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Effects of the economic crisis on demand due to mental disorders in Asturias: data from the Asturias Cumulative Psychiatric Case Register (2000-2010)

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Introduction. The economic crisis has negative effects on the population's physical and mental health. Our objective has been to study the association between socioeconomic status and number of people demanding mental health services.

Methods. We performed a correlation analysis of administrative morbidity data (incidence and prevalence) of mental illness (obtained from the Asturias Cumulative Psychiatric Case Register) and three economic indicators (unemployment, consumer price index and gross domestic product).

Results. The increase in the unemployment rate is associated with a clear decrease in both new and prevalent mental health demand. CPI has a minor weak positive correlation with the administrative incidence of some mental disorders (Neurotic disorders, Schizophrenia and addictions). GDP does not show a significant correlation with the administrative incidence and it is strongly associated with an increased administrative prevalence that is more intense in the case of alcoholism, neurotic disorders, mental retardation and Z codes (ICD-10).

Conclusion. The variation of the socioeconomic indicated observed in the economic crisis period in Asturias was not associated with increased care demand for any mental disorders. There is a negative correlation of unemployment rate with care demand.

Keywords: Crisis, Mental Health, Incidence, Prevalence, Epidemiology, Unemployment

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Efectos de la crisis económica en la demanda por trastornos mentales en Asturias: datos del Registro Acumulativo de Casos Psiquiátricos (2000-2010)

Introducción. La crisis económica produce efectos negativos en la salud física y mental de la población. El objetivo del presente trabajo es estudiar la asociación existente entre la situación socioeconómica y la demanda asistencial a los servicios de salud mental.

Métodos. Se ha realizado un análisis de correlación de los datos de morbilidad (incidencia y prevalencia) administrativa de enfermedad mental, que fueron obtenidos del Registro Acumulativo de Casos Psiquiátricos de Asturias, y tres indicadores socioeconómicos (paro, índice de precios de consumo -IPC- y producto interior bruto -PIB- per cápita ajustado por inflación).

Resultados. El incremento en la tasa de paro se asocia a una clara disminución de la demanda incidente y prevalente en salud mental. El IPC presenta una correlación positiva débil con la tasa de incidencia administrativa de algunos trastornos mentales (Trastornos neuróticos, Esquizofrenia y Toxicomanías). El PIB no presenta una correlación significativa con la demanda incidente y se asocia, de forma robusta, con un incremento de la tasa de prevalencia administrativa, más intensa en el caso del alcoholismo, trastornos neuróticos, retraso mental y demandas por códigos Z (CIE-10).

Conclusión. En Asturias, la variación de los indicadores socioeconómicos observado en el presente periodo de crisis económica no se asocia con un incremento en la demanda asistencial por trastorno mental. La correlación de la tasa de desempleo con la demanda asistencial es negativa.

Palabras clave: Crisis, Salud mental, Incidencia, Prevalencia, Epidemiología, Desempleo

INTRODUCTION

Since 2007, the socioeconomic situation of most European countries has deteriorated and there has been an increase in national debt levels, decrease in gross domestic product (GDP) and deterioration of unemployment rates.¹ The situation in Spain is especially serious and as it has undergone accelerated growth compared to its European homologues, since 2007, it has been suffering a contraction of its economy that has produced loss of employment, home foreclosures and a large national budget deficit. The Regional Community of Asturias accounts for approximately 2.5% of Spain's GDP and has been intensely affected by the crisis.

The economic crisis has negative effects on the population's mental and physical health.² There are specific aspects, such as unemployment,^{3,4} social exclusion or impoverishment⁵ and especially the financial type adverse situations (debts, and especially problems concerning home payments) that increase the risk of mental problems, this occurring through social withdrawal, loss of self-esteem, adoption of unhealthy behaviors^{6,7} and even increase of tissue inflammation.⁸ Mental disorders, which have been more consistently associated with financial crisis, are depression, addictive behaviors (alcohol or other drugs), pathological gambling and suicide.⁹⁻¹⁴

This study begins with the hypothesis that economic recession affects the population's mental health and indirectly affects the demand for use of health care services. It has aimed to know the association between socioeconomic condition and incident and prevalent demand for mental health public services.

METHODOLOGY

The data from the Asturias Cumulative Psychiatric Case Register [Registro Acumulativo de Casos Psiquiátricos de Asturias (RACPAS)], regarding subjects who established contact with any Mental Care Services care site in Asturias from 1 Jan 2000 to 31 December 2010 were analyzed. The RACPAS collects information on patients who are seen in any mental health facility of Asturias, whether as an outpatient (Mental Health Centers) or in hospital (emergencies, referrals and admissions). Interventions performed in Primary Care were not recorded. The following population rates were used for the data time analysis: Annual administrative incidence rate (AAIR), in relation to subjects who contacted any one of the mental health services for the first time during the year, and annual administrative prevalence rate (AARP) calculated by the number of subjects who were in contact with the services at the onset of each year, plus those who established contact for the first time during the year. Table 1 shows the taxonomy used by the RACPAS and its correspondence with the

Table 1		Mental disorders studied in the current work (according to the taxonomy used in the Asturias Cumulative Psychiatric Case Register - RACPAS) together with the International Classification of Diseases (ICD-10) for each type of disorder
Categories collected in the RACPAS	ICD-10 Classification	
Organic mental disorders, including symptomatic ones	F00-9	
Schizophrenia, schizotypal disorders and delusional ideas disorders	F20-9	
Mood disorders (affective)	F30-9	
Neurotic disorders, secondary to stressful and somatomorphic situations	F40-9	
Personality and adult behavior disorders	F60-9	
Behavior disorders associated to physiological dysfunctions and somatic factors	F51-59	
Eating behavior disorders	F50	
Mental and behavior disorders due to alcohol consumption	F10	
Mental and behavior disorders due to consumption of other psychotropic substances	F11-9	
Psychological Development Disorders	F8X	
Mental Retardation	F7X	
Factors that affect the health condition and contacts with health services	ZXX	
Other Processes	OTHERS	

diagnostic categories of the International Classification of Diseases (ICD-10).

The population data for each year were obtained from the Municipal Census of the period studied. The source used was the database of the National Institute of Statistics of Spain (INE) that has been making yearly reports since 1998. Based on these, the following population indicators were calculated: Youth Index (percentage of population under 20 years of age compared to population of 60 years or more); Fritz Index (percentage of population under 20 years of age compared with population age group between 30 and 49 years); and Replacement of Active Population (proportion of persons between 15 to 19 years in relation with population between 60 and 64).¹⁵

The general Consumer Price Index (CPI), unemployment rate, and GDP per capita adjusted to inflation according to the data published by the INE¹⁶ on its web page and corresponding to the Principality of Asturias between the years 2000 and 2010 (Figure 1) were used to evaluate the economic situation of Asturias.

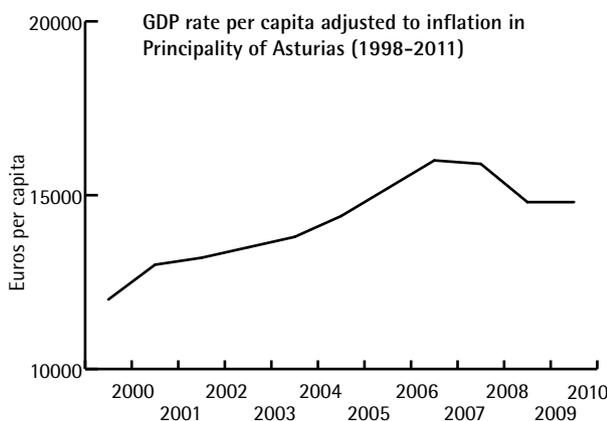
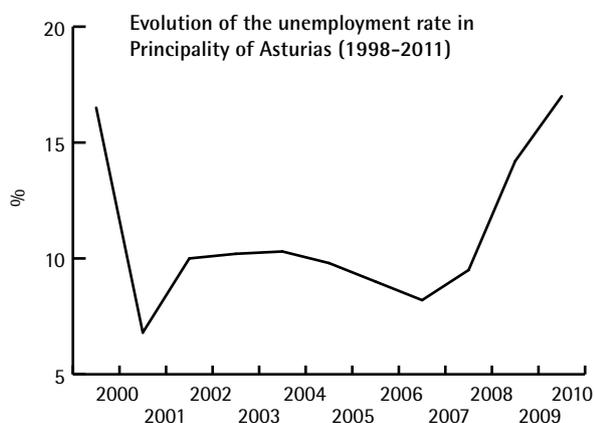
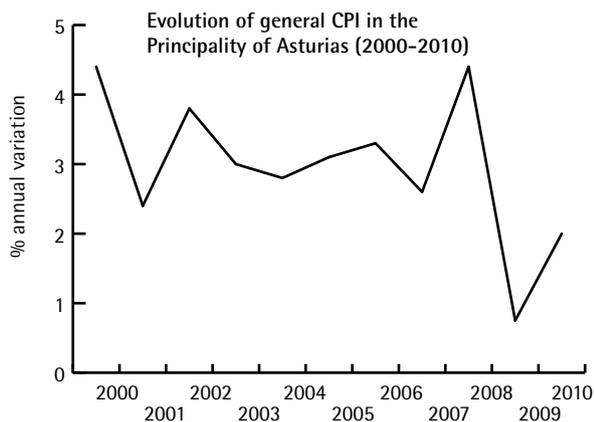


Figure 1 Evolution of socioeconomic indicators in the Principality of Asturias: General CPI, Unemployment rate and inflation-adjusted GDP per capita

The Cox-Stuart test¹⁷ was used in the current work for the analysis of tendencies. This is a non-parametric test applied to detect tendencies in time series.¹⁸ The null hypothesis of the mentioned test is that the time series does not show any tendency, while its alternative hypothesis is that the series does show a tendency. Furthermore, the correlation coefficient proposed by Galton and Pearson for

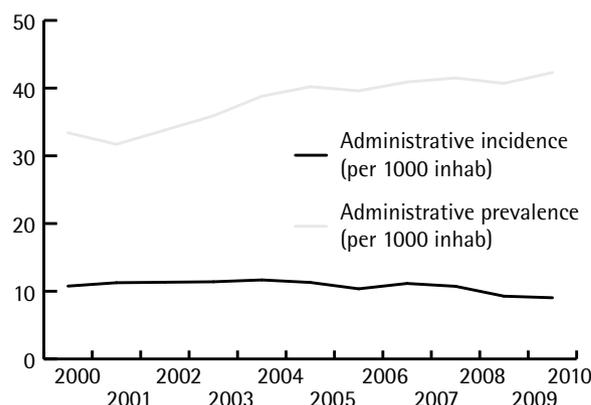


Figure 2 Evolution of incidence and global administrative prevalence (per 1000 inhabitants) of mental disease in Asturias between the years 2000 and 2010

it was used to analyze the linear relation between the different quantitative variables studied.¹⁹

RESULTS

The mean catchment area of the RACPAS' patients (the entire territory of Asturias) during the period evaluated was 1,078,406 inhabitants (52.03% women). This level has remained practically unchanged. In the year 2000, Asturias already had a situation of population aging that worsened during the study period. Applying the Cox-Stuart test, a progressively significant decrease was observed in the demographic indexes. The levels obtained in 2000 and 2010 were the following: Youth Index went from 62.4% in 2000 to 50.5% in 2010 ($Z=-2.155$ and $p=0.0156$), Fritz Index from 55.4% to 45.3% ($Z=-2.155$ and $p=0.0156$) and active population replacement index from 114.56% to 56.95% ($Z=-2.155$ and $p=0.0156$).

The evolution of the prevalence rates and those of annual administrative incidence of mental disease per 1000 inhabitants can be seen in figure 2. Application of the Cox-Stuart test showed a significant decrease ($Z=-1.863$ and $p=0.0312$) of the AAIR in Asturias during the period studied. The incidence was maintained during the first years of the period and tended to decrease beginning in the year 2005 and above all, beginning in 2008. The analysis broken down by diseases showed a significantly decreased AAIR in Schizophrenia, schizotypal disorder and delusional ideas disorders, Mood disorders (affective), Neurotic disorders, secondary to stressful and somatomorphic situations, Adult personality and behavior disorders, Eating behavior disorders, Mental and behavior disorders due to

Table 2	Correlation between administrative incidence of mental disorder and socioeconomic indicators					
	UNEMPLOYMENT		CPI		GDP per capita	
	Correlation coef	p	Correlation coef	p	Correlation coef	p
Organic M.D.	-0.61	0.020	0.48	0.090	0.48	0.100
Schizophrenic Ps	-0.55	0.040	0.58	0.030	0.00	0.740
Mood Disorder	-0.45	0.120	0.51	0.070	-0.30	0.330
Neurotic D.	-0.75	0.003	0.58	0.030	0.24	0.420
Personality D.	-0.33	0.260	0.53	0.060	-0.36	0.228
Associated behavior D.	-0.81	0.001	0.45	0.120	0.40	0.170
Eating behavior D.	-0.37	0.210	0.46	0.110	-0.25	0.400
Alcoholism	-0.72	0.005	0.41	0.160	0.47	0.109
Toxicomanias	-0.55	0.050	0.57	0.040	-0.05	0.884
Psychological development D.	0.53	0.060	0.29	0.330	-0.34	0.245
Mental Retardation	-0.38	0.200	0.38	0.190	-0.43	0.138
Other Processes	-0.67	0.010	0.33	0.260	0.20	0.521
Z codes	-0.80	0.001	0.47	0.100	0.43	0.145

Table 3	Correlation between administration prevalence of mental disorder and socioeconomic indicators					
	UNEMPLOYMENT		CPI		GDP per capita	
	Correlation coef	p	Correlation coef	p	Correlation coef	p
Organic M.D.	-0.51	0.072	0.34	0.820	0.70	0.007
Schizophrenic Ps	-0.37	0.217	0.31	0.250	0.74	0.004
Mood Disorder	-0.55	0.052	0.29	0.300	0.76	0.002
Neurotic D.	-0.53	0.064	0.18	0.560	0.88	0.000
Personality D.	-0.45	0.122	0.37	0.210	0.65	0.015
Associated behavior D.	-0.57	0.042	0.22	0.470	0.82	0.001
Eating behavior D.	-0.62	0.023	0.29	0.340	0.62	0.023
Alcoholism	-0.45	0.120	0.19	0.540	0.82	0.000
Toxicomanias	-0.41	0.167	0.43	0.140	0.58	0.039
Psychological development D.	-0.21	0.481	0.29	0.330	0.68	0.009
Mental Retardation	-0.48	0.095	0.25	0.410	0.84	0.000
Other Processes	-0.67	0.013	0.46	0.110	0.44	0.100
Z codes	-0.59	0.033	0.10	0.660	0.87	0.000

consumption of other psychotropic substances and Mental Retardation. In every case, $Z=-1.863$ and $p=0.0312$.

A non-significant change can also be seen in AARP during the period studied. This increase was greater in the first years of the study and less accentuated after and was found in the global rate and rates broken down by diagnostic categories.

The correlation analysis between AARP and AAIR of the diagnostic categories studied and the economic indicators

are shown in tables 2 and 3. A robust negative correlation of the unemployment rate was observed with AAIR, above all with behavior disorders associated to physiological dysfunctions and somatic factors, Neurotic disorders, environmental and circumstantial factors (Z codes) and Alcoholism. The correlation was less in the case of organic mental disorders and Schizophrenia. Although with less intensity than in the case of AAIR, unemployment also had a negative correlation with AARP. In this case, the most

consistent negative correlations occurred in the case of the Z codes and Eating behavior disorders. Thus, the increase of unemployment was associated with lower rates of prevalence and annual administrative incidence.

The effect of the CPI was less than that of unemployment. Its increase was associated with an increase of new cases of Schizophrenic psychosis, Neurotic disorders and Non-alcoholic toxicomanias. The influence of CPI on AARP was not significant.

The effect of the GDP per capita adjusted by inflation was not as clear. Its increase caused non-significant variable effects on the incident cases and was associated with a generalized and robust increase of the AARP of most of the disorders, with special significant in the case of Alcoholism, Neurotic disorders, Mental Retardation and Z codes.

DISCUSSION

As explained, the variations of the socioeconomic indicators observed in recent years in Asturias correlate with the variations in the care demand for the different outpatient and hospital facilities of the Mental Health Services (administrative morbidity), both for new procedures (AAIR) as well as the sum of the new procedures and those that are already being treated (AARP).

It must be stressed that during the period studied, there was no variation in the mental health service portfolio of Asturias or any political-administrative decision that could have affected the patient referral pattern from Primary Care to the Mental Health Services. Regarding the special care resources, there were no variations in the outpatient resources or in the care places for acute patients in general hospitals. The most relevant structural changes were creation of two comprehensive treatment centers for persons with severe mental disorders and the setting up of two assertive community treatment teams.

The difference in the methodologies used made it difficult to compare our data with other studies that examine the association of mental health and economic crisis. A study performed in Spain on the population attended in primary care⁷ has revealed an increase that coincided with the period of economic crisis, with the proportion of mental disorders over the total demands. Another study performed in the Regional Community of Valencia that analyzed the impact on the characteristics of the demand for mental health services of a sociolaboral situation in a region of the Regional Community of Valencia (Spain)²⁰ found that the crisis situation was associated with changes in the profile of the persons who demanded care from the mental health services (more men, unemployed and those having a higher level of academic training) and on the type of demand (more demand related with direct or indirect work problems). There

are a series of characteristics in the studies (design, diagnostic categories studied and performance setting) that make it necessary to consider as complementary the data that apparently seem to be contradictory. The economic crisis is associated to a change in the profile of the demand in primary care (increase of the proportion of mental health) and a change in the characteristics of the patients who come to the mental health clinics. However, the population rates obtained show that these changes in profile would occur within the context of a lower number of demands for the mental health services.

Differences were also observed between our data and those recently obtained in Greece,²¹ in which no correlation was found between the economic indicators (unemployment and mean income) and admissions to psychiatric clinics but in which a negative correlation (contrary to that found by us) was found between mean income and the amount of out-patient visits to the psychiatric emergency services. This work, which analyzes the frequency of visits in a non-representative sample, found variations between the different geographic areas analyzed. Thus, in one of the hospitals studied, on the contrary to that which occurred in the global sample, the two economic indicators showed a positive correlation with the resource use variables (number of out-patient psychiatric visits and visits to the emergency psychiatric services).

These data call attention to the complexity of the consequences of the economic crisis on the mental health population and medical visit habits. Some variables that modulate the effect of the crisis have been identified. Among these are social support network,²² social support resources offered (with less impact of the crisis in the rich countries where the availability of resources is greater),^{23,24} and different personal factors of the nearby setting that cause inequities which, in periods of recession, are difficult to observe and can vary between studies.^{25,26} In this sense, it has been demonstrated that the impact of the crisis on mental health is greater in certain groups: men,^{27,28} the elderly, young people and children who live in vulnerable families, single parent families, the unemployed, ethnic minorities, emigrants, the poor, persons with previous mental disease, persons with fragile personality (low tolerance to frustration or low self-esteem) and those subjected to frequent negative events.^{22,29,30}

Regarding the specific case of unemployment, the most recent data show a small-sized positive association with mental problems,^{27,31} which are also modulated by factors such as the situation regarding employment (persons who are looking for their first job or mature unemployed workers), availability of social or financial resources and type of personal resources (cognitive, use of immature coping strategies).^{3,32}

Not all the data coincide in indicating the positive correlation between economic crisis and mental disorders. In

the 2011 ECNP/EBC (European College of Neuropsychopharmacology - the European Brain Council) report,³³ the annual prevalence rates obtained from the review of the existing epidemiological data that were subsequently validated by experts were published. When the 2011 figures were compared with those of 2005, an increase was observed in both global number of persons affected by mental disease as well as annual prevalence of mental disease, observing a change from 27.4% in 2005 to 38.2% in 2011. However, the authors per se indicated that the increase of persons with mental disease is proportion to growth of the population in the European Union and that there was a greater number of diagnostic categories in 2011. When the values of the two time points studied were compared, accurately evaluating the same diagnostic categories, no variations were found in prevalence between the year 2010 and 2005 (27.4% in 2005 and 27.1% in 2011). This would imply that the economic crisis in Europe as a whole was not associated with significant variations in the prevalence of the most important mental disorders.

In regards to alcohol-consumption related problems, the current data suggest that harmful consumption of alcohol may be an indirect and unfortunate consequence of the economic crisis.³⁴ If this is true, our data confront us with the preoccupying situation that the new demand due to alcohol-related problems is less when unemployment increases and administrative prevalence increase when economic well-being increases. This could imply that in the case of alcohol, the crisis would increase the number of persons with alcohol-related problems who do not access new treatments or follow-up visits.³⁵

From our point of view, there could be several explanations for the negative association between economic crisis and administrative morbidity rates found in our setting. Economic well-being could increase expectations of persons on mental health and the tendency to delegate more health-care responsibilities on society, generating a greater number of medical visits whose objective would be the search for indiscriminate solutions to problems having less intensity.³⁶ If we assume this hypothesis, the adverse social circumstances that occur in periods of economic crisis would cause health expectations to decrease and would require more personal responsibilities to be taken on to achieve these expectations. On the contrary, difficult socioeconomic situations would decrease motivation to demand care due to the possible negative consequences (loss of work, etc.) and to the decrease of the likelihood that a mental disorder diagnosis would made it possible to obtain advantages due to economic restrictions.

In terms of public health, the so-called "net effect" of the crisis has been postulated. This indicates that the patients affected by the crisis would have more health problems in general. However, the non-affected would either adopt

healthier or more defensive attitudes (fear of losing a job due to work disability). As the number of persons who have the most harmful effects of the crisis (unemployment, repossessions, etc) is lower than those not suffering it, the net effect would be less care demand and even a decrease in the true morbidity.³⁷

This study has a series of limitation. The first is related to the characteristics of the case cumulative registries. These registries are dependent on the nature and structure of the services and on the reference population characteristics. Therefore, the social phenomena and migrations may have an unknown impact on the data. They provide limited information because they use wide diagnostic categories that are difficult to modify. In the specific case of the RACPAS, the clinical actions made in Primary Care were not registered.

In the second place, the series studied ended in 2010, which means that it was not possible to see how the data behaved in the most intense years of the crisis. In the third place, the current study analyzed the association of the administrative morbidity of mental health and the crisis globally without considering some variables (above all gender and age) that had previously been demonstrated to have a modulating effect on the influence of the economic crisis situations on mental health. Although the work design makes it possible to respond to its objective (analyze the association between economic crisis and care demand), it does not make it possible to go deep into other aspects such as the differential effect that the crisis may have had on different population groups or to establish the influence that the sociodemographic changes of the population study could have had on the data.

In conclusion, and although it was not possible to establish causal relations, the current study has shown an association between care demand for specialized mental health services and the economic crisis expressed as the variation of three socioeconomic indicators (unemployment rate, unemployment, consumer price index [CPI] and gross domestic product [GDP]). The increase in the unemployment rate was associated to a clear decrease in both the new and prevalent mental health demand. Increased living costs (increase in CPI) had little relevant effect, with a weakly positive correlation with the incident demand. The increase in material well-being (measured by the GDP) did not show a significant correlation with demand of new cases and was robustly associated with an increase in the AARP, which was greater in the case of Alcoholism, Neurotic disorders, Mental retardation and Z codes.

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