

Depression and economic hardship across Greece in 2008 and 2009: two cross-sectional surveys nationwide

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Abstract

Purpose In many western countries during the recent years, people have witnessed the deterioration of their economies and the emergence of related phenomena such as loss of property, unemployment and social disruption. These phenomena have also been associated with increasing levels of demoralization and the developing of major depressive episodes (MDE). Greece in the years 2008 and mainly in 2009 started facing a sharp economic decline. The purpose of this study was to explore the consequences of this condition and the ways are reflected in the prevalence of MDE during these two critical years.

Method Two nationwide cross-sectional telephone surveys were carried out in 2008 and 2009 with representative samples of 2,197 and 2,192 respondents, respectively. The interview comprised the SCID I module of MDE and an Index of Personal Economic Distress (IPED).

Results The 1-month prevalence of MDE in 2009 was found to be 6.8%, compared to corresponding rates of 3.3% in 2008. Respondents facing serious economic hardship (with higher scores in IPED) were mostly at risk for developing an MDE.

Conclusions The findings of both studies underline the significance of the risk involved in developing MDE when individuals have been exposed in extreme and stressful economic situations.

Keywords Major depressive episodes · Poverty · Low income · General population

Introduction

In the epidemiology of depression, a consistent finding is the association of the prevalence rates of affective disorders with specific social and demographic factors, such as gender, age, marital status, place of residence, social mobility [1–14].

Certain economic variables such as income, employment, social class and other such as the quality of life and social support are also causally related to depression [15–20].

In Greece, previous cross-sectional, nation wide, studies on the prevalence of depressive symptoms and depression have also shown an association between sociodemographic and economical factors namely income and employment status [21–23].

In many western countries during recent years, individuals have witnessed prolonged recession of the economy, the loss of property and jobs as well as social disruption and increasing deterioration of quality of life and well-being [24–26]. These adverse phenomena were significantly associated with health and mental health problems, and particularly with depression [24–37].

Despite the large volume of studies that have documented the association of depression with several social and economical factors, limited information is available about the development of depressive disorders among individuals experiencing personal economic distress.

Although in 2008, Greek economy was listed as the 27th largest economy of the world by nominal Gross Domestic Product (GDP) with 32,100 USD GDP per capita [38], in

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the recent years poverty was reported as one of the major social problems the country was facing [39]. According to official sources and the European Commission data, in 2007, a 23% of Greek citizens (2.2 million people) had an income below the threshold of 60% of the national median income, while in the EU the corresponding proportion was 14% [39]. Greece and Ireland nowadays have the highest poverty rate among the 15-member states of EU. In Greece, a single-member household is considered to be at risk of poverty when its annual income does not exceed €4,264 against the average of €8,319 in the 15-member states of EU [40]. In this category of people classified as “poor” belonged: the 33% of persons over 65 years of age; the 25% of pensioners; the 34% of single-parent families; the 46% of the unemployed persons as well as the 27% of people living in rural areas.

In 2008, as a result of the international financial crisis and the local continual and uncontrolled spending, Greek economy started facing a socioeconomic turmoil with unemployment rates exceeding 10%. This situation has affected many sectors of Greek society as well as the everyday life of great segment of its population. In the period between December 2008 and January 2009, this situation was further aggravated by the outburst of extensive social unrest and street riots, which caused property loss of 2.1 billion Euros, in Greater Athens area and six other major cities. In 2009, the economic crisis comprised even largest population segment in the category of economically disadvantaged. This picture appears even worse in 2010.

This paper presents and discusses the results of two nationwide, cross-sectional surveys. The first one was conducted in the beginning of 2008, before the downturn of the economy and the “December riots”. It was planned in order to investigate the prevalence of major depressive episodes (MDE) and compare its findings with those of the first nationwide prevalence study in the country 30 years ago [21]. The second survey, a replication of the 2008 one, was conducted a year later (2009), and was initiated by the above-described abrupt recession of the economy and the events that took place as a result of this. Its purpose was to delineate possible causal associations between economic factors and the prevalence of depression in this critical period.

The aim of this study was to answer the following questions:

- What are the differences in the prevalence rates of major depression (a) between the years 2008 and 2009; and (b) in the period of last 30 years?
- What are the association between the personal economic hardship and the diagnosis of major depression?
- What are the predictors of developing a major depression during the period of 2008–2009?

Methods

Methodological note

The method of a telephone-based survey was chosen for two main reasons. One was to minimize the personal involvement and possible stigma-related effect that could occur during a face-to-face interview in a home survey. The anonymity of a telephone interview facilitates the expression of inner feelings and prevents possible phenomena of response bias. The second reason was the feasibility of the study given the fact that a telephone-based survey was of low cost, compared to a home face-to-face survey, given the limited resources of this research project. The method of a telephone-based survey on health or mental health issues has been considered as reliable and valid [41, 42]. This research approach was chosen by several investigators [41–45]. Some epidemiological surveys on depression and other mental disorders have also used this method of telephone-based interviews [46–48].

Both studies received approval from the University Mental Health Research Institute, Medical School, University of Athens and its Research Ethics Committee. After an oral informed consent was obtained from the participant, the interviewer initiated the interview over the phone. The structured interview questions were stored centrally, recalled in programmable sequences and displayed for each of the 20 interviewer’s computer terminal. Each interviewer entered the answers received by the telephone interview directly in his/her computer. This method made possible call backs. It is of note that this interview approach is similar to the one reported by Ketola and Klockars [49].

All interviews were carried out by well-trained interviewers being graduates in social sciences. The training included 60 h with lectures, role playing and pilot interviews by the phone which were taped and reexamined. Both 2008 and 2009 surveys used the same interviewers.

Sampling

Greece has a population of 11.3 million people in 4.3 million households, and full telephone coverage consisting of 7.2 million residential lines. The samples were selected from national phone-number databanks. Only telephone numbers belonging to individuals were included in the studies, and numbers of businesses or public services were excluded. Both surveys were carried out by a commercial company working in the field of demographic surveys, under the close guidance of both the authors and researchers in the field of mental health.

The first telephone survey of adults aged between 18 and 69 years in the general population was conducted from 1 February to 30 March 2008. Responses to 2,977 calls were as follows: 2,197 (73.8) successfully completed interviews, 328 (11.0) hung up immediately and 452 (15.1) refused to be interviewed or did not complete the interview. The cooperation in the study reached a rate of 73.8%. The sample consisting of 1,079 males and 1,118 females was weighted according to gender, age, and place of residence distribution, as reported by the 2001 population census. With a 95% confidence level, the maximum sampling error was $\pm 2.09\%$.

The second telephone survey of adults was carried out from 12 February to 4 April 2009. Responses to calls made were similar to those obtained in the 2008 study. The sample included 1,080 males and 1,112 females. Refusals reached 17.8% based on the valid calls to a household telephone number. The maximum sampling error was $\pm 2.12\%$ with 95% confidence limits.

The proportion of refusals in both studies is acceptable in view of the rates of non-participation in cross-sectional studies [48].

In Table 1, the sociodemographic characteristics of the samples of the survey of 2008 and of that of 2009, compared to those of the population census of 2001 in Greece, are presented.

Apparently, the comparison of social and demographic characteristics of both samples is almost similar with that of the 2001 population census and in some of them identical. In 2008, the average age of males and females was found to be 38.90 (± 1.51) and 37.37 (± 1.68), respectively. In 2008, the corresponding mean ages were 37.81 (± 1.62) for male and 36.96 (± 1.51) for female respondents.

Measures

The interview questions covered sociodemography, the SCID I module for the detection of MDE (1 month) [50], the suicidal behavior including attempted suicide, previous help-seeking, use of psychotropic medication, and previous admission in psychiatric setting.

In both surveys, an index on personal possible economic distress was included. Variations of items on economic hardship have been usually used in household surveys on social and political issues in Greece.

The order in which the data were gathered in the interview was first the collection of information on sociodemographics and the economical condition of the respondents and second the detection of possible MDE.

Table 1 Sociodemographic characteristics of the samples of 2008 and 2009 compared to those of the population census of 2001

Variables	2008		2009		2001
	N	%	N	%	%
Males	1,079	49.1	1,080	49.3	46.8
Females	1,118	50.9	1,112	50.7	54.2
Total	2,197	100.0	2,192	100.0	100.0
Age groups					
<24	186	8.4	210	9.6	9.2
25–34	400	18.2	411	18.7	19.8
35–44	290	13.2	325	14.8	16.2
45–54	516	23.5	452	20.6	19.4
55–64	413	18.8	384	17.5	16.0
>65	392	17.8	409	18.6	18.4
Marital status					
Single	377	17.2	486	22.2	21.0
Married	1,588	72.7	1,487	67.8	70.0
Widowed	129	5.9	123	5.9	7.1
Divorced	87	4.0	96	4.3	3.0
Education (years)					
<11	1,196	54.4	1,077	49.1	61.0
12	794	36.1	813	37.1	28.0
>13	207	13.5	302	13.8	11.0
Place of residence					
Athens greater area	889	40.5	808	36.9	39.3
Thessalonica and central Macedonia	282	12.8	275	12.5	15.0
Rest of country	1,026	46.7	1,109	50.6	45.7
Occupation					
Professionals/business owner	68	3.1	74	3.4	3.0
Employees/med. bus. own.	71	3.2	83	3.8	6.0
Clerks/small bus. own.	290	13.2	238	10.8	11.0
Skilled workers	659	30.0	629	28.7	25.0
Unskilled workers	351	16.0	378	17.2	20.0
Pensioners	330	15.0	370	16.9	15.1
Students	65	2.9	89	4.0	4.0
Housekeepers	329	14.9	331	15.1	14.9
Employed	1,304	91.0	1,184	84.4	94.0
Unemployed	130	9.0	218	15.6	6.0

National Statistical Service of Greece: population census of 2001

The reliability of interview with SCID I

Firstly, SCID I has been standardized in the Greek population samples and has been used extensively in several clinical and epidemiological studies [51–53].

An interrater study in the beginning of 2008 was conducted to test the reliability of diagnostic judgments by lay interviewers. A number of 100 individuals, including

persons suffering from MDE, having accepted to be interviewed by 10 out of 20 interviewers were randomly selected. The same respondents agreed to be interviewed by five psychiatrists in a second time. The rate of agreement on diagnosis reached 88% (intraclass correlation coefficient 0.82).

The validity of MDE diagnosis

To avoid the possibility of detecting false positive and negative cases, a 30% of the true negative and true positive MDE cases of the 2008 final sample were re-interviewed in a week period. The sensitivity and specificity rates were 89 and 92%, respectively. Similar findings were obtained in 2009.

The construction of the Index of Personal Economic Distress (IPED)

Based on previous demographic studies, carried out in Greece, eight items were selected related to personal economic functions. The IPED ratings on the eight items were made on a three-point scale incorporating the dimensions of frequency, ranging from never (1), sometimes (2), and often (3). The scores range from 8 “no economic problems” to 24 “serious problems”. All items covered the period of the last 6 months.

The scale’s internal consistency with the correlation of each item with the remainder of the scale and coefficient alpha (α) was computed and provided statistically significant α exceeding 0.50 (Table 2).

The concurrent validity of the IPED was tested against the Social Economic Status (SES) of respondents, as an external criterion, by the use of Receiver Operator Characteristic Curve (ROC) analysis. The SES categorized the total sample into four categories based on education level and prestige of the reported occupation. The category of

students was excluded from the analysis. “Housekeepers” being females were included according to their husband’s occupation. Pensioners were also part of the analysis based on their previous reported occupation. For analytical reasons, the SES categories were merged into two.

The ROC explains the probability of a false positive one, with the identification of the best cut-off point to produce the high values of sensitivity and specificity.

The ROC curve provided the best cut-off point of 15 to produce the best values of sensitivity (78%; true cases in economic distress) and specificity (85%; true cases of economically well-being).

The average values of IPED score (8.99 ± 3.38) of the total sample in 2008 were found to be lower than those (10.54 ± 3.3) of the 2009 study, at statistically significant level. The same differences were observed among the males and females between the two surveys (data not shown). It seems that more respondents in the 2009 study were financially distressed than their counterparts of the 2008 survey.

Statistical methods

Data were shown as (1) percentages for categorical variables with a Chi-square with Yates correction tests used, (2) means and standard deviations with a Student’s *t* test for continuous measures.

Internal consistency of the IPED with correlation of each item with the remainder of the index and coefficient alpha (α) was computed. Independent variables including the IPED score were selected for entry into logistic regression analysis on the basis of their predicting power on the diagnosis of MDE as dichotomized-dependent variable, namely “depressed”/“non-depressed” cases.

The statistical analysis was performed by the application of the Statistical Package for Social Sciences XIII [54].

Table 2 Index of Personal Economic Distress: each item and total scale average scores

Item	2008		2009	
	\bar{x} (SD)	α	\bar{x} (SD)	α
1. Unable to pay the public utility/bills regularly (electricity, telephone, etc.)	1.12 (0.38)	0.72	1.15 (0.41)	0.70
2. Difficulties in paying installments of bank loans	1.10 (0.39)	0.74	1.45 (0.60)	0.75
3. Not capable of paying the minimum installment of credit card	1.19 (0.52)	0.69	1.88 (0.75)	0.72
4. Delaying to pay the rent	1.12 (0.43)	0.70	1.25 (0.55)	0.69
5. Not enough money to be spent for leisure activities	1.09 (0.36)	0.63	1.66 (0.68)	0.68
6. Cannot afford the expenses for clothing, etc.	1.11 (0.41)	0.54	1.22 (0.48)	0.44
7. Paying the minimum for food, beverages, etc.	1.10 (0.55)	0.66	1.17 (0.43)	0.69
8. Missing of paying installment for the purchase of a car or other significant assets	1.08 (0.33)	0.61	1.24 (0.52)	0.48
Total	8.99 (1.98)	0.81	10.54 (2.15)	0.79

Internal consistency reliability results: Cronbach’s α in 2008 and 2009

Results

Prevalence and correlates of MDE

The 1-month prevalence rates of MDE in 2008 among the males and females were 2.4 and 3.8%, respectively.

In 2009, the overall corresponding rates were much higher than those of 2008, at statistically significant level ($p < 0.0001$). The 1-month prevalence rates of MDE were 6.8% (males 4.6%, females 8.8%), differences statistically significant ($p < 0.0001$).

The same differences in the rates of MDE in almost all sociodemographic variables among the respondents of surveys 2008 and 2009 are observed (Table 3).

Females in both surveys, older persons, the widowed and divorced, the less educated, the respondents living in the greater Athens area, the people of low SES and the unemployed have been identified as suffering from higher rates of 1-month MDE than those in the other demographic categories in both surveys.

Severity of MDE

With a criterion the presence of seven or more core depressive symptoms including suicidal ideation, during the past month, 1 and 2.8% of the total identified cases suffering from MDE, in 2008 and 2009, respectively, were characterized as severe ones (data not shown).

The personal economic hardship and MDE

With a cut-off 15 in the IPED, the average number of core depressive symptoms (from one to nine) as reported by each respondent, in both studies in 2008 and 2009, was found much higher among the persons with scoring levels between 15 and 24, meaning a personal state of economic distress, than in the category “no or few problems” with scoring levels ranging from 8 to 14 (Table 4). This average number of symptoms refers to the total samples as well as to the male and female populations.

The predictors of MDE

Finally, the logistic regression results with the dependent variable of that of diagnosis dichotomized into depressed/non-depressed cases are given in Table 5.

All the sociodemographic variables, the IPED score, previous help-seeking from a mental health specialist and medication used as well as any previous admission to inpatient service, were entered the analysis as independent variables.

The odds ratios for the association of MDE with sociodemographic variables showed that females were more likely (1.54 times) to suffer from MDE than their male

Table 3 One-month prevalence of Major Depression Episode by gender, age groups, marital status, education, place of residence and socioeconomic and employment status in the surveys of 2008 and 2009

Variables	1 month	
	2008 (<i>n</i> = 2,197), % (SE)	2009 (<i>n</i> = 2,192), <i>N</i> % (SE)
Gender		
Males	2.4 (0.9)	4.6 (0.1) ¹
Females	3.8 (0.3)	8.8 (0.2) ³
Total	3.3 (0.1)	6.8 (0.2) ³
Age groups		
<24	3.3 (0.7)	6.2 (0.3) ⁴
25–34	3.8 (0.1)	7.0 (0.4) ^{NS}
35–44	3.4 (0.7)	5.2 (0.3) ^{NS}
45–54	1.7 (0.3)	8.3 (0.5) ²
55–64	2.7 (0.4)	3.6 (0.1) ⁴
>65	5.0 (0.8)	9.3 (0.8) ⁴
Marital status		
Single	2.2 (0.1)	6.9 (0.4) ³
Married	1.8 (0.5)	5.9 (0.4) ³
Widowed	6.3 (0.6)	9.7 (0.6) ^{NS}
Divorced	6.8 (0.6)	11.4 (1.0) ^{NS}
Education (years)		
<11	4.5 (0.5)	8.2 (0.2) ²
12	3.1 (0.1)	6.0 (0.4) ¹
>13	1.9 (0.1)	3.9 (0.2) ^{NS}
Place of residence		
Athens greater area	4.3 (0.5)	8.6 (0.2) ²
Thessalonica and central Macedonia	2.8 (0.1)	5.1 (0.4) ^{NS}
Rest of country	3.3 (0.1)	6.0 (0.3) ³
Socioeconomic status		
I	1.3 (0.2)	4.4 (0.2) ^{NS}
II	1.8 (0.1)	7.5 (0.6) ²
III	3.9 (0.3)	10.8 (0.7) ³
IV	5.4 (0.5)	15.3 (1.2) ³
Employment status		
Employed	2.7 (0.3)	4.7 (0.4) ³
Unemployed	4.4 (0.6)	11.2 (1.0) ⁴

Chi-squares with Yates correction: ¹ $p < 0.01$, ² $p < 0.001$, ³ $p < 0.0001$, ⁴ $p < 0.05$

counterparts in both surveys. Being divorced and widowed increases the risk of developing MDE 1.87 and 1.75 times in 2008 and 2009, respectively.

The likelihood of the unemployed respondents to suffer from MDE was 1.65 times in 2008 and 1.28 times in 2009. The past use of psychotropic medication was found also to be a strong predictor of risk of MDE. Personal economic distress increased the probability (1.33 times) of developing MDE in the 2009 study.

Table 4 Average MDE depressive symptoms criteria by the Index of Personal Economic Distress cut-off point levels and gender

Poverty index	Cut-off	Study 2008 (<i>n</i> = 2,197)					Study 2009 (<i>n</i> = 2,192)				
		<i>N</i>	\bar{X}	SD	<i>t</i>	<i>df</i>	<i>N</i>	\bar{X}	SD	<i>t</i>	<i>df</i>
Males											
No or some problems	8–14	968	0.90	1.40	4.23 ¹	1,077	913	0.79	1.67	11.98 ¹	1,078
Serious problems	15–24	111	2.01	2.33			167	3.25	2.58		
Females											
No or some problems	8–14	1,029	1.12	2.20	4.48 ¹	1,116	979	1.29	1.90	3.55 ¹	1,110
Serious problems	15–24	89	2.60	3.12			133	1.93	2.07		
Total											
No or some problems	8–14	1,997	1.01	1.78	7.52 ¹	2,195	1,892	0.94	1.79	12.22 ¹	2,190
Serious problems	15–24	200	2.44	2.69			300	2.70	2.40		

Based on 1-month prevalence

¹ Significant at the level of 0.001 two-sided test**Table 5** Sociodemographic, economic and clinical predictors—dependent variable: depressed/non-depressed cases

Variables	OR (95% CI)	
	2008	2009
Gender	1.54 (1.22–1.94) ²	1.59 (1.08–2.61) ²
Age	1.48 (0.80–2.66)	1.39 (0.91–2.18)
Place of residence	1.12 (0.78–1.19)	1.15 (0.78–1.82)
Occupation	1.13 (0.68–1.93)	1.27 (0.77–1.97) ²
Marital status	1.87 (1.27–2.90) ³	1.75 (1.27–2.70) ³
Education (years)	1.26 (0.89–1.21)	1.21 (0.84–1.66)
Employment status	1.65 (1.05–2.66) ⁴	1.28 (1.10–2.13) ²
Index of Personal Economic Distress score	0.88 (0.23–1.24)	1.33 (1.07–1.94) ²
Help-seeking (any treatment)	1.03 (0.73–2.60)	1.18 (0.86–3.04)
Medication used	4.46 (3.21–6.50) ⁴	10.74 (6.80–15.00) ²
Previous admission in inpatient service	0.28 (0.08–0.77) ¹	0.33 (0.09–0.63) ¹

Based on 1-month prevalence

¹ Significant at the 0.05 level two-sided test² Significant at the 0.03 level two-sided test³ Significant at the 0.01 level two-sided test⁴ Significant at the 0.001 level two-sided test

Suicidal ideation and attempts

In the 2008 study, 2.4% of respondents with a MDE diagnosis reported recent suicidal ideation mainly among the oldest age groups 55–65 and >65. In 2009, the proportion of respondents reporting suicidal ideation reached 5.2% (data not shown). Among the economically distressed respondents of both studies, the proportion of persons with suicidal thoughts was found 35.0% in 2008 and 48.6% in 2009, respectively. In 2008, 0.6% of the sample reported

that they had recently attempted suicide. This proportion was found to be higher (1.1%) in 2009.

Discussion

The dimensions of MDE in 2008 and 2009

To answer the first question, regarding any differences in the prevalence rates of MDE between 2008 and 2009, the results from this study indicate that in 2009 the 1-month prevalence rates of MDE increased by 2.1 times compared to those of 2008.

In 1978 and 1984, the 1-month prevalence rates of MDE, in Greece nationwide, were found 3.6 and 5.4%, respectively, compared to the corresponding rates of 2008, 3.1 and 11.2% [21]. It should be mentioned that the nationwide studies in 1978 and 1984 were household surveys carried out with personal interviews. The clinical diagnosis of MDE (DSM III R) was based on specific items extracted from the CES-D scale and supplemented by items on suicidal behavior [21]. Apparently, the 1-month rates recorded in 2009 were much higher than the ones of 2008 and those detected in 1978 and 1984. In addition, in 2009, the detection of severe cases of MDE in terms of clinical significance was also found to be twice as higher than those of 2008.

The comparison of the prevalence rates of our studies with the findings reported from other general population studies has shown a wide range of prevalence rates, some of them similar of those of 2008 and 2009 [5, 9, 10, 55, 56]. With respect to the issue of time intervals in the morbidity of MDE in the National Comorbidity Replication Study, a significant increase was noticed in the 12-month prevalence (6.6%) compared to that reported in the first NCS [5, 56].

It is of note that those studies have a common characteristic; they have not been carried out in a period of serious economic crisis.

With respect to the nature of the depressive symptoms, one might argue that these symptoms represent emotional reactions resulting from loss (in our case the economic hardship) yielding higher false positive rates of MDE [57]. In our surveys, the sensitivity and specificity rates of clinical interviews were found to be high.

The association between the personal economic hardship and MDE

The findings of the current study confirmed the hypothesis of the association between personal economic hardship and suffering from major depression. Depression appears globally more common not only among women but also among disadvantaged persons (the less educated, the unemployed and the poor) as well as among people in distress (divorced, widowed, refugees) [11, 58, 59].

Particularly, poverty and low income have long been linked with higher prevalence of depression in several studies [5, 16, 27, 55, 60, 61].

The National Comorbidity Survey has shown that respondents in the lowest income stratum were at greater risk of developing mood disorders [56], a finding close to that of our studies.

In a cross-sectional survey among Chinese-Americans in Los Angeles, the odds ratios for dysthymic disorders among the poor (household annual income from zero to 11,000 USD) were 8.66 times greater than among the rich ones ($\geq 50,000$ USD annual income) [62]. In the NHANES III study, the rates of MDE among the low income respondents were found to be 12.2% while among the high income ones the rates were 7.5% [11].

The findings of our studies demonstrate that unfavorable socioeconomic conditions in a country are affecting the personal economical well-being, resulting to the development of psychopathology. In fact, a sharp economic decline was observed in the period between the two studies. In the first study, conducted in February and March 2008, the rather stable sociopolitical atmosphere of 2007 was reflected in the profile of the respondent's socioeconomic status both personal and familial. The outbreak of the international and local economical crisis in September 2008, burdened by the extensive riots of December 2008, probably influenced negatively the psychosocial climate of the first months of 2009 when the second study interviews were carried out.

The sociopolitical and economic climate in the beginning of 2009 was getting worse; a great number of people were reported to be unable to meet their economic needs, i.e. to service their bank loans; unemployment rates were

dramatically increased; budget and salary cuts in the public sector were announced. Increased unemployment rates were a characteristic of the 2009 sample. These phenomena could explain the increased scores of IPED and the rates of MDE in the 2009 study. The rates of MDE were also greater among respondents who were experiencing serious personal economic distress. It seems that respondents, who felt they were not managing financially well their living standards, were most likely to suffer from major depression [61].

Apparently, the inability to cope with the financial burden related to unmet basic household needs causes feelings of guilt and hopelessness, helplessness and depression. It should be noted that in this study the variable "income" was rejected as an indicator of personal financial distress, because income as reported by respondents may not fully capture the significant dimensions of poverty [61].

Zimmerman and Katon [15] in their cohort study with the use of CES-D scale proved that income had no effect on depression. The ratio of debts-to-assets and employment were found highly significant and causally related to depression, findings also compatible with those reported in this study.

With respect to the diachronic trends of socioeconomic differences and depression, several investigators confirmed that socioeconomic inequalities such as unemployment, low education levels, poor income and depression were persisting for the years of economic recession [8, 20, 31] similar findings to those of our study.

In addition, suicide and unemployment rates were also correlated for longer periods [63]. In our study, suicidal behavior was also associated with higher levels of personal economic distress. Furthermore, in 2009, the number of recorded cases of suicides in Greece increased by 18.0%, compared to those of 2007 [64].

Since the association of depression and economy has been established, the question is whether the economic distress is causing depression, or a person being depressed is unable to be economically sound?

In our study, the IPED covers a period of 6 months and the establishment of 1-month MDE diagnosis needs at least a period of the last 2 weeks. Therefore, it is probably a social causation phenomenon. The continuous living in an environment of economic deprivation contributes to increasing symptoms of demoralization and depression.

The results of the 2009 Opinion Survey by the European Opinion Research Group carried out in Greece nationwide, by telephone interviews on health and mental health issues and life adversities, are echoing the findings of our study [65].

In addition, the National Study on Income and Living Conditions of Households in 2009 in Greece nationwide revealed that 19.6% of the total population was under the

poverty level and there was a close association of poor quality of living conditions and low income as well as low levels of education [66].

The predictors of caseness of MDE

In both studies, in the years 2008 and 2009, certain demographics were found to have a predicting power on the diagnosis of MDE. Being female, older, divorced and widowed, of low level of education, holding an occupation of low prestige, is more likely to develop a depressive illness, fulfilling the DSM IV criteria of MDE. All those correlates of DSM IV major depression are common findings in almost all cross-sectional studies on depression [1, 7, 13, 16].

In the previous nationwide cross-sectional surveys in Greece, in 1978 and 1984, the same demographics were reported to be predictors of depression [21].

Medication used strongly predicted the establishment of an MDE diagnosis. The IPED score was found to be a MDE predictor in the 2009 study. Apparently, the excess of morbidity of MDE recorded in the 2009 survey reflects the deeper adversities of the psychosocial climate of the Greek society in 2009.

Strengths and limitations

These data were derived from two nationwide telephone surveys with representative samples of adults across Greece in a period of economical crisis in order to explore the possible effect of socioeconomic condition to the genesis of major depression. However, there are limitations to these studies. Firstly, the cross-sectional design of both studies provides associations not necessarily implying causal links. Secondly, diagnoses were made only by the assessment of the possible nine core symptoms of MDE not supplemented by any information given by significant others (relatives, close friends or any medical service record) for cross-validation.

The higher 1-month prevalence of MDE we found in 2009 could not be due to the increased sensitivity of the telephone interview because the same method was used in 2008, when the rates of MDE were found to be much lower.

Despite these limitations, the current studies show that a telephone-based interview to assess the dimensions of MDE and socioeconomic adversities in the general population, at a nationwide level, is a reliable and comprehensive method.

In addition, the present studies underscore the importance of socioeconomic stability of a country in the maintenance of mental health status of the citizens. It appears that those individuals exposed to unfavorable

economic conditions are more likely to develop depression in its serious clinical form of MDE.

Further research will help to uncover possible underlying mechanisms in the genesis of MDE in the general population in association with personality traits, social support system and coping processes.

In particular, any information drawn will enable the organization and implementation of preventively oriented social policy, focusing on the causal association between economic distress and depression.

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Conflict of interest statement M.M. is a professor of psychiatry of Athens University.

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