effects when unemployment rates sharply rise. But the opposite findings have also been reported. Despite the deep economic recession that Finland suffers between 1989 and 1997, with rapidly rising unemployment, attempted suicide rates remained unexpectedly stable. Total attempted suicide rates did not increase as might have been expected[10]. This result was consistent with Fountoulakis, et al[11]. They argued that there is no evidence to support a causal link between the economic crisis and suicide, questioning the reliability of the Greek official data on suicide rates.

Despite a growing research in this field, limited data of suicidal ideation (SI) and economic crisis are available. Economou et al.[12] provides evidence of a substantial increase in the prevalence of suicidal ideation between 2009 and 2011 in a representative Greek population. The proportion of respondents who reported SI was 6.7% in 2011 versus 5.2% in 2009. In addition, in 2011, the presence of major depression during the previous month was 48 times more likely to lead to SI compared to those without that diagnosis. Moreover, respondents with a history of suicide attempts were 7 times more likely to present it. Others factors, such as "economic hardship experiences" were also significant predictors of SI. Miret et al.[13] reported that prevalence of suicidal ideation in Spain is similar in 2001 and 2011. Furthermore, the factors associated with suicidality vary among age groups: Marital status, heavy alcohol consumption and occupation status were associated with the 50-64 age group, and economic problems with the 65 + group.

The aim of the present study is to report suicidal ideation rates in depressive patients before and during the current economic recession in Spain (2006-2010) and to explore significant predictors of SI during this period.

## Method

### *Design, participants and setting*

This study is based on the data of two nationwide epidemiological cross-sectional studies conducted in Spain in 2006-2007 (survey I) and 2010-2011 (survey II), before and during the economic crisis. Methodology has been described elsewhere[3]. In the first survey, a nationwide sample of 2000 primary care general practitioners (GPs), 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, in order 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, inviting five randomly selected patients to participate in the survey. A total of 7940 patients were surveyed between January 2006 and January 2007, with a further 5876 patients between February 2010 and April 2011. For the purpose of the present study only those patients who answered the PRIME-MD mood module were selected. Thus, our final sample was 3090 patients from the survey I and 3658 from the survey II.

This research received approval from the Local Ethics Committee and was performed in accordance with the ethical standards delineated in the 1964 Declaration of Helsinky. Informed consent was obtained from all participants.

### *Measures*

Patient information was collected by the GPs using a Case Report Form (CRF). The CRFs included: gender, age, marital status, education level, living alone or accompanied, rural or urban residence, employment status and body mass index (BMI).

- Primary Care Evaluation of Mental Disorders (PRIME-MD): It is a clinician-administered diagnostic instrument developed and validated for use in primary care settings[14]. This questionnaire was designed for the assessment of mental disorders, functional impairment, and recent psychosocial stressors. The PRIME-MD evaluates mood, anxiety, somatoform, alcohol and eating disorders. It has two components: a one-page self-administered patient health questionnaire (PHQ); and 12-page clinician evaluation guide (CEG) to determine the presence of 18 possible current disorders. It has a sensitivity of 81.4% and a specificity of 66.1% in Spain[15].

- Patient Health Questionnaire (PHQ): as part of the PRIME-MD, consists of 26 dichotomic questions (yes/no) about symptoms and signs during the last month, divided into the five DSM-IV diagnostic areas just listed above, and subthreshold disorders (e.g. other depressive disorders, probable alcohol abuse/dependence, and somatoform disorder); plus one question about the patient's overall health[15]. The first 16 items cover 15 physical symptoms that constitute the majority of physical complaints in primary care and one item for hypochondriasis; three or more positive responses direct the physician to the somatoform module of the PRIME-MD. A single item screens for the eating module, one of two depressive symptoms triggers the mood module, and at least one of the three anxiety symptoms triggers the anxiety module.

- Suicidal ideation: SI was measured using one item included in the mood module of the PRIME-MD: "Over the last two weeks, have you been bothered by thoughts about being better off dead or of hurting yourself in some way?"

- Psychiatric comorbidity (with mood disorders) was taken into account using the diagnoses that PRIME-MD provides (panic disorder, generalized anxiety disorder, social phobia, posttraumatic stress disorder, multisomatoform disorder, non-specific multisomatoform disorder, bulimia nervosa, and alcohol abuse/dependence).

### *Statistical Analysis*

Descriptive analyses were calculated in terms of mean and standard deviation for continuous variables, while frequencies were computed with percentages for ordinal and nominal variables.

Data analyses were carried out in two steps. In the first step of the analyses, we calculated the prevalence of suicidal ideation for several socio-demographic conditions and we compared it between surveys I and II using the Chi-Square test ($\chi^2$). In the second step of the analyses, binary logistic regression models for each survey data, adjusted for age and BMI, were performed to identify possible predictors of SI. Adjusted odds ratio (OR's) and 95% confidence intervals were calculated. All the data were processed using the SPSS 21 for Windows.

## Results

Socio-demographic data of the sample are presented in **table I**. The mean age of the participants was 49.6 years (SD=14.4) in 2006 and 48.6 years (SD=13.8) in 2010. The total sample was predominantly married in both 2006 and 2010 (58.4 and 55.5% respectively), with completed High School (27.9% in 2006; 30.7% in 2010) and employed (93.5% in 2006; 85.6% in 2010), although it is noted that there was an increase of unemployed people. Results also show an increase in the number of people living in rural areas (23.8% in 2006 versus 44.1%

**Table I:** Socio-demographic characteristics of the sample in 2006 and 2010

| | TOTAL (N=13816) | | SAMPLE (N= 6748) | |
|---|---|---|---|---|
| | 2006 (n=7940) | 2010 (n= 5876) | 2006 (n=3090) | 2010 (n=3658) |
| **Gender n (%)** | | | | |
| Male | 3036 (38.2) | 2528 (43) | 907 (29.4) | 1444 (39.5) |
| Female | 4898 (61.7) | 3348 (57) | 2183 (70.6) | 2214 (60.5) |
| **Age mean (SD)** | 48.5 (15.4) | 48.2 (14.1) | 49.6 (14.4) | 48.6 (13.8) |
| **Marital Status n (%)** | | | | |
| Single | 1592 (20.1) | 1206 (20.5) | 487 (15.8) | 638 (17.4) |
| Married/Stable couple | 4822 (60.7) | 3280 (55.8) | 1806 (58.4) | 2031 (55.5) |
| Widowed | 842 (10.6) | 614 (10.4) | 395 (12.8) | 397 (10.9) |
| Separated/divorced | 679 (8.6) | 776 (13.2) | 402 (13) | 592 (16.2) |
| **Education level n (%)** | | | | |
| No studies/Uncompleted | 2186 (27.5) | 1183 (20.1) | 892 (28.9) | 783 (21.4) |
| Completed Elementary School | 1823 (23) | 1732 (29.5) | 767 (24.8) | 1135 (31) |
| Completed High School | 2271 (28.6) | 1829 (31.1) | 862 (27.9) | 1123 (30.7) |
| College | 1653 (20.8) | 1132 (19.3) | 568 (18.4) | 617 (16.9) |
| **Place of Residence n (%)** | | | | |
| Rural | 2085 (26.3) | 2615 (44.5) | 736 (23.8) | 1615 (44.1) |
| Urban | 5851 (73.7) | 3261 (55.5) | 2354 (76.2) | 2043 (55.9) |
| **Occupation n (%)** | | | | |
| Employed | 7505 (94.5) | 5177 (88.1) | 2889 (93.5) | 3133 (85.6) |
| Unemployed | 435 (5.5) | 699 (11.9) | 201 (6.5) | 525 (14.4) |

Notes: n: simple size; SD: Standard Deviation.

in 2010) and of separated or divorced (13% in 2006 versus 16.2% in 2010).

We found no differences in SI rates between 2006 and 2010. The proportion of respondents to the mood module who reported SI was 16.3% in 2006 and 17.3% in 2010; and among suicidal ideators, we found that 98.2% in 2006 and 97.8% in 2010 had major depressive disorder. As shown in **table II**, rates of SI has only increased among singles from 11.7% in 2006 to 16.6% in 2010 ($\chi^2 = 5.374$; $p < 0.05$); among people with no studies or uncompleted ones from 20.3% in 2006 to 25.7% in 2010 ($\chi^2 = 6.853$; $p < 0.01$); and among people aged > 50 from 42.9% to 57.1% ($\chi^2 = 5.306$; $p < 0.05$).

**table III** reports results of adjusted model of SI by survey year, which you can find depicted on **figure 1**. As detailed in the table, being men, widowed, presence of major depression, dysthymia and PHQ score were significant predictors of SI in both 2006 and 2010 [$\chi^2 = 14.443$, $p = 0.071$ in 2006; $\chi^2 = 8.042$, $p = 0.429$ in 2010]. In addition, in 2006 being separated/divorced (OR = 2.248, 95% CI = [1.523, 3.317]), unemployed (OR = 1.622, 95% CI = [1.108, 2.374]) and having a comorbid condition with depression (OR = 1.346, 95% CI = [1.054, 1.718]) were also predictors of SI. By contrast, in 2010 we found that any level of studies was a protective factor of SI, that is, completed elementary school (OR = 0.709, 95% CI = [0.552, 0.912]), completed High School (OR = 0.621, 95% CI = [0.474, 0.814]) or college (OR = 0.702, 95% CI = [0.510, 0.966]).

## Discussion

The aim of this research was to study SI rates in depressive patients before and during the current economic recession in Spain (2006-2010) and to explore significant predictors of SI during this period. Regarding our first objective, it must be pointed that no statistical differences in rates of SI before (2006) and during (2010) economic crisis were found. This result is in line with Miret, et al[13], who reported that the rate of SI in Spain is similar in 2001 and in 2011. Despite of this result, rates of SI has significantly increased in 2010 in relation to 2006 among single participants, with uncompleted or no studies and in the oldest group of patients (more than 50 years old). In line with these results, Economou et al.[12] reported an increase in SI rates among 55-64 years-old Greek respondents between 2009 and 2011. Different explanations could address this result. First, those who are about to retire during an economic crisis are particularly vulnerable to stress and uncertainty due to disruptions to their economic situation[16]. A second possible explanation is that

**Table II:** Prevalence (%) of suicidal ideation in 2006 and 2010

| | 2006 (n=3090) | 2010 (n= 3658) | $\chi^2$ | $p$ |
|---|---|---|---|---|
| **Total n (%)** | 503 (16.3) | 647 (17.7) | 2.352 | 0.125 |
| **Gender n (%)** | | | | |
| Male | 155 (17.1) | 280 (19.4) | 1.957 | 0.162 |
| Female | 348 (15.9) | 367 (16.6) | 0.325 | 0.568 |
| **Age Group n (%)** | | | | |
| 18-35 | 54 (37.8) | 89 (62.2) | 3.277 | 0.070 |
| 35-50 | 205 (46.8) | 233 (53.2) | 1.094 | 0.296 |
| >50 | 244 (42.9) | 325 (57.1) | 5.306 | **0.021** |
| **Marital Status n (%)** | | | | |
| Single | 57 (11.7) | 106 (16.6) | 5.374 | **0.020** |
| Married/Stable couple | 252 (14) | 303 (15.4) | 1.618 | 0.203 |
| Widowed | 97 (24.6) | 115 (29) | 1.965 | 0.161 |
| Separated/divorced | 97 (24.1) | 113 (19.1) | 3.652 | 0.056 |
| **Education level n (%)** | | | | |
| Uncompleted or no studies | 181 (20.3) | 201 (25.7) | 6.853 | **0.009** |
| Completed Elementary School | 111 (14.5) | 189 (16.7) | 1.637 | 0.201 |
| Completed High School | 136 (15.8) | 166 (14.8) | 0.375 | 0.541 |
| College | 75 (13.2) | 91 (14.7) | 0.586 | 0.444 |
| **Place of Residence n (%)** | | | | |
| Rural | 131 (17.8) | 320 (19.8) | 1.325 | 0.250 |
| Urban | 372 (15.8) | 327 (16) | 0.034 | 0.854 |
| **Occupation n (%)** | | | | |
| Employed | 454 (15.7) | 551 (17.6) | 3.789 | 0.052 |
| Unemployed | 49 (24.4) | 96 (18.3) | 3.375 | 0.066 |

Notes: n: simple size; SD: Standard Deviation; $\chi^2$: chi squared statistic; $p$: associated probability.
Significant p-values are in bold.

**Table III:** Logistic regression results with suicidal ideation as dependent variable adjusted for age and BMI

| | 2006 | | | 2010 | | |
|---|---|---|---|---|---|---|
| | OR | 95%CI | *p* | OR | 95%CI | *p* |
| **Gender n (%)** | | | | | | |
| Male [a] | 1.350 | 1.070-1.702 | <0.05 | 1.565 | 1.285-1.906 | <0.01 |
| **Marital Status** | | | | | | |
| Single [a] | | | | | | |
| Married/Stable couple | 1.243 | 0.877-1.763 | ns | 0.779 | 0.591-1.026 | ns |
| Widowed | 2.803 | 1.746-4.499 | <0.01 | 1.835 | 1.237-2.722 | <0.01 |
| Separated/divorced | 2.248 | 1.523-3.317 | <0.01 | 0.983 | 0.713-1.354 | ns |
| **Education level** | | | | | | |
| Uncompleted or no studies [a] | | | | | | |
| Completed Elementary School | 0.799 | 0.598-1.608 | ns | 0.709 | 0.552-0.912 | <0.01 |
| Completed High School | 0.957 | 0.712-1.286 | ns | 0.621 | 0.474-0.814 | <0.01 |
| College | 0.883 | 0.625-1.247 | ns | 0.702 | 0.51-0.966 | <0.05 |
| **Occupation** | | | | | | |
| Unemployed [a] | 1.622 | 1.108-2.374 | <0.05 | 1.088 | 0.831-1.424 | ns |
| **Major Depressive Disorder [a]** | 10.187 | 3.738-27.758 | <0.01 | 6.802 | 3.563-12.985 | <0.01 |
| **Dysthymia [a]** | 1.507 | 1.271-1.940 | <0.01 | 1.831 | 1.512-2.218 | <0.01 |
| **Minor Depressive Disorder [a]** | 0.6 | 0.159-2.266 | ns | 0.365 | 0.112-1.185 | ns |
| **PHQ** | 0.901 | 0.872-0.932 | <0.01 | 0.893 | 0.869-0.918 | <0.01 |
| **Psychiatric comorbidity [a]** | 1.346 | 1.054-1.718 | <0.05 | 1.002 | 0.805-1.248 | ns |

Notes: PHQ: Patient Health Questionnaire score; OR: Odds ratio; CI: Confidence interval; ns: not significant; p: associated probability; [a] Reference category.

older people depend on fixed income resources, such as pensions, which are subject to market fluctuations[17].

We found that some factors, such as being separated or widowed, unemployed and having a comorbid disorder, are significant predictors to report SI before economic crisis but not during this period. In that sense, the most important finding of this research is the effect of academic training or schooling as a significant protective factor for suicide ideation during economic crisis. Specifically, any level of study resulted a protective factor of SI. To our knowledge, this is the first study reporting protective factors in relation to suicidal ideation during economic crisis in Spain. Completed elementary or high school or college reduced significantly the probability to present SI in 2010, unlike in 2006.

These findings could be explained by different factors. First, unemployment rates increased from 8.30% in 2006 to 20.33% in 2010[18]. Unemployment rates in 2006 were unusual, and that could explain that only in this period of time unemployment was a predictor to report suicidal ideation. Second, negative effects of the economic crisis were stronger in the construction and services sectors[19]. These sectors do not require any level of qualification, what could explain why any level of study is a significant protector of suicidal ideation in 2010 and why respondents who had uncompleted studies reported more suicidal ideation rates compared to 2006.

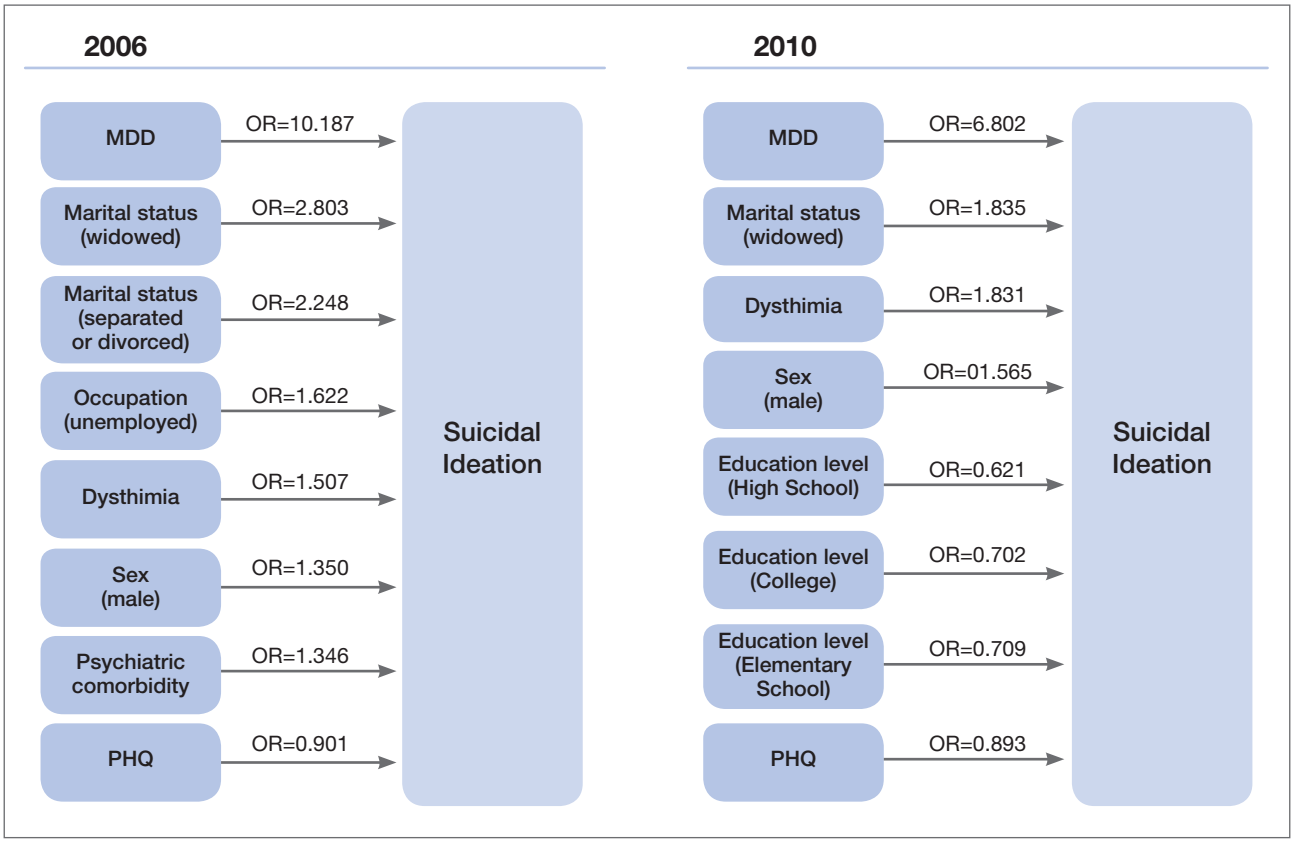
Being men, widowed, the presence of major depression, dysthymia and PHQ total score resulted significant predictors of SI in both periods of time (2006 and 2010). As pointed out by other researchers, depression is the most associated factor with suicide behavior[20]. Previous research has indicated that suicidal thoughts and attempts should be conceptualized as predictors of more serious suicidal acts[21, 22]. It has been suggested that suicidal ideation and suicide is often a delayed consequence of an underlying mental health disorder rather than the result of an immediate response to stressful life events[23]. More than a half of all clinically depressed persons have suicidal ideation[24] and among them the probability of ever making a suicide plan or ever making a suicide attempt is 33.6% and 29.0%; and the likelihood of making an attempt among suicidal ideation persons with a plan is 56%. These data implies that particular attention must be paid to suicidal ideation and attempts[25].

Suicide prevention programs should focus on early detection and prevention for depression at primary care level. On average, 77% of people who committed suicide were in contact with a primary care physician in the year before their death, and about 45% contacted a primary care provider in the month prior to their death[24]. An improvement in depression identification and suicide risk evaluation by GPs at the primary-care level was found to be an important component of suicide prevention strategies[26], leading to the conclusion of the role of primary care physicians in identification and treatment of depres-

sion and suicidal ideation as an efficient means for lowering suicide rates[26, 27]. This statement have shown to be adequate in general population prevention campaigns conducted under the umbrella of the European Alliance Against Depression, an European Commission-funded initiative whose main aim is to cope with depression and to prevent suicide by an intervention program on different social groups (general population, primary care givers and social centers). This initiative started in the city of Nuremberg in 2004, and it was demonstrated to be an effective population-based intervention[27] which was spread to other places in Europe.

This research had some limitations to consider. First, the sample of this research is biased, as it only includes those who answered the mood module of PRIME-MD, because the SI item is in the mood module. For this reason, respondents could be more at risk to present any mood disorder. Second, conventional measures of unemployment do not capture those who shifted from full employment to being on "sick leave" or "temporarily unable to work". Finally, interviews were administered in different season of the year: the first wave occurred between January, 2006, and January, 2007, while the second wave was performed between February, 2010, and April, 2011. Despite these limitations, our research presents important strengths: it is the first study reporting protective factors in relation to suicidal ideation during economic crisis. Moreover, it is the one of the studies focused on the relation between suicidal ideation and economic crisis in Spain, together with Miret, et al[13]. Finally, it is worthwhile to point that the large sample in this research was assessed in two moments and provides the necessary statistical power to analyze differences between them.

**Figure 1:** Predictors of Suicidal Ideation in 2006 and 2010




Notes: OR: Odds Ratios; MDD: Major Depressive Disorder; PHQ: Patient Heath Questionnarie score

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