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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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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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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