

## Research article Ερευνητική εργασία

### Suicide in Greece: 2001–2011

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Psychiatriki 2013, 24:170–174

Since 2008 several European countries have fallen into a financial crisis. This crisis has mainly affected the Greek population. The lower of income and the increase of unemployment as consequences of crisis lead to negative effects on people's mental health. Usually, in periods of economic crisis there is an increase of suicidality of population. The aim of this study is to examine the changes of suicide rates in Greece during the last decade (2001–2011) with particular consideration in the recent period of economic crisis (2008–2011). Data regarding the greek general population and the crude data on suicides were obtained from the Hellenic Statistical Authority (ELSTAT). We assessed the specific suicide rate, i.e. the number of suicide cases per 100.000 inhabitants (SSR) using population data on the 2001 and 2011 census. Yearly and mean total, age and sex-SSR were calculated in five years age groups. There were no suicide cases among children under the age of fifteen. We compared total and male, female SSR during the period before the crisis (2001–2007) and during the crisis (2008–2011). During the decade 2001–2011 a total number of 4133 suicide cases were recorded. There were 3423 (82.8%) male suicides and 710 (17.2%) female suicides. During the decade 2001–2011 total SSR increased by 38.4%. In males increased by 33.1% and in females by 69.6%. In the period before the crisis (2001–2007) total SSR decreased by 3.9%. In males decreased by 8.4% but in females increased by 22.3%. During the period of crisis (2008–2011) total SSR increased by 27.2%. In males increased by 26.9% and in females by 28.5%. There was a statistically significant increase in total SSR during the crisis regarding subjects 50–54 years old ( $t=3.43$ ,  $p=0.007$ ) and in total SSR of males ( $t=2.31$ ,  $p=0.047$ ) as well as of the males age groups 50–54 ( $t=3.56$ ,  $p=0.006$ ), 45–49 ( $t=2.87$ ,  $p=0.02$ ), 30–34 ( $t=2.96$ ,  $p=0.02$ ). There were no statistically significant differences both in total SSR and in SSR of all age groups of females during the crisis. The most often used method of suicide all the year of this study was by hanging. In absolute count the total suicide cases for the year 2011 in Greece were 477 (SSR=4.22) and the male suicides 393 (SSR=7.02) which are the highest number of suicides observed in Greece during the last decades. Findings suggest an increase in suicide mortality in Greece during the financial crisis. Reorientation of the goals of the national mental health system as well as targeted interventions should be applied in high risk individuals, i.e. unemployed, poor, suffering from mental or/and physical illnesses, in order to prevent or to mitigate the impact of the financial crisis in the greek population.

**Key words:** Suicide, male, female, financial crisis, prevention, Greece

## Introduction

The European economic crisis started in 2008 and has mainly affected the Greek population. The major consequences of financial crises are the lowering of income and the increase of unemployment or the fear of unemployment which have adverse consequences for the mental health of individuals including suicidal behaviour.<sup>1,2</sup>

Suicide rates in Greece are among the lowest in Europe. Explanations include many social protective factors existing in the Greek society such as strong family ties, high social cohesion, low isolation and alienation. However, the last decades, Greece became member of the European Union. So, the life-style of people has been changed.<sup>3</sup>

It is well known that suicidality increase in periods of economic crisis.<sup>1,4,5</sup> However, some exceptions have been mentioned concerning countries with low rises in unemployment and poverty and the development of systems of social protection.<sup>2</sup>

During the last years, there is a great interest on the consequences of recent economic crisis of Greece on citizens' suicidality but the data are contradictory.<sup>6–9</sup>

In this preliminary report, we examined how suicide rates changed during the last decade in Greece (2001–2011) with particular consideration given in the recent period of crisis (2008–2011).

## Material and method

Data regarding the Greek general population and the crude data on suicides were obtained from the Hellenic Statistical Authority (ELSTAT).<sup>10–11</sup> We assessed the specific suicide rate (number of suicide cases per 100,000 inhabitants, SSR) using population data based on the 2001 and 2011 census. Yearly and mean age and sex-SSR were calculated in five year age groups (range 15 to 85+ years). There were no suicide cases among children under the age of fifteen. We estimated the percentage differences in SSR between years 2001 and 2007 and between 2008 and 2011 using the equation (final value-initial value/initial value×100).<sup>12</sup> Total and male, female SSR's during the period before the crisis (2001–2007) and during the crisis (2008–2011) were compared using two sample t-tests. The methods of suicide were classified according to ICD-9-CM Classification System. For the statistical evaluation the SPSS.20 statistical package was used.

## Results

During the last decade (2001–2011), a total number of 4133 suicide cases were recorded. Male suicides were 3423 (82.8%) while suicides committed by females were significantly lower (710, 17.2%). Deaths by suicide constitute 0.35% of all deaths in Greece during the same period.

Table 1 shows the general population of Greece, the absolute number of suicides, the sex-specific suicide rates (SSR) and the male/female suicide ratios for the years 2001–2011 in Greece. During the decade 2001–2011, although a fluctuation of suicides was noted, total SSR increased by 38.4%. Suicide rates in males increased by 33.1% while in females by 69.6% (figure 1).

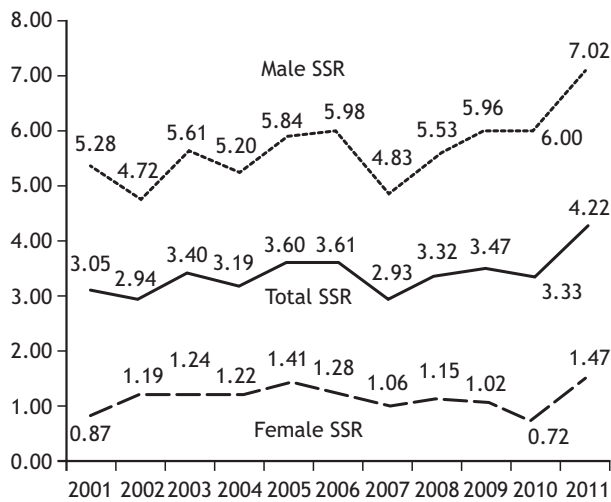
In the period before the crisis (2001–2007), total SSR decreased by 3.9%. In males, suicide rates decreased by 8.4% while in females increased by 22.3%.

During the period of crisis (2008–2011) total SSR increased by 27.2%. In males, suicide rates increased by 26.9% while in females suicide rates were further increased by 28.5%.

Our analysis revealed a statistically significant increase in total SSR during the crisis regarding subjects 50–54 years old ( $t=3.43$ ,  $p=0.007$ ). Furthermore, a statistically significant increase in total SSR of males during the crisis ( $t=2.31$ ,  $p=0.047$ ) as well as in the male age groups 30–34 ( $t=2.96$ ,  $p=0.02$ ), 45–49 ( $t=2.87$ ,  $p=0.02$ ), 50–54 ( $t=3.56$ ,  $p=0.006$ ) was revealed. On the contrary, SSR in the male age group of 60–64 years decreased significantly during the crisis ( $t=2.51$ ,  $p=0.03$ ). There were no statistically significant differences both in total SSR and in SSR of all age groups of females during the crisis. However, it should be mentioned the fact that there was a doubling of female suicides during the last two years (table 1).

Regarding the methods of suicide, the most often used method was by hanging all the years of this study<sup>10,11</sup> (table 2).

What is quite interesting though, is the fact that total suicide in absolute count for the year 2011 were 477 (SSR=4.22) and the number of male suicides 393 (SSR=7.02) which are the highest number of suicide observed in Greece during the last decades. It is also worth to note that in the greater Athens area (region of Attica), the greater urban center of Greece, suicide cases have risen during the crisis from 111 (SSR=2.73) to 172 (SSR=4.18), the greater number observed during the last decade. This means an increase of suicide 53% during the period of crisis for the Athens area.<sup>10,11</sup>



**Figure 1.** The fluctuation of the annual specific suicide rate (SSR) during the period 2001–2011 in Greece.

## Discussion

According to our results there is evidence of a clear increase of suicide in Greece during the economic crisis. However, it should be noted that the number of suicide could have been underestimated because of a social stigma against suicide, for religious reasons or because that many deaths from suicide can be reported as accidental, i.e. falls or drowning etc.<sup>3,13–15</sup> Other recent studies found an increased prevalence of depression as well as of suicide ideation and attempts during the recent economic crisis in Greece.<sup>16–18</sup> The association of the above conditions to completed suicide is well known.<sup>19–21</sup>

The strong association between unemployment and suicide is well documented.<sup>4,22</sup> During the period of crisis in Greece (2008–2011) unemployment rates increased from 7.6% to 17.7% and continued to raise the next years.<sup>23</sup>

According to our data being mainly male aged 50–54 years has the higher risk of suicide during the crisis. This can be explained by the man's social role and many other factors such as that these people have to deal with early compulsory retirement, job insecurity and loss of income. Yet, men are usually more isolated and have less social support.<sup>24</sup>

From the system's perspective, the mental health consequences of recent economic crisis in Greece include the dramatic health care spending cut, the reduced nurse to patient ratios, the decrease of beds in public hospitals, the rising of emergency admissions in the public hospitals, the cut backs in salaries of professionals working in hospitals, the reduction of the number of consultants in psychiatric departments, the overcrowded inpatients psychiatric units in public hospitals.<sup>1,25–27</sup>

In this period of crisis strategic intervention priorities must include reinforcement of social security networks, revamp essential services towards weaker populations that need to be protected, rehabilitation and social inclusion of unemployed individuals, improvement and reorientation of mental health system, timely treatment of patients with mental disorders. The apply of targeted interventions are expected to prevent or to mitigate the next years the impact of financial crisis to the Greek population.<sup>1,28–30</sup>

**Table 1.** General population, absolute number of suicides, total, male, female specific suicide rates (SSR) and the male/female suicide ratios for the years 2001–2011 in Greece.

Year	General population	Total suicides		Male suicides		Female suicides		M:F Ratio
		N	SSR	N	SSR	N	SSR	
2001	10,931,206	334	3.05	286	5.28	48	0.87	6.08
2002	10,968,708	323	2.94	257	4.72	66	1.19	3.97
2003	11,006,377	375	3.40	306	5.61	69	1.24	4.52
2004	11,040,650	353	3.19	285	5.20	68	1.22	4.28
2005	11,082,751	400	3.60	321	5.84	79	1.41	4.14
2006	11,125,179	402	3.61	330	5.98	72	1.28	4.67
2007	11,171,740	328	2.93	268	4.83	60	1.06	4.55
2008	11,213,785	373	3.32	308	5.53	65	1.15	4.83
2009	11,260,402	391	3.47	333	5.96	58	1.02	5.85
2010	11,305,118	377	3.33	336	6.00	41	0.72	8.36
2011	11,309,885	477	4.22	393	7.02	84	1.47	4.77

**Table 2.** Total and male, female SSR according to the method used in Greece: 2001–2007 vs 2008–2010.\*

**	Total SSR		Male SSR		Female SSR	
	Mean 01–07	Mean 08–10	Mean 01–07	Mean 08–10	Mean 01–07	Mean 08–10
E 950	0.29	0.25	0.40	0.28	0.18	0.21
E 951	0.00	0.00	0.00	0.00	0.00	0.00
E 952	0.01	0.01	0.01	0.01	0.00	0.00
E 953	1.78	1.95	2.93	3.39	0.65	0.54
E 954	0.07	0.02	0.08	0.01	0.07	0.02
E 955	0.79	0.90	1.51	1.74	0.09	0.08
E 956	0.04	0.07	0.08	0.12	0.01	0.02
E 957	0.23	0.17	0.30	0.24	0.16	0.09
E 958	0.03	0.02	0.04	0.04	0.02	0.00

\* There were no data for the year 2011, \*\* E950 Poisoning by solid or liquid substances, E951 Poisoning by gases in domestic use, E952 Poisoning by other gases and vapors, E953 Hanging, strangulation and suffocation, E954 Submersion (drowning), E955 Firearms and explosives, E956 Cutting and piercing instruments, E957 Jumping from high place, E958 Other and unspecified

## Αυτοκτονίες στην Ελλάδα: 2001–2011

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Ψυχιατρική 2013, 24:170–174

Από το έτος 2008 αρκετές ευρωπαϊκές χώρες βρέθηκαν σε κατάσταση οικονομικής κρίσης. Η οικονομική αυτή κρίση επηρέασε κυρίως τον ελληνικό πληθυσμό. Η μείωση του εισοδήματος και η αύξηση της ανεργίας, ως συνέπειες της κρίσης, οδήγησαν σε αρνητικές επιπτώσεις σε σχέση με την ψυχική υγεία του πληθυσμού. Συνήθως σε εποχή οικονομικής κρίσης καταγράφεται αύξηση της αυτοκτονικότητας του πληθυσμού. Σκοπός της μελέτης αυτής είναι να διερευνήσει τις αλλαγές των δεικτών αυτοκτονίας στην Ελλάδα κατά την διάρκεια της τελευταίας 10ετίας (2001–2011) με ιδιαίτερη έμφαση στην περίοδο της παρούσας οικονομικής κρίσης (2008–2011). Δεδομένα σχετικά με τον πληθυσμό της Ελλάδας και του αριθμού των αυτοκτονιών προήλθαν από τα αρχεία της Ελληνικής Στατιστικής Υπηρεσίας (ELSTAT). Υπολογίσθηκε ο Ειδικός Δείκτης Αυτοκτονιών (Specific Suicide Rate, SSR), δηλαδή ο αριθμός των αυτοκτονιών ανά 100.000 κατοίκους χρησιμοποιώντας δεδομένα των απογραφών του πληθυσμού τα έτη 2001 και 2011. Καταγράφηκαν οι ετήσιες μέσες τιμές των SSR σε σχέση με το φύλο και ανά 5ετίες ηλικιών. Δεν υπήρξαν περιπτώσεις αυτοκτονίας σε παιδιά ηλικίας κάτω των δεκαπέντε ετών. Συγκρίσεις έγιναν ανάμεσα στους συνολικούς SSR, τους SSR του ανδρικού και του γυναικείου πληθυσμού στις περιόδους πριν την κρίση (2001–2007) και κατά τη διάρκεια της κρίσης (2008–2011). Στη διάρκεια της δεκαετίας 2001–2011 καταγράφηκε ένας συνολικός αριθμός 4133 αυτοκτονιών, 3423 (82,8%) αυτοκτονίες αφορούσαν άνδρες και 710 (17,2%) αυτοκτονίες αφορούσαν γυναίκες. Κατά τη διάρκεια της δεκαετίας 2001–2011, ο συνολικός SSR αυξήθηκε κατά 38,4%. Στους άνδρες καταγράφηκε αύξηση κατά 33,1% και στις γυναίκες κατά 69,6%. Στην περίοδο πριν την οικονομική κρίση (2001–2007) ο συνολικός SSR παρουσίασε μείωση κατά 3,9%. Στους άνδρες μειώθηκε κατά 8,4% ενώ στις γυναίκες αυξήθηκε κατά 22,3%. Στη διάρκεια της κρίσης (2008–2011) ο συνολικός SSR αυξήθηκε κατά 27,2%. Στους άνδρες αυξήθηκε κατά 26,9% και στις γυναίκες κατά 28,5%. Κατά τη διάρκεια της κρίσης σημειώθηκε μια στατιστικά σημαντική αύξηση του συνολικού SSR για τα άτομα ηλικίας 50–54 ετών ( $t=3,43$ ,  $p=0,007$ ) και ακόμη, μια αύξηση του SSR του συνολικού ανδρικού πληθυσμού ( $t=2,31$ ,  $p=0,047$ ) και για τις ανδρικές ηλικιακές ομάδες 50–54 ετών ( $t=3,56$ ,  $p=0,006$ ), 45–49 ετών ( $t=2,87$ ,  $p=0,02$ ) και 30–34 ετών ( $t=2,96$ ,  $p=0,02$ ). Αντίθετα, παρατηρήθηκε μείωση των αυτοκτονιών στο ηλικιακό φάσμα των 60–64 ετών ( $t=2,51$ ,  $p=0,03$ ). Δεν εντοπίστηκαν στατιστικά σημαντικές διαφορές στη διάρκεια της κρίσης στο συνολικό SSR όσο και στα

SSR όλων των ηλικιακών φασμάτων του γυναικείου πληθυσμού. Η συχνότερη μέθοδος αυτοκτονίας σε όλα τα χρόνια της μελέτης ήταν ο απαγχονισμός. Για το έτος 2011 ο συνολικός αριθμός των αυτοκτονιών που καταγράφηκαν στην Ελλάδα ανήλθε στις 477 (SSR=4,22) ενώ οι αυτοκτονίες των ανδρών ήταν 393 (SSR=7,02). Οι παραπάνω καταγραφές αυτοκτονιών είναι οι μεγαλύτερες που σημειώθηκαν στην Ελλάδα τις τελευταίες δεκαετίες. Σύμφωνα με τα ευρήματα της μελέτης αυτής εντοπίζεται σαφής αύξηση της θνησιμότητας από αυτοκτονία στην Ελλάδα την περίοδο της οικονομικής κρίσης. Επαναπροσδιορισμός των στόχων του εθνικού συστήματος ψυχικής υγείας με συγκεκριμένες στρατηγικές παρεμβάσεων σε άτομα υψηλού κινδύνου για αυτοκτονικές συμπεριφορές όπως άνεργοι, φτωχοί, πάσχοντες από ψυχικές ή/και σωματικές παθήσεις θα πρέπει να εφαρμοστούν, προκειμένου να προληφθούν ή να μετριασθούν τα προσεχή χρόνια οι αρνητικές επιπτώσεις της οικονομικής κρίσης στον ελληνικό πληθυσμό.

**Λέξεις ευρετηρίου:** Αυτοκτονία, άνδρες, γυναίκες, οικονομική κρίση, πρόληψη, Ελλάδα

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