# **Prospective Study**



# Patients' Perceptions of Chronic Pain During the Economic Crisis: Lessons Learned from Greece

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**Background:** Chronic pain is well known to be influenced by various social factors; however, the impact of financial issues on pain has not been extensively studied.

**Objective:** The aim of this study was to investigate the impact of the economic crisis on pain and quality of life in Greek patients suffering from chronic pain.

**Study Design:** The study employed a prospective, open-label design.

**Setting:** The study setting was the Pain Unit of Attikon University Hospital in Athens, Greece.

**Methods:** The study surveyed 200 randomly selected outpatients with chronic pain during two different time periods (2012 and 2016). Patients completed a structured questionnaire to assess the impact of the economic crisis on multiple aspects of pain and pain management, health care, and quality of life. Personality characteristics and stress were also evaluated using the DASS-42 and the LOT-R questionnaires.

**Results:** Most patients in both periods believed that the economic crisis led to a worsening of their symptoms (75%) and quality of life (97%). Most patients (97.5%) also believed that the intensity of their pain would have been improved if their financial status had been better. Their main concerns about the future were "the possibility of not having access to health care facilities and medication" (94.5%), "stress" (43%), and "fear of financial strain" (30.5%). Higher levels of anxiety, stress, and pessimism were associated with higher levels of pain and lower quality of life

**Limitations:** The study is based on a small sample size.

**Conclusions:** This study identified impacts of the financial crisis on chronic pain and quality of life, pointing to the need for measures to solve this problem.

**Key words:** Pain, global financial crisis, quality of life, quality of health care, psychosocial factors

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hronic pain is influenced by various genetic, biological, psychological, social, and ethnic factors. However, the impact of financial conditions on chronic pain has not been throughly investigated, particularly in the context of a national financial crisis (1-3). Greece is one of the countries that

has been profoundly affected by the economic crisis of the last decade, begining in 2008 and continuing today (4-12). During 2010, the Greek economy was placed under the surveillance of the European Commission, the Central European Bank, and the International Monetary Fund. The program of reforms

that was implemented included multiple measures to guide the structural reformation of the economy, the aim of which was to reduce the account deficit and to achieve long-term stability (13). As a consequence, the Greek economy entered a long phase of recession, characterized by unemployment, significant wage and pension reductions, in addition to tax increases, gradually leading to a process of "internal devaluation" (13,18). The effects of this recession on various aspects of health care and well-being are now being examined, but pain has consistently been overlooked.

Only a few studies have investigated the effects of these recent changes in economic conditions on public health (4), and these have largely focused on health outcomes such as cardiovascular disease (5), chronic obstructive pulmonary disease (6,7), infections (8,9), and mental health and suicidality (10-12). Studies from Greece during the economic recession revealed a drop inself-rated health status, with an overall negative impact on health care, health, and well-being (13). The limited literature addressing the impacts of these issues on chronic pain indicates that lower socio-economic status and lower education combined with aggravating psychological factors contribute to the incidence of chronic pain and disability, but does not shed light on the effects of the economic crisis on patients' pain behavior (2,14). Therefore, in the context of a country that has been substantially affected by the recent financial crisis, this study aims to assess and comment on the possible impact of this crisis on the pain and quality of life of Greek patients suffering from chronic pain.

### **METHODS**

This prospective observational study was conducted with the approval of the Research and Ethics Committee of the Attikon University Hospital and is in agreement with the Declaration of Helsinki. Participation in the study involved completion of self-reported questionnaires from outpatients with chronic pain who were followed up at the Pain Unit for at least 3 months. All patients involved in the study were followed up within the National Health Care System, meaning appointments were without charge. Patients with both malignant and nonmalignant pain were interviewed after providing written informed consent. Exclusion criteria included the presence of cognitive disorders, the inability to understand or write in the Greek language, status as private patients, and patients who had not lived in Greece since 2008.

The study was conducted during 2 different time

periods: the first part during 2012 and the second part during 2016. A structured questionnaire was created by the pain management team (Fig. 1) and was initially administered to 20 patients for pilot testing. The questionnaire was developed by the pain physicians of the pain unit in collaboration with a team of psychologists in order to assess the self-rated effects of the economic crisis on pain and quality of life. This questionnaire included items on patients' demographic characteristics, including educational and marital status, and a measure of pain intensity: the Numeric Rating Scale (NRS 0-10). Ten questions were developed that focused on patients' perceptions of the impacts of the economic crisis on various aspects of their health care and pain management. Most of these items included 3 response options: a lot, moderately, or not at all.

In addition to the economic crisis questionnaire, patients completed the Depression Anxiety Stress Scales (DASS-42) and the Life Orientation Test-Revised (LOT-R) in order to assess their depression, anxiety, and stress, as well as their tendencies toward pessimism or optimism. All questionnaires used were translated and validated for use in the Greek language. All questionnaires were self-administered except in cases where the patient required help and received assistance from a colleague in the pain unit.

## **Statistical Analysis**

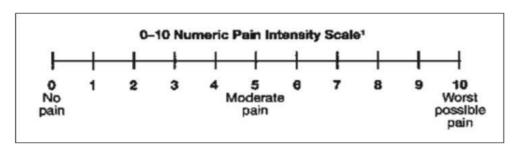
Using G power analysis (15), a total sample of 196 patients was determined a priori for analysis of one study group vs. population, with alpha set to 0.05 and power to 0.80, based on the means and standard deviations of the Greek validation of the DASS (16) and LOT (17). Using the same calculation for 2 groups and a dichotomous endpoint based on the effect of the economic crisis, the effect sample size calculation with alpha set to 0.5, beta set to 0.20, and power set to 0.80 for an anticipated incidence of 20% difference between the 2 groups gave us a calculation of 97 subjects for each group. Therefore, we examined 100 patients during each time period in order to avoid missing items. Chi-square goodness of fit as well as independent sample t tests and one-way analyses of variance (ANOVA) were used to test whether there were any differences between the 2 groups of patients in terms of sociodemographic and clinical characteristics. A P value of less than 0.05 was considered significant. All statistical tests were performed using SPSS Version 21 (IBM Corporation, Armonk, NY).

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With this questionnaire, we will attempt to record certain aspects of life that may affect your pain. The questionnaire is anonymous. After you fill it in, hand it to your attending physician.

Your help is valuable. We want to thank you for your participation.

In the scale listed below, please mark how intense your pain is, with "0" meaning no pain at all and "10" meaning the worst pain possible.



Please answer the following questions by indicating the answer that currently represents you the best. Your answers are confidential and they will be used solely for the purposes of this research.

Sex: 1 Male 2 Female	<del>)</del>	
Age:		
Profession:	_	
Education:		
① Elementary school ② High school	ol ③Graduate level ④ Post Graduat	е
level		
Residence: ① Athens ② Other		
Marital status:		
① Single ② Married ③ Divorce	ed ④ Widowed	
Children:		

Fig. 1. Economic crisis questionnaire.

1.	Do you think t	hat the economica	l crisis has a	ffected y	our pain lev	els?
	① a lot	2 moderately	3 not at	all		
2.	Did the econor	mical crisis affect	your pain tre	atment?		
	① a lot	② moderately	3 not at	all		
3.	Did you reduce	e the number of yo	our appointm	ents to th	e Pain Unit	due to
	the economica	ıl crisis?				
	① a lot	② moderately	3 not at	all		
4.	How many app	oointments did you	ı have for yo	ur pain pı	oblem durii	ng the
	last year?					
	1 more than the	hree ② two - th	iree (	③ one	4 none	e
5.	Are you conce	rned about the fac	t that in the	future you	ı may not h	ave
	access to heal	thcare facilities or	medication?	•		
	① a lot	2 moderately	3 not at	all		
6.	Has the econo	mical crisis affect	ed your quali	ity of life?	•	
	① a lot	2 moderately	③ not at	all		
7.	Did the econor	mical crisis lead to	reduction of	f your oth	er healthca	re
	appointments'	?				
	① a lot	② moderately	③ not at	all		
8.	Do you think t	hat the intensity o	f my pain wo	uld be alt	ered if you l	nad a
	better financia	l status? It would.				
	① increase	② remain th	ne same	③ ded	crease	
9.	Do you think t	hat the possibility	of losing you	ır job/inc	ome in the f	uture
	will affect the l	evel of your pain?				
	① a lot	② moderately	③ not at	all		
10	. Except for the	pain, which of the	following is	a major p	roblem for	you?
	[you can chos	e more than one]				
	① unemploym	ent ② financial is	sues ③ stre	ess about t	he future	

# RESULTS

Two hundred patients participated in the study, including 100 during each time period. The majority of patients were women (75%). Demographic characteristics of patients are presented in Table 1. No statistical differences existed regarding gender, age,

profession, level of education, residency, or marital status. Disease characteristics differed between the 2 time periods due to the initiation of headache management at the facilities of the pain unit in 2013; more patients suffering from headache were admitted during 2016 compared to 2012 (Table 1).

Table 1. Demographic characteristics of the patients participating in the study during the 2 different time periods, 2012 and 2016.

	Total n	Total %	2012 (n/%)	2016 (n/%)	test/P value
Sex					
Men Women	50 150	25 75	24/12 76/38	26/13 74/37	0.107/0.74
Profession	,	'	'	<b>'</b>	,
Retired Self-employed State employee Private employee Household Unemployed	57 19 17 27 63	28.5 9.5 8.5 13.5 31.5 8.5	25/12.5 11/5.5 9/4.5 14/7 32/16 9/4.5	32/16 8/4 8/4 13/6.5 31/15.5 8/4	1.508/0.912
Education			77.515		
Primary school High school Higher education MSc, PhD	70 82 42 6	35 41 21 3	35/17.5 41/20.5 22/11 2/0.1	35/17.5 41/20.5 20/10 4/2	0.775/0.855
Residency	_	1	1	<b>'</b>	,
Athens Other areas	174 26	87 13	86/43 14/7	88/44 12/6	1.383/0.501
Marital status					
Unmarried Married Divorced Widow/er	22 133 28 17	11 66.5 14 8.5	12/6 66/33 14/7 8/4	10/5 67/33.5 14/7 9/4.5	0.248/0.969
Clinical diagnosis					
Low back pain ± sciatica Headache Malignant pain Neuropathic pain Arthritis/musculoskeletal pain Other	79 47 14 15 16 29	39.5 23.5 7 7.5 8	53/26.5 6/3 8/4 7/3.5 6/3 20/10	26/13 41/20.5 6/3 8/4 10/5 9/4.5	44.31/0.001*

All patients completed the questionnaires without significant problems.

Most patients believed that financial strain led to a worsening of their pain symptoms (75%) and quality of life (97%), but that financial strain did not impact the frequency of their appointments, treatments for pain management, or other health care treatments (Table 2). Most patients (97.5%) also believed that the intensity of their pain would have been the same or improved if their financial status was better and that their pain would be worse if they lost their income or job. Their main concerns about the future included "the possibility of not having access to health care facilities or medication (94.5%), "stress" (43%), and "fear of financial strain" (30.5%). Survey questions and responses for the total sample of patients across both time periods, and for each time period, are presented in detail in Table 2.

With regard to personality and emotional characteristics of the patients, independent sample t tests did not reveal statistically significant differences between the 2012 and 2016 samples. However, patients reporting higher levels of anxiety, stress, and pessimism were more likely to report effects of the economic crisis on their quality of life (Table 3) and pain (Table 4).

### **Discussion**

Although the biopsychosocial model of pain management was developed in 1977 (1), there is still a gap in the literature regarding the effects of social factors – in particular, financial status – on pain behavior. The global financial crisis is currently one of the major social factors affecting quality of life, and its role in pain perception is likely to be substantial.

This study aimed to identify the impacts of a national financial crisis on pain behavior in a country sig-

Table 2. Responses of patients participating in the study during the 2 different time periods, 2012 and 2016.

	Total	l n/%	2012 (n/%)	2016 (n/%)	Test/P value
Do you think that the economic crisis has affected y	our pain levels?		`	`	
A lot	89	44.5	48/24	41/20.5	
Moderate	61	30.5	29/14.5	32/16	1.019*/0.601
Not at all	50	25	23/11.5	27/13.5	
Did the economic crisis affect your pain treatment?					
A lot	70	35	39/19.5	31/15.5	
Moderate	58	29	27/13.5	31/15.5	1.415/0.493
Not at all	72	36	34/17	38/19	
Do you think that the intensity of your pain would be	e altered if you had	d a better financial	status?		
In a positive direction	82	41	45/22	37/18.5	
It would be the same	111	55.5	53/26	58/29	0.545/0.427
In a negative direction	7	3.5	3/1.5	4/2	
Do you think that the possibility of losing your job/i	ncome in the futur	re will affect the lev	vel of your pain?		
A lot	96	52.2	61/33.2	35/19	
Moderate	44	23.9	17/9.2	27/14.7	0.018*/0.018
Not at all	44	23.9	22/12	22/12	
Did you reduce the number of your appointments to	the Pain Unit due	to the economic c	risis?		
A lot	24	12	14/7	10/5	
Moderate	39	19.5	19/9.5	20/10	0.761/0.693
Not at all	137	68.5	67/33.5	70/35	
How many appointments did you have for your pair	problem during the	ne last year? (%)			
>3	100	50	43/21.5	57/28.5	
2-3	58	29	26/13	32/16	17.137/0.001*
1	19	9.5	11/5.5	8/4	
	23	11.5	20/10	3/1.5	
Are you concerned about the fact that in the future y	,	ı	I		I
A lot	168	84	89/44.5	79/39.5	
Moderate	21	10.5	5/2.5	16/8	6.746/0.034*
Not at all	11	5.5	6/3	5/2.5	
Did the economic crisis lead to reduction of your ot	1	I	T		I
A lot	34	17	16/8	18/9	
Moderate	51	25.5	24/12	27/13.5	0.512/0.774
Not at all	115	57.5	60/30	55/27.5	
Has the economic crisis affected your quality of life?		I	I .		I
A lot	133	66.5	66/33	67/33.5	0.050/0.050
Moderate	62	31	32/16	30/15	0.273/0.872
Not at all	5	2.5	2/1	3/1.5	
Except for the pain , which of the following is a major	1	T T	115	<b>5</b> /2 -	
Unemployment	9	4.5	4/2	5/2.5	
Financial None	61 10	30.5 5	25/12.5 2/8	36/18	0.000*/0.000*
None Stress about the future	86	43	38/19	1/4 48/24	0.000*/0.000*
All	34	17	31/15.5	3/1.5	
1111	71	1/	51/15.5	3/1.3	

nificantly affected by it over the past decade. The study assessed patients' perceived impacts of the financial crisis on pain and other quality of life indicators during 2 different time periods, with the goal of comparing the impacts of the economic recession at the "beginning" compared to the "deepening" of the crisis, during

which the effects of possible adjustment mechanisms may have manifested. The study was performed in one of the largest University Hospitals in Greece, within a very active pain unit that handles over a hundred outpatient appointments monthly addressing multiple kinds of chronic pain. Therefore, the sample can be

Table 3. Differences between depression, anxiety, stress, and optimism for the total sample according to the self-reported effect of the economic crisis on quality of life and between the 2 time periods (2012/2016)

Test/effect on quality of life		N	М	SD	Mean difference	P value
	A lot	87	18.48	12.81		
	Moderate	60	13.88	9.71	4.60*	0.034*
Depression	Not at all	50	7.72	7.26	10.76*	0.000*
	Total 2012/2016	197 100/97	14.35 14.8/13.9	11.51 11.1/11.9	F=16.11 t=0.568	0.000* NS
	A lot	85	16.62	11.37		
	Moderate	60	12.12	7.99	4.51*	0.015*
Anxiety	Not at all	49	01/07/55	6.99	9.07*	0.000*
	Total 2012/2016	194 98/96	12.94 12.7/13.2	10.08 9.8/10.4	F=14.72 t=-0.312	0.000* NS
Stress	A lot	87	20.89	11.59		
	Moderate	61	15.89	9.02	5.01*	0.023*
	Not at all	50	01/11/70	8.99	9.19*	0.011*
	Total 2012/2016	198 100/98	17.03 18.2/15.9	10.85 10.9/10.8	F=13.38 t=1.484	0.000* NS
LOTR	A lot	89	12.47	5.27		
	Moderate	61	01/12/98	5.26	-0.51	1000
	Not at all	50	15.78	3.54	-3.31*	0.001*
	Total 2012/2016	200 100/100	13.46 13.2/13.7	5.06 4.9/5.3	F=7.72 t=-0.600	0.001 NS

F for one-way analysis of variance ANOVA (total sample) and t for independent sample t test (between the 2 time periods). \*Statistically significant result. Mean difference was estimated for ANOVA with Dunnett t tests which treat one group as a control and compare all other groups against it.

Table 4. Difference between depression, anxiety, stress, and optimism for the total sample according to the self-reported effect of the economic crisis in pain.

Test/effect of crisis in pain		N	Mean	Std. Deviation	Mean difference	P value
	A LOT	87	18,48	12,81	10.76*	0.000*
Dommoodom	MODERATE	60	13,88	9,71	6.16*	0.006*
Depression	NOT AT ALL	50	7,72	7,26		
	Total	197	14,35	11,51	F=16.111	0.000*
	A LOT	85	16,62	11,37	9.07*	0.000*
A	MODERATE	60	12,12	7,99	4.56*	0.023*
Anxiety	NOT AT ALL	49	7,55	6,99		
	Total	194	12,94	10,08	F=14.722	0.000*
	A LOT	87	20,89	11,59	9.19*	0.000*
C4	MODERATE	61	15,89	9,02	4.18	0.059
Stress	NOT AT ALL	50	11,70	8,99		
	Total	198	17,03	10,85	F=13.380	0.000*
Optimism	A LOT	89	12,47	5,27	-3.31*	0.000*
	MODERATE	61	12,98	5,26	-2.79*	0.006*
	NOT AT ALL	50	15,78	3,54		
	Total	200	13,46	5,06	F=7.722	0.001*

F for one-way analysis of variance ANOVA \*statistically significant result. Mean difference was estimated with Dunnett t tests which treat one group as a control and compare all other groups against it.

considered adequately representative of patients with chronic pain, especially those living in the capital. Most patients who participated in this study were middle-aged women who were retired or household-occupied, of lower or middle education, and married with children. The predominance of women in our sample was expected since most patients visiting the pain unit are women. Our patients were found to experience pain mainly of nonmalignant origin, with low back pain and headache being the most common diagnoses.

The majority of patients believed that the economic crisis did affect their pain levels, leading to worsening of their symptoms and their quality of life. However, they did not reduce their appointments, treatments for pain management, or other health care visits. In fact, the study noted an increase in the number of appointments from the first to the second study period, which could be explained either by patients' urgent need to feel more "secure" about their health care - reflected in more frequent visits to the pain management team - or to increased pain levels. Our results suggest that pain levels were no higher as the crisis deepened, so it is more likely that stress and insecurity explain the increase in number of appointments. Regardless of the cause, the increase in health care visits for pain management is problematic, since the facilities of the pain unit remained the same. So, as the crisis leads to stress and insecurity, this is followed by a problem in health care facilities, especially in chronic pain management, where the psychological disturbance may be even greater.

It is interesting that most people believed that "the intensity of their pain would be the same or better if their financial status was better," a fact that is most likely related to chronic stress. Indeed, the main concerns of patients about the future were "the possibility of not having access to health care facilities or medication," in addition to a vague sense of "stress for the future" and "fear of worsening financial strain." Personality characteristics were also very important findings of this study, indicating that the greater the anxiety, stress and pessimism of patients, the more likely they were to repord an effect of the crisis on their pain and quality of life.

Literature supports this significant impact of psychosocial factors on pain. Rates of psychiatric comorbidities such as anxiety, depression, substance misuse, and insomnia are 2 to 7 times greater in people with chronic pain compared to the general population (2,14). The major psychological factors that have been

identified to influence pain include fear & avoidance behavior, catastrophizing, guarding, excessive bed-rest, negative cognitions and beliefs, low self-efficacy, low readiness to change, helplessness, and lack of acceptance. However, information regarding the influence of social factors is lacking (2).

Most studies report that social workload and conflict do influence the overall experience of pain, but studies investigating only the effects of financial status are too limited (2,14,19-21). An extensive survey of 8,970 employees over 40 years of age revealed that chronic and disabling pain were associated with lower social status, suggesting that lower financial status may influence the experience of pain (14). Similarly, the British Birth Cohort Study revealed that the prevalence of chronic pain at 45 years of age was increased 3-fold when adult and childhood social classes were lower (21). Jordan et al (20) also investigated the effects of socioeconomic status on pain and found that pain interference was increased with perceived financial strain, in addition to psychological disturbances such as anxiety and depression. Bonathan et al (2), in a similar review of literature from 1998-2013 regarding the overall effects of financial issues on pain, revealed that individuals with lower socioeconomic status were more disabled and distressed, and were also more likely to develop chronic pain; these effects were also associated with psychological factors, lifestyle, and occupational conditions. In our study, most people believed that the crisis "did affect their pain levels," leading to a worsening of their symptoms and their quality of life. Although these effects were self-reported, without objective measurements, this finding sheds light on how people think about financial issues with respect to how these issues impact their lives. Additionally, it supports existing evidence that stressful psychosocial environments are associated with a higher likelihood of reporting pain, with patients suffering from chronic pain in particular seemingly even more vocal (22,23).

A closer examination of our study sample is revealing with regard to financial and social status: 28.5% of our patients were retired, either due to age or disability, thus relying on social compensation; 31.5% were women, taking care of the household, with no personal income, no access to benefits, and no vocation; 8.5% were able to work, but were currently unemployed; and only 31.5% were currently employed, having a steady income. In summary, approximately two thirds of the study population experienced tremendous financial pressure and social seclusion. There

has been an increasing number of meta-analysis studies exploring the consistent, statistically significant associations found between financial compensation, surgery outcomes (24,25), and long-term symptom relief and functionality (26). The meaning and significance of these findings need to be revisited in contemporary Greece, a country under financial and social strain, in which social benefits and worker compensation have shrunk dramatically.

The mechanisms of effect linking these 2 issues, financial strain and pain, are still to be explored. One hypothesis is that chronic stress might be the causal mechanism, since all kinds of social threats raise anxiety and stress. The provoked chronic metabolic alterations, including increased stress hormones and altered metabolism, have been linked with chronic diseases, such as cardiovascular disorders, immunological disorders, diabetes, cancer, and now, probably pain (2). The accompanying poor working conditions or unemployment, lower education, and decreased access to health care are additional factors that exacerbate the impact of that stress. The findings of our study are consistent with current literature (2), indicating that chronic stress, as measured by the DASS-42, may be linked to an increased expression of pain and a greater effect of financial strain on patients' quality of life. The greater the anxiety and stress perceived by the patients, the more likely they were to report a negative effect of the crisis on their pain and quality of life.

Fear of the future may be another mechanism linking economic stress and pain. Patients' main concerns about the future related to health care, including "the possibility of not having access to health care facilities or medication" in addition to more general "stress and fear of financial strain". Beliefs about the future, perceived ability to control pain and subsequently quality of life, and beliefs of self-efficacy and self-worth are important determinants of psychological functioning and pain perception (27). The increase in the number of patient visits to the pain unit despite the crisis could reflect patients' efforts to achieve control over their pain and quality of life. Although these visits occurred at a public hospital, free of charge, the transportation expenses and the loss of time required for the visit are still considerable costs that, evidently, patients considered worth taking. The social angst and fear of the future that people experience during the crisis may be reflected in patients' beliefs that their pain levels are higher. Fear can be a key emotion in chronic pain patients. Fear of the future and fear of avoidance of activities seem

to be inter-related as well. McCracken t al (28) have indicated that people with pain symptoms who are exposed to a fearful situation experience a cascade of negative emotions and cognitions, such as worry, avoidance behaviors, and exacerbation of perceived pain. Fear is also associated with work loss and poor work performance (29). It would be interesting to revisit the meaning of these findings in a crisis situation in which fear has become a societal variable and people's access to work and financial resources is impaired.

Patients' health- and health care-related concerns about the future in the context of economic crisis seem to be well-founded. A systematic review investigating the effects of the crisis on several areas of health in Greece from 2009 until 2013 revealed that it had a significant impact on four major dimentions: mental health was significantly affected, with rates of major depression 2.6 times higher during 2011 compared to 2008; the suicide rate increased by more than 25%; there were acute and chronic infectious disease outbreaks; and there was a significant deterioration of self-rated general health (4). At the same time, consequences to health care facilities included increased requirements for public health care; increased number of patients without insurance; and major alterations in the pharmaceutical market, including prescription policies (4). Self-rated health status has significantly deteriorated, with more people reporting their health as "bad" and linking this effect with financial strain and unmet medical needs (13,18,30,31). Most people reported difficulties in accessing public or private health care facilities, and faced increased waiting time for assessement despite living in large urban centers.

Similar findings have been reported in other countries that have been affected by the crisis. In Portugal, increased unmet medical needs were recorded between 2010 and 2012, with financial barriers being the major cause for the inability of people to seek health care (32,33). Similarly, in Spain, the crisis had a significant impact on many basic health care facilities, particularly those that serve the most vulnerable parts of the population (34). Impacts of the economic crisis on mental health and suicidality have been reported in Greece, Italy, the United Kingdom, and more (9-12, 31-39). Since the financial crisis is a global situation, countries such as the United States cannot be excluded, especially in an era of medication overuse (e.g., opioids and other controlled substances). The increased perception of pain, and the alteration of pain behavior due to financial disability, may contribute to this overuse,

as suggested by studies that have shown correlations between psychological vulnerability, stress, pain, fear for the future, and addictive behavior (37,40).

The interventions required to help patients cope with financial strain point in two directions. On one side of the spectrum are psychological interventions to modify stress-related behaviors; on the other side are social interventions based on the recommendations of the World Health Organization (37). Increased awareness of the problem and development of measures to facilitate increased access to pain services are critical next steps. Education of health care professionals in the fundamentals of pain management is also essential, so that the pain problem is being addressed not only within specialized pain centers, but also in the primary care setting.

#### CONCLUSION

To conclude, this study identified an impact of the current financial crisis on chronic pain issues, in the context of a country that has been, and continues to be, seriously affected by it. Findings promote a rethinking of the impact of social issues on pain itself and of the fundamental position of the multimodal approach in pain management. The application of the biopsychosocial model in all aspects of patient care is once again identified as basic for the provision of care in patients with chronic pain. There is an urgent need to rethink and encourage a public debate on all areas of health care provision related to pain management, including education, diagnosis, management, and cost, with the aim of promoting the welfare of citizens across the

### REFERENCES

- Engel GL. The clinical application of the biopsychosocial model. Am J Psychiatry 1980; 137:535-544.
- 2. Bonathan C, Hearn L, de Williams A. Socioeconomic status and the course and consequences of chronic pain. *Pain Manage* 2013; 3:159-162.
- Linton SJ, Shaw WS. Impact of psychological factors in the experience of pain. Phys Ther 2011; 91:700-711.
- 4. Simou E, Koutsogeorgou E. Effects of the economic crisis on health and healthcare in Greece in the literature from 2009 to 2013: A systematic review. *Health Policy* 2014; 115:111-119.
- Fanourgiakis J, Kanoupakis E. Catastrophic healthcare expenditure during economic recession in the field of cardiovascular disease. Expert Rev Pharmacoecon Outcomes Res 2014; 14:5-8.
- Tsiligianni IG. COPD patients trapped in the financial crisis in rural Crete. Lancet Respir Med 2013; 1:e31-e32.
- Karamanoli E. Financial crisis harms respiratory health in Greece. Lancet Respir Med 2013; 1:511-512.
- 8. Bonovas S, Nikolopoulos G. High-burden epidemics in Greece in the era of

- economic crisis. Early signs of a public health tragedy. *J Prev Med Hyg* 2012; 53:169-171.
- Economou C, Kaitelidou D, Kentikelenis A, Sissouras A, Maresso A. The impact of the financial crisis on the health system and health in Greece. European Observatory on Health Systems and Policies. World Health Organization 2014. Available at www.euro.who.int/\_\_data/assets/pdf\_ file/0007/266380/The-impact-of-thefinancial-crisis-on-the-health-systemand-health-in-Greece.pdf
- Economou M, Madianos M, Theleritis C, Peppou LE, Stefanis CN. Increased suicidality amid economic crisis in Greece. Lancet 2011; 22:378:1459.
- Economou M, Madianos M, Peppou LE, Patelakis A, Stefanis CN. Major depression in the era of economic crisis: A replication of a cross-sectional study across Greece. J Affect Disord 2012; 145:308-314.
- Stavrianakos K, Kontaxakis V, Moussas G, Paplos K, Papaslanis T, Havaki-Kontaxaki B, Papadimitriou G. Attempted suicide during the financial crisis in Athens. Psychiatriki 2014; 25:104-110.
- 13. Zavras D, Zavras A, Kyriopoulos II, Kyri-

- opoulos J. Economic crisis, austerity and unmet healthcare needs: The case of Greece. *BMC Health Serv Res* 2016; 16:309.
- Gaastamoninen P, Leini-Arjas P, Laaksonen M, Lahelma E. Socio-economic differences in the prevalence of acute, chronic and disabling chronic pain among ageing employees. *Pain* 2005; 114:364-371.
- 15. Rosner B. Fundamentals of Biostatistics. 7th ed. Boston, MA: Brooks/Cole; 2011.
- 16. Lyrakos NG, Arvaniti C, Smyrnioti M, Kostopanagiotou G. Translation and validation study of the depression anxiety stress scale in the Greek general population and in a psychiatric patient's sample. Eur Psychiatry 2011; 26:1731.
- 17. Lyrakos GN, Damigos D, Mavreas V, Georgia K, Dimoliatis IDK. A translation and validation study of the life orientation test revised in the Greek speaking population of nurses among three hospitals in Athens and Ioannina. Soc Ind Res 2009; 95:129-142.
- Zavras D, Tsiantou V, Pavi E, Mylona K, Kyriopoulos J. Impact of economic crisis and other demographic and socio-

- economic factors on self-rated health in Greece. *Eur J Public Health* 2013; 23:206-210.
- 19. Mitchell D, O'Donnell M. Institute for Safety, Compensation and Recovery Research & Australian Centre for Posttraumatic Mental Health. Psychosocial interventions for chronic pain: A snapshot review, July 2011. Assessed online at www.tac.vic.gov.au/\_data/assets/ pdf\_file/0003/125409/Chronic-Pain-Evidence-Review.pdf
- Jordan KP, Thomas E, Peat G, Wilkie R, Croft P. Social risks for disabling pain in older people: A prospective study of individual and area characteristics. *Pain* 2008; 137:652-661.
- Macfarlane GJ Norrie G, Atherton K, Power C, Jones GT. The influence of socioeconomic status on the reporting of regional and widespread musculoskeletal pain: Results from the 1958 British Birth Cohort Study. Ann Rheum Dis 2009; 68:1591-1595.
- 22. Hoogendoorn WE, van Poppel MN, Bongers PM, Koes BW, Bouter LM. Systematic review of psychosocial factors at work and private life as risk factors for back pain. Spine (Phila Pa 1976) 2000; 25:2114-2125.
- 23. Blyth FM, Macfarlane GJ, Nicholas MK. The contribution of psychosocial factors to the development of chronic pain: The key to better outcomes for patients? Pain 2007; 129:8-11.
- Harris I, Mulford J, Solomon M, van Gelder JM, Young J. Association between compensation status and outcome after surgery: A meta-analysis. JAMA 2005; 293:1644-1652.
- Cheriyan T, Harris B, Cheriyan J, Lafage V, Spivak JM, Bendo JA, Errico TJ, Goldstein JA. Association between com-

- pensation status and outcomes in spine surgery: A meta-analysis of 31 studies. *Spine J* 2015; 15:2564-2573.
- Fujihara Y, Shauver MJ, Lark ME, Zhong L, Chung KC. The effect of workers' compensation on outcome measurement methods after upper extremity surgery: A systematic review and meta-analysis. Plast Reconstr Surg 2017; 139:923-933.
- Turq DC, Okifuji A. Psychological factors in chronic pain: Evolution and revolution. J Consult Clin Psychol 2002; 70:678-690.
- McCracken LM, Gross RT, Sorg PJ, Edmands TA. Prediction of pain in patients with chronic low back pain: Effects of inaccurate prediction and pain-related anxiety. Behav Res Ther 1993; 31:647-652.
- Waddell G, Newton M, Henderson I, Somerville D, Main CA. Fear-Avoidance Beliefs Questionnaire (FABQ) and the role of fear-avoidance beliefs in chronic low back pain and disability. *Pain* 1993; 52:157-168.
- Kentikelenis A, Karanikolos M, Papanicolas I, Basu S, McKee M, Stuckler D. Health effects of financial crisis:
   Omens of a Greek tragedy. Lancet 2011; 378:1457-1458.
- Kyriopoulos II, Zavras D, Skroumpelos A, Mylona K, Athanasakis K, Kyriopoulos J. Barriers in access to healthcare services for chronic patients in times of austerity: An empirical approach in Greece. Int J Equity Health 2014; 25:13-54.
- 32. Legido-Quigley H, Karanikolos M, Hemandez-Plaza S, de Freitas C, Bernardo L, Padilla B, Sa Machado R, Diaz-Ordaz K, Stuckler D, McKee M. Effects of the financial crisis and troika austerity measures on health and health care access in Portugal. *Health Policy* 2016;

- 120:833-839.
- Stuckler D, Basu S, Suhrcke M, Coutts A, McKee M. Effects of the 2008 recession on health: A first look at European data. Lancet 2011; 378:124-125.
- 34. Cortes-Franch I, Gonzalez Lopez-Valcarcel B. The economic-financial crisis and health in Spain. Evidence and viewpoints. SESPAS report 2014. Gac Sanit 2014; 28:1-6
- Penchansky R, Thomas JW. The concept of access: Definition and relationship to consumer satisfaction. Med Care 1981; 19:127-140.
- Fanourgiakis J, Kanoupakis E. Catastrophic healthcare expenditure during economic recession in the field of cardiovascular disease. Expert Rev Pharmacoecon Outcomes Res 2014; 14:5-8.
- WHO. The financial crisis and global health. Report of a high-level consultation. Geneva, World Health Organization 2009. Available at www.who.int/ mediacentre/events/meetings/2009\_financial\_crisis\_report\_en\_.pdf)
- 38. UNICEF. Report on the situation of children in Greece. Athens, Hellenic UNICEF Committee 2016. Available at www.unicef.gr/uploads/filemanager/PDF/2016/children-in-greece-2016-eng. pdf
- 39. Human Rights Watch. Global state to pain treatment. Access to palliative care as a human right. 2011. Assessed online at www.hrw.org/sites/default/files/reports/hhro511W.pdf
- Kolodny A, Courtwright D, Hwang C, Kreiner P, Eadie J, Clark T, Alexander C. The prescription opioid and heroin crisis: A public health approach to an epidemic of addiction. Annu Rev Public Health 2015; 36:559-574.

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