Journal of Psychosomatic Research 96 (2017) 98–105

Contents lists available at ScienceDirect

Journal of Psychosomatic Research

journal homepage: www.elsevier.com/locate/jpsychores

The relationship of the perceived impact of the current Greek recession with increased suicide risk is moderated by mental illness in patients with long-term conditions

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ARTICLE INFO

Keywords:
Financial crisis
Greece
Suicide
Depression
Anxiety
Generalized anxiety disorder
Chronic illness
Long-term conditions

ABSTRACT

Objective: Adverse life events may contribute to the emergence of suicidality. We aimed to test the relationship between the impact of the Greek recession and suicidal risk in people with long-term conditions (LTCs) and to determine whether this relationship is moderated by the presence of a mental disorder.

Methods: Suicidal risk (RASS) and crisis parameters were assessed in a cross-sectional survey including 376 patients with LTCs (type-II diabetes mellitus, rheumatological disorders and chronic obstructive pulmonary disease) attending the Emergency Department or specialty clinics. A diagnosis of mental disorder was confirmed by the Mini International Neuropsychiatric Interview (MINI) interview. Hierarchical regression models were used to quantify moderator effects.

Results: Suicidal risk was significantly associated with the perceived impact of the recession ($p = 0.028$). However, moderation analysis showed that this relationship was significant only in those diagnosed with either major depressive disorder or generalized anxiety disorder.

Conclusions: These findings suggest that the perceived impact of the current Greek recession is not correlated with suicidal risk *per se*, but the recession may act as precipitator in combination with other risk factors, such as the presence of a mental illness, thus supporting the importance of early diagnosis and treatment of mental disorders in vulnerable groups.

1. Introduction

During the last decade the global economy experienced a significant recession, and thus the possible effects of the global financial recession on public health has been a focus of ongoing research. Previous studies suggest that the detrimental consequences of the financial crisis on things such as unemployment, job loss and job insecurity may have a negative impact on health including mental health [1,2]. Several studies have also linked global economic recession with increased suicide rates [3], and a recent study in 54 European and American countries found that suicide rates increased during the global recession, particularly in men and in countries with higher unemployment rates [4].

Greece is perennially ranked among European countries with the lowest suicide rates [5]. However, studies have shown that during the current recession the annual suicide rate increased up to 40% between 2009 and 2010 [6,7] and a mean rise by 35% has been reported between 2010 and 2012 [8]. A recent study using a 30-year time series analysis showed that austerity-related economic events in Greece significantly contributed to changes in suicide rates, with suicides rising by 36% by June 2011, after the adoption of strict austerity measures [9]. A temporal correlation between an increase in suicide rates among persons of working age with austerity measures has also been reported [8].

However, possible confounders may moderate the impact of the recession upon suicidality. Studies conducted in the "Eurozone periphery" including Greece have found that the impact of fiscal austerity is gender-, age- and time-specific, and may have short-, medium- and

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http://dx.doi.org/10.1016/j.jpsychores.2017.03.008
Received 20 November 2016; Received in revised form 20 March 2017; Accepted 21 March 2017

Table 1
Participants' characteristics, crisis parameters and suicidal risk according to MINI interview and RASS across the two samples.

	Patients attending the Emergency Department (N = 74)	Patients attending routine clinic (N = 302)	Sign
Age (mean ± SD)	66.2 ± 14.7	59.4 ± 14.0	p < 0.001[a]
Sex (N, %)			p = 0.365[b]
Females	31 (41.9%)	145 (48.0%)	
Males	43 (58.1%)	157 (52.0%)	
Divorced/widowed/separated	11 (14.9%)	36 (11.9%)	p = 0.556[b]
Charlson Comorbidity Index (mean ± SD)	4.4 ± 1.9	3.1 ± 1.6	p < 0.001[a]
Unemployed (N, %)	4 (5.4%)	24 (7.9%)	p = 0.455[b]
Unemployment due to ill health (N, %)	6 (9.5%)	58 (22.5%)	p = 0.022[b]
Job lost due to the financial crisis (N, %)	3 (4.8%)	17 (6.5%)	p = 0.618[b]
Percentage of income reduction during the last 2 years (mean ± SD)	32.0 ± 26.4	33.7 ± 20.5	p = 0.656[a]
up to 20% (N,%)	35 (47.3%)	101 (33.4%)	
20%–50% (N,%)	25 (33.8%)	85 (28.1%)	p = 0.197[b]
> 50% (N,%)	14 (18.9%)	86 (28.5%)	
Perceived impact of crisis (mean ± SD)	6.5 ± 2.1	6.8 ± 2.3	p = 0.317[a]
History of mental illness (N, %)	16 (21.6%)	82 (27.2%)	p = 0.324[b]
Suicidal risk (any degree) (MINI; N, %)	11 (14.9%)	40 (13.2%)	p = 0.715[b]
Suicidal risk (MINI; N, %)			
Low	7 (9.5%)	32 (10.6%)	p = 0.627[b]
Moderate	4 (5.4%)	8 (2.6%)	
High	0	1 (0.3%)	
Suicidal risk (RASS total score; mean ± SD)	209.8 ± 162.7	164.7 ± 145.8	p = 0.024[a]

[a] Two-tailed *t*-test.
[b] Chi-square test.

long-term effects on suicide rates [10]. Other investigators suggest that the impact of the recession on suicide rates may be smaller than thought [11] or regard these associations as a premature over-interpretation of available evidence [12].

Suicidal behaviour is a complex phenomenon with numerous interlinking biological, social, and psychological risk factors. Mental illness, history of mental illness and suicide attempts, hopelessness, male gender, chronic physical illnesses, lack of social support and cultural and religious beliefs are among the most frequently reported risk factors for suicide [13,14]. Adverse life events such as job loss are also recognized precipitators of suicide attempts when they occur in combination with other risk factors such as depression [15]. Furthermore, the majority of people who die due to suicide have depression or another diagnosable mental disorder [13].

A marked increase in the prevalence of mental disorders including anxiety and major depressive disorder (MDD) during the Greek crisis has been also reported [16]. Repeated telephone surveys have shown that the prevalence of MDD has doubled between 2008 and 2009 (from 3.3% in 2008 to 6.8% in 2009) [17], reaching 8.2% in 2011 [18] and up to 12.3% in 2013 [19]. Studies from our research group performed in 2012–13 with patients with LTCs attending the emergency department (ED) also reported a high prevalence of mental illness: 28.0% were diagnosed with MDD [20] and 22.9% identified with suicide risk [21].

Adverse events (e.g., periods of recession) shape the people's feelings and perceptions of impact and risk, resulting in a wide range of responses, which are often influenced by a number of factors, including personal characteristics, confidence in those managing the risk, and belief in one's ability to cope with an adverse event [22–24]. Therefore, the perception of the effect of the financial crisis may be an important factor regarding the psychological impact of this stressor. Studies have shown, for instance, that the perceived financial strain and not only the concrete financial difficulties predict health problems in later life [25].

In summary, evidence suggests that during the current Greek recession suicide rates increased, as well as the prevalence of MDD. Suicidal risk and mental illness are also prominent in vulnerable groups such as people with LTCs. To the best of our knowledge, no previous studies have investigated the complex interplay between the perception of the current Greek financial crisis, mental health and suicidal risk. The aim of the present study was to test the hypothesis that aspects of the Greek crisis (i.e. adverse life events such as income reduction, job loss, or perceived negative impact of the financial crisis) are associated with suicidal risk. A second aim was to determine whether mental disorders moderate this relationship, after adjustment for potential confounders (e.g., chronic illness, comorbidities, and a lifetime history of mental disorder).

2. Methods

2.1. Study design and participants

Data were collected during the baseline assessment of the study "Assessing and enhancing resilience to depression in people with long term medical conditions in the era of the current Greek crisis" and its main objective is to develop psychosocial strategies to enhance resilience to depression in vulnerable patients with LTCs facing the current Greek crisis, through a program of applied clinical research.

The sample comprised 376 patients with at least one of three LTCs: type-II diabetes mellitus (DM), rheumatological disorders (RD) and chronic pulmonary obstructive disease (COPD) who were seeking unscheduled or urgent care at the ED of the University Hospital of Ioannina (N = 74) or were attending routine care in the respective follow-up specialty clinic (N = 302) during a six-month period (9/2015–3/2016). Exclusion criteria were: inability to read and write Greek, active psychotic, intoxicated or confused or too severely unwell physically. Of the 116 patients in the ED who were approached, 86 were eligible and 74 agreed to participate (response rate 86.1%); 33 with DM only, 5 with RD only, 22 with COPD only and 14 with a combination of conditions. Of the 360 patients in routine care who were approached, 350 were eligible and 302 agreed to participate (response rate 86.3%); 88 with DM only, 172 with RD only, 7 with COPD only, and 35 with a combination of conditions. No statistically significant differences were found in age, sex, education and marital status between participants and non-participants across the two samples.

Researchers were in the hospital from 8.00 a.m. to 4.00 p.m. every day and participants were recruited on a consecutive basis during this time frame. Inclusion criteria were age 18 or more and a diagnosis of DM, RD or COPD confirmed by the treating clinician. Sampling was

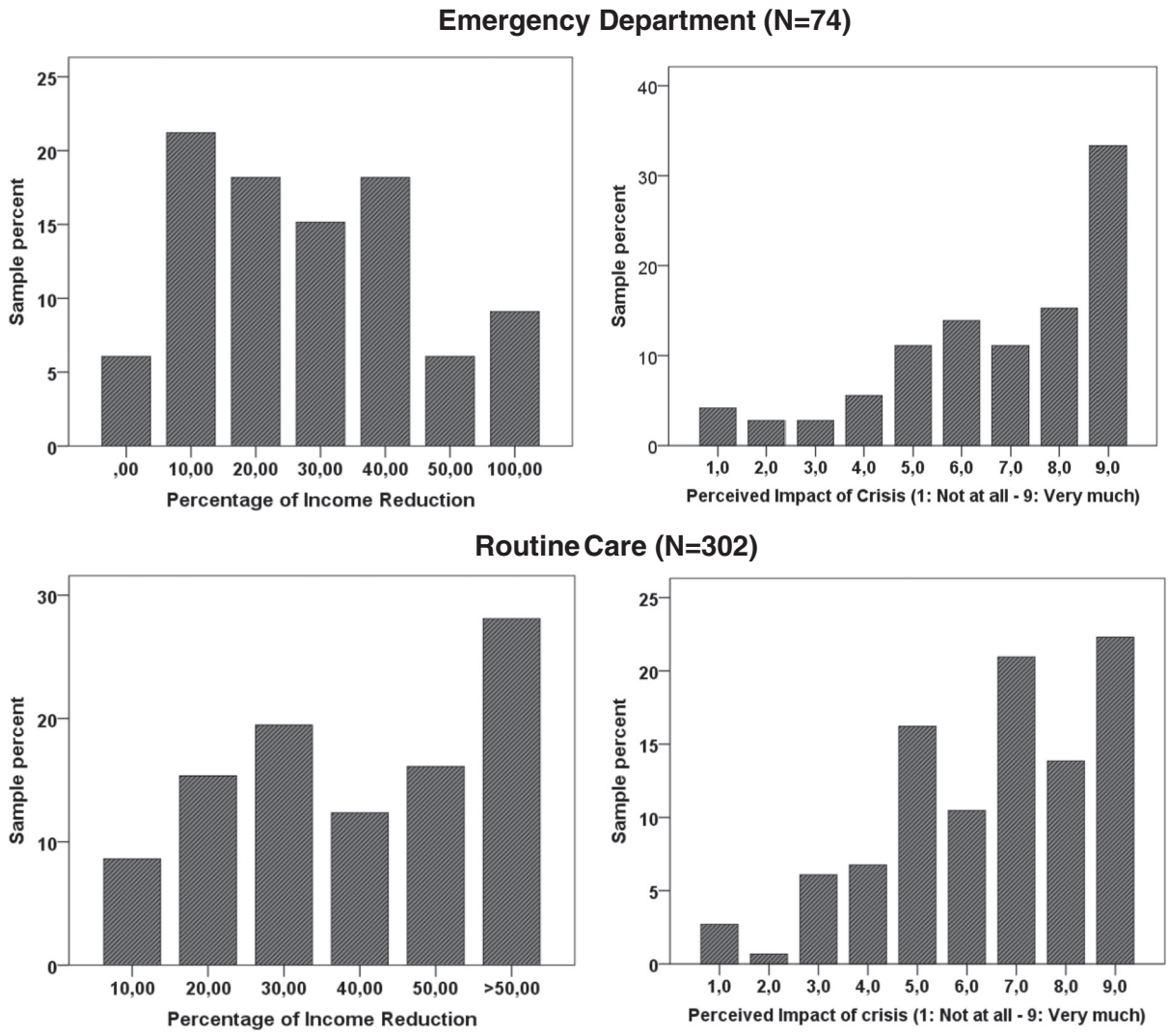

Fig. 1. Distribution of responses regarding the percentage of income reduction during the last two years and the degree of the perceived impact of the current crisis across the three samples.

undertaken by three researchers, trained psychologists (EN, VP, DP). The interviewers had at least 4 years of experience in diagnostic and clinical work in the Department of Psychiatry of the University of Ioannina and have also participated in courses on the administration of diagnostic instruments and screens. All patients with DM, RD or COPD attending the ED or a follow-up clinic during the sampling period were considered for recruitment. Eligible participants were approached by the researchers, and consenting participants were subsequently interviewed. The interviewers were blind to scores of the self-report questionnaires, which were administered the same day. All the procedures followed were in accordance with the World Medical Association Helsinki Declaration. The study was approved by the hospital's ethics committee (617/17–09-2015). Signed informed consent was obtained from all participants.

2.2. Measures and study instruments

Demographic variables including age, sex, marital status, residence, employment status and occupation were collected. History of mental illness was also recorded. Clinical features, disease severity indices and laboratory data were obtained from the patients' records. The current use of any agent including antidepressants was also recorded. Coexisting medical diseases were scored using the Charlson comorbidity scale [26]. Parameters regarding the impact of the current Greek social and financial crisis were also recorded including percentage of income reduction during the last two years and unemployment due to personel cuts. Participants were also asked to define the perceived degree of the negative impact of the crisis upon their social and financial status on a 1–9 Likert-type scale (*not at all* to *very much*). *Mental diagnoses* were confirmed using the Greek version 5.0.0 of the Mini International Neuropsychiatric Interview (MINI) [27]. The MINI is a structured psychiatric interview that ascertains the diagnosis of mental disorders according to DSM-IV or ICD-10 criteria [28]. It focuses mainly on current diagnosis and contains 120 questions for screening 17 axis I disorders. The MINI has been previously used in studies with Greek medical patients [29,30]. *Suicidal risk* was assessed using the standardized Greek version of the Risk Assessment Suicidality Scale (RASS) [31]. RASS is a brief 12 item self-report instrument of suicidal risk behaviours. It contains items relevant to intention, life, and history of suicide attempts, which are rated on a 0–3 Likert–type scale (*not at all* to *very much*) and the scores were transformed according to the suggestions of the standardization study for use within the Greek population [31]. In patients with LTCs attending the ED, we have found that at an optimal cutpoint of 270 the scale had 81.3% sensitivity and 81.8% specificity, with a Cronbach's α of 0.80 [21]. Higher scores indicate greater suicidal risk.

Table 2
Distribution of the patients' characteristics according to diagnostic status for any mental disorder (AMD), major depressive disorder (MDD) and generalized anxiety disorder (GAD) across the two samples and comparisons with those of patients without any mental disorder (No Mental Disorder-NMD).

	Patients attending the Emergency Department (N = 74)				Patients attending routine clinic (N = 302)			
	AMD	MDD	GAD	NMD	AMD	MDD	GAD	NMD
N	34	20	12	40	147	76	62	155
(%)	45.9	27.0	16.2	54.1	48.7	25.2	20.5	51.3
Age (mean ± SD)	65.2 ± 15.0	66.4 ± 15.8	56.1 ± 15.2*	67.1 ± 14.5	57.6 ± 13.2	60.3 ± 12.1	56.5 ± 12.7*	61.0 ± 14.6
Females (%)	41.2	50.0	41.7	42.5	55.1*	68.4*	56.5*	41.3
Divorced/widowed/separated (%)	17.6	20.0	8.3	12.5	15.6*	19.7*	11.3	8.4
Charlson Comorbidity Index (mean ± SD)	4.5 ± 2.1	4.4 ± 2.1	3.7 ± 2.1	4.3 ± 1.8	3.2 ± 1.7	3.1 ± 1.4	2.8 ± 1.3	3.2 ± 1.7
Percentage of income reduction during the last 2 years (mean ± SD)	43.3 ± 32.7*	37.0 ± 27.5*	25.0 ± 17.3	22.5 ± 14.9	35.1 ± 21.2	34.9 ± 20.5	35.0 ± 22.5	32.4 ± 19.7
Perceived impact of crisis (mean ± SD)	7.2 ± 2.3*	7.7 ± 1.4*	7.3 ± 2.4	6.4 ± 2.2	6.6 ± 2.1	6.9 ± 2.0*	6.7 ± 1.9	6.4 ± 2.0
History of mental illness (%)	35.3*	55.0*	41.7*	10.0	39.7*	50.0*	42.6*	15.5
Suicidal risk	302.2*	340.5*	275.9*	133.9	229.7*	293.1*	247.2*	103.1
(RASS total score; mean ± SD)	(± 151.2)	(± 138.6)	(± 153.0)	(± 130.6)	(± 160.4)	(± 161.7)	(± 180.0)	(± 96.1)

Note: Asterisks indicate statistically significant differences at least at $p < 0.05$ level between patients with mental disorders and those without any mental disorder, based on two-tailed t-tests r chi-square tests, as appropriate.

Table 3
Multiple linear regression analysis showing the variables most closely associated with suicidal risk (N = 376).

	Suicidal risk (RASS)	
	b	p
Sex (0 = female)	− 0.171	0.001
Age	− 0.027	0.762
Divorced/widowed/separated	0.061	0.241
History of mental illness	0.176	0.001
Unemployment	0.030	0.574
Perceived impact of crisis	0.118	0.028
Income reduction during the last 2 years	0.041	0.454
Number of LTCs	0.038	0.496
Charlson Comorbidity Index	0.089	0.342

($R^2_{adj} = 0.18$, $F_{[9366]} = 4.64$, $p < 0.001$).

2.3. Statistical analysis

Statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) version 21.0 (SPSS Inc., Chicago, IL, USA) for Windows. Summary statistics for all variables were calculated. Normality was tested by the Kolmogorov-Smirnov test [32]. Chi-square analyses for categorical data and two-tailed *t*-tests for continuous data were carried out to assess the differences between the two samples as well as between participants with mental illnesses compared to their counterparts without any mental illness in major demographic variables, suicidal risk, and crisis parameters.

The association of unemployment, income reduction and perceived impact of crisis with suicidal risk was tested using Pearson bivariate correlations followed by linear multiple regression analysis with dependent variable the RASS score and independent variables the major demographic and clinical variables, history of mental illness and crisis parameters. Very few patients had lost their job during the crisis, and therefore the statistical power for this variable was very low, preventing us of proceeding with a full analysis on its role in suicidal risk.

2.3.1. Moderation analysis

According to Kraemer et al. [33], to be a moderator, a variable (A) must be a characteristic that can be shown to have an interactive effect with another variable (B) on the outcome. An interactive effect means that the effect of B on individual subsets depends on their value of A. If A is a baseline variable that identifies subgroups of patients (e.g. sex, disease), then A indicates on whom the variable of interest may have the most significant effects. In the present study, statistical tests of moderation were conducted to test whether a diagnosis of mental illness is potential moderator of the relationship of unemployment, income reduction and perceived impact of crisis with suicidal risk. Of the analyses performed to assess potential moderators of the relationship between crisis parameters and suicidal risk, only those with the perceived impact of the crisis showed a significant moderator effect, which was a significant interaction between the perceived impact of crisis and mental illness.

Three independently produced moderator analyses were performed for each mental disorder (i.e. Any Mental Disorder, MDD and Generalized Anxiety Disorder). The raw scores of the variables were standardized (i.e. converted to z-scores). To demonstrate moderation, we would have to show a significant interaction between the moderator (i.e., diagnosis of mental illness) and the perceived impact of crisis [33]. Simple regression lines were plotted to probe the significant interactions effects and hierarchical multiple regression analyses were performed to quantify moderator effects [34]. The standardized predictor and moderator variables were then multiplied to yield an interaction variable. The independent variables were entered into the equation in two steps. In the first step, the perceived impact of crisis and moderator

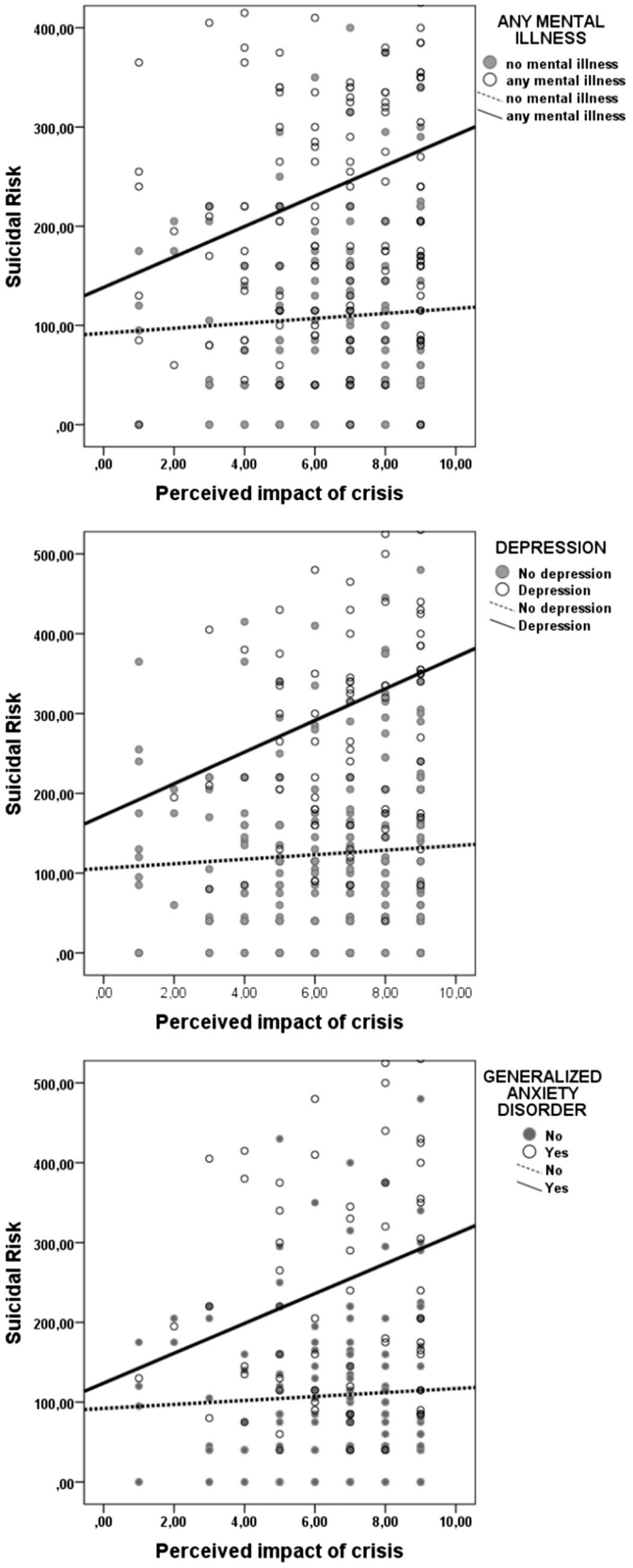

Fig. 2. Scatterplots showing lines of best fit in the relationship of suicidal risk with the perceived impact of crisis for people with and without a diagnosis of any mental disorder, major depressive disorder and generalized anxiety disorder (N = 376).

Table 4
Hierarchical multiple regression analyses to examine whether a diagnosis of (a) any mental illness, (b) major depressive disorder, and (c) generalized anxiety disorder, is moderator of the relationship between the perceived impact of crisis and suicidal risk after controlling for history of mental illness (N = 376).

	Model 1		Model 2	
	b	p	b	p
(a) Any mental illness				
(z) Perceived impact of crisis	0.127	0.007	0.113	0.018
(z) Any mental illness	0.403	0.001	0.401	0.001
(z) Impact of crisis × any mental illness	–	–	0.091	0.047
Adjusted R^2 of model	0.233		0.239	
Incremental adjusted R^2	0.233		0.006	
Significance of F change	0.001		0.047	
(b) Major depressive disorder (MDD)				
(z) Perceived impact of crisis	0.089	0.049	0.103	0.025
(z) MDD diagnosis	0.511	0.001	0.498	0.001
(z) Impact of crisis × MDD	–	–	0.091	0.030
Adjusted R^2 of model	0.307		0.319	
Incremental adjusted R^2	0.307		0.012	
Significance of F change	0.001		0.030	
(c) Generalized Anxiety Disorder (GAD)				
(z) Perceived impact of crisis	0.124	0.009	0.116	0.015
(z) GAD diagnosis	0.302	0.001	0.295	0.001
(z)Impact of crisis × GAD	–	–	0.092	0.035
Adjusted R^2 of model	0.166		0.179	
Incremental adjusted R^2	0.166		0.013	
Significance of F change	0.001		0.035	

variables were entered separately, followed in the final step by the interaction variable [34]. Suicidal risk as assessed by the RASS was the outcome variable. Since sex and history of mental illness was found significantly associated with a diagnosis of mental illness as well as with suicidal risk, all hierarchical regression analyses were adjusted using sex and history of mental illness as covariates. Tolerance values were > 0.2 and all variance inflation factors (VIF) were below 2, indicating that multicollinearity was not biasing the regression models [34].

3. Results

3.1. Descriptive data, suicidal risk, and crisis parameters

Table 1 presents the participants' characteristics across the two samples and Fig. 1 illustrates the distribution of their responses to items corresponding to the main crisis parameters studied. As shown in Table 1, patients in the ED presented with similar suicidal risk as assessed by the MINI as patients in routine care. However, the degree of suicidal risk as assessed by the RASS total score was higher for patients attending the ED compared to patients attending routine care (p = 0.022). Approximately one fifth in each group had a history of mental illness, while both groups presented similar percentages of unemployment (5.4% and 7.9%, respectively). It should be mentioned that the vast majority of patients were pensioned (N = 226, 60.1%), and 31 (8.2%) were householders. The mean percentage of income reduction during the last 2 years (2013–15) was similar in both groups, slightly over 30%. However, as shown in Fig. 1, a remarkable proportion of patients in routine care reported an income reduction of over 50%, while among patients attending the ED there were cases reporting a 100% reduction. As for the perceived impact of the crisis, both groups reported similar mean impact, but more that 30% of those attending the ED reported that the crisis affected their lives “very much”.

3.2. Mental illness, suicidal risk and associated crisis parameters

As shown in Table 2, approximately half of the patients presented with mental illness of any kind (45.9% in the ED and 48.7% in routine care), mostly MDD (27.0% and 25.2%, respectively). In addition, large proportions were diagnosed with GAD (16.2% and 20.5%, respectively). All mental disorders were associated with a lifetime history of mental disorders and suicidal risk in both groups, while crisis parameters were sporadically associated with mental illness: income reduction with MDD in the ED patient sample and the perceived impact of the crisis with MDD in both patient samples (Table 2).

Multivariable regression analysis with suicidal risk as the dependent variable (as assessed by the RASS) and independent variables the major demographic variables, physical burden (number of chronic illnesses and comorbidities), lifetime history of mental disorders and crisis parameters showed that female sex ($p = 0.001$), lifetime history of mental disorders ($p = 0.001$) and the perceived impact of the crisis ($p = 0.028$) were the variables most closely associated with suicidal risk (Table 3).

3.3. Moderation analysis

We performed moderation analyses to test whether a diagnosis of a mental disorder could act as moderator in the relationship between the perceived impact of the economic crisis and suicidal risk, after controlling for sex and lifetime history of mental disorders. As shown in Fig. 2A, the slope of the relationship between the perceived impact of crisis and suicidal risk is steeper for patients with a current mental disorder than for patients with no mental disorder (Pearson correlation coefficients: 0.21, $p = 0.007$ and 0.05, $p = 0.507$, respectively); the same applied to patients diagnosed with MDD (Fig. 2B, $r = 0.22$, $p = 0.035$ and $r = 0.06$, $p = 0.368$), as well as to those diagnosed with GAD (Fig. 2C, $r = 0.22$, $p < 0.05$ and $r = 0.05$, $p = 0.507$).

In a further hierarchical linear regression analysis to quantify the abovementioned observations, diagnosis of any mental disorder was found to be a significant moderator in the relationship between the perceived impact of the crisis and suicidal risk, as the interaction term (impact of crisis x any mental illness) had a beta coefficient of 0.091 ($p = 0.047$) (Table 4a, model 2), indicating that the relationship between the perceived impact of the crisis and suicidal risk was significantly greater for those diagnosed with any mental disorder than for those without a diagnosis of mental illness. Similarly, the relationship between the perceived impact of the crisis and suicidal risk was significantly greater for those diagnosed with MDD ($b = 0.091$, $p = 0.030$) (Table 4b, model 2) or GAD ($b = 0.092$, $p = 0.030$) compared to those without (Table 4c, model 2).

4. Discussion

The results of the present study revealed that in people with LTCs suicidal risk was significantly associated with the perceived impact of the recession. However, moderation analyses showed that this association was significant only in those diagnosed with a mental disorder, thus confirming our hypothesis. Furthermore, apart from a diagnosis of MDD, a diagnosis of GAD also moderated the relationship between the perceived impact of the recession and suicide risk. As far as we know, this is the first report to show that the impact of the crisis is not correlated with suicidal risk *per se*, but the crisis may act as a precipitator in combination with other risk factors, such as the presence of a mental illness, either MDD or GAD. In other words, people with mental illness may be particularly vulnerable to the effects of the Greek recession.

We found a high prevalence of suicidal risk within this patient population, rising up to 14.9% in patients with LTCs seeking urgent care in the ED. These findings indicate that suicidal risk is a phenomenon that should attract much attention in current times, as it seems to be affecting a remarkable proportion of patients with LTCs. Although suicide rates in Greece remain low compared to other countries [5], the reported increased of up to 40% after the 2008 financial crisis [7] is much higher than the increments reported during the financial crisis in other European countries: 5.3% in Germany, 5.2% in Portogal, 7.6% in Czech Republic, 19.3% in Poland, and 22.7% in Slovakia [35].

Participants of both groups reported a substantial income reduction between 2013 and 2015, with a mean of 32.8%. Although income reduction was initially associated with suicidal risk, the inclusion of other variables rendered this association non-significant, indicating that the perceived impact of the crisis, a lifetime history of mental illness or sex are more closely related with suicidal risk.

Our main new finding is that the perceived impact of the current recession is associated with suicidal risk, but this association is moderated by current mental disorder: the greater the perceived impact of the crisis the greater the suicidal risk only when MDD or GAD is present. This finding indicates that, apart from the recognized relationship of mental illnesses with suicidal risk [36–38], the impact of the crisis as experienced by the individual further increases this risk. The perceived impact of the recession was here a stronger correlate of suicidal risk than actual financial difficulties, such as income reduction. The perceived experience of an economic recession is obviously subjective and has a variable impact on individuals [39]. The perceived impact of the financial crisis may provide an indication of how individuals cope with the crisis, since individuals may experience financial crises in different ways depending on a combination of interacting factors such as gender, income, numeracy and political attitude [22]. Our findings indicate that the perceived impact of the crisis may increase suicidal risk in people diagnosed with a mental disorder, and even though it may be challenging for healthcare professionals to intervene in financial crises, negative health effects may be addressed by specifically targeting the perceived impact of the recession in vulnerable patients.

Our finding that the impact of recession is associated with greater suicidal risk in people diagnosed with GAD deserves further consideration. Studies have reported that anxiety disorders are risk factors for suicidal ideation and suicide attempts [40], and a recent meta-analytic review concluded that anxiety is a statistically significant, yet weak, predictor of suicide ideation and attempts, with the strongest associations observed for Post-Traumatic Stress Disorder (PTSD) [41]. However, the relevance of GAD should not be underestimated, as present findings indicate. Our findings underscore the need to assess and manage anxiety disorders, especially GAD, in patients with LTCs within the medical setting. Clinicians, apart from the early recognition and treatment of depression, should also investigate the presence of anxiety symptoms in patients with LTCs, in order to prevent the emergence of suicidality triggered by the current Greek recession. Ensuring appropriate systems, services and support for people with mental disorders should be a priority for health professionals in the era of the current recession.

Strengths of our study include the use of the MINI structured interview for establishing a diagnosis of mental disorder, which was conducted face-to-face with participants. We used well recognized, standardized instruments and we performed formal moderation analyses. However, some limitations need to be addressed. First, our study was cross-sectional; therefore, we cannot examine causality and the findings need to be replicated in a prospective study. Second, we studied multiple rather a single disease group. This heterogeneity prevented us from accounting for the severity of illness using specific disease severity indices, and this may have influenced the results. Third, it could be argued that mediation instead of moderator analysis could be more suitable in assessing the interplay between the variables at hand, as mental illness is considered that lies in the pathway between the stressor (i.e., the indices of the recession) and the outcome (i.e., suicidality). Our cross-sectional design, however, prevented us to conclude about a temporal precedence, which is a prerequisite for

mediation analysis [42]; the indices of recession indeed could precede mental illness, but it could be also the other way around. Finally, our findings should be interpreted with caution since our sample of patients with LTCs could not be considered representative of the general population of Greece or for all people with LTCs; our sample only consisted of those patients with those long-term conditions who had access to our hospital. In addition, the majority was pensioned, and this may explain the low rates of unemployment reported compared to the three- to four-fold rates officially announced in Greece currently.

In conclusion, the present study confirms that, in patients with LTCs, the perceived impact of the current Greek crisis is significantly associated with suicide risk, but only in those with a diagnosis of current mental disorder. Our data also highlight the importance of assessing and managing GAD in patients with long-term medical conditions. In addition, this study raises the possibility of developing psychosocial therapies which target dysfunctional psychological reactions to the recession, especially in patients with LTCs experiencing comorbid MDD or GAD. These strategies may prevent the emergence of suicidality in vulnerable populations.

Competing Interest Statement

'The authors have no competing interests to report'.

Acknowledgements

The project "Assessing and Enhancing Resilience To Depression in people with long term medical conditions in the era of the current Greek social and financial crisis (ASSERT-DEP)" has been co-financed by the European Economic Area (EEA) Financial Mechanism 2009–2014 (EEA GR07/3767) and National funds as part of the program "Dissimilarity, Inequality and Social Integration" (Grant number: 132324/I4-25/8/2015). The funding source had no involvement in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication.

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Part of this work has been presented at the 4th Annual Conference of the European Association of Psychosomatic Medicine (EAPM): "Transforming Health with Evidence and Empathy", Lulea, Sweden, 16th–18th June 2016, and it has been awarded with the "Best poster award".

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