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ARTIGO ORIGINAL

Economic Crisis in Portugal: Trajectory of the Incidence of Depression and Correlation With Unemployment

Crise Económica em Portugal: Evolução da Incidência de Depressão e Correlação com o Desemprego

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ABSTRACT

Introduction: Previous studies have found an increase in the incidence rate of depression between 2007 – 2013 in Portugal, with a positive correlation with the unemployment rate, namely, in men. So, it was hypothesized that this increase is related with the situation of economic crisis. This study aimed to investigate if the correlation between unemployment rates and the incidence of depression is maintained in the post-crisis period of economic recovery in Portugal (2016 – 2018).

Material and Methods: An ecological study was carried out, using data from the General Practitioners Sentinel Network concerning depression incidence (first episodes and relapses) and data from the National Statistics Institute on unemployment rates in the Portuguese population. The correlation coefficient was estimated using linear regression and the results were disaggregated by sex.

Results: Between 2016 and 2018, there was a consistent decrease in the incidence of depression in both sexes. During the 1995 – 2018 period, a positive correlation was observed between unemployment and depression, with a coefficient of 0.833 (p = 0.005) in males and of 0.742 (p = 0.022) in females.

Discussion: The reduction in the incidence of depression in both sexes observed between 2016 – 2018 corroborates a positive correlation between unemployment and depression in the Portuguese population, previously observed between 2007 – 2013.

Conclusion: This study highlights the need to monitor the occurrence of mental illness in the Portuguese population, especially in moments of greatest social vulnerability in order to establish preventive measures, as a way to mitigate the impact of future economic crises.

Keywords: Depression; Economic Recession; Portugal; Primary Health Care; Sentinel Surveillance; Unemployment

RESUMO

Introdução: Estudos anteriores verificaram um aumento da taxa de incidência de depressão entre 2007 e 2013 em Portugal, a qual se correlacionou positivamente com a taxa de desemprego, nomeadamente, em homens. Tal facto levantou a hipótese desse aumento se encontrar relacionado com a situação de crise económica à data. No sentido de testar esta hipótese, este estudo teve como objetivo investigar se a correlação entre taxa de desemprego e incidência de depressão se manteve no período de recuperação económica pós-crise em Portugal (2016 – 2018).

Material e Métodos: Realizou-se um estudo ecológico, utilizando dados da rede Médicos Sentinela relativos à incidência de depressão (primeiros episódios e recidiva) e dados do Instituto Nacional de Estatística sobre a taxa de desemprego na população portuguesa. O coeficiente de correlação foi estimado através de regressão linear e os resultados foram desagregados por sexo.

Resultados: Entre 2016 e 2018, verificou-se um decréscimo consistente da incidência de depressão em ambos os sexos. Durante o período 1995 – 2018, observou-se uma correlação positiva entre desemprego e depressão, sendo o seu coeficiente de 0,833 (p = 0,005) nos homens e de 0,742 (p = 0,022) nas mulheres.

Discussão: A redução da taxa de incidência de depressão em ambos os sexos, observada entre 2016 e 2018, corrobora a existência da correlação positiva entre desemprego e depressão na população portuguesa, observada anteriormente em 2007 – 2013.

Conclusão: Este estudo reforça a necessidade de monitorização da ocorrência de doença mental na população portuguesa, em especial em momentos de maior vulnerabilidade social, para instituição de medidas preventivas como forma de mitigar o impacto de futuras crises económicas.

Palavras-chave: Cuidados de Saúde Primários; Depressão Vigilância de Evento Sentinela; Desemprego; Portugal; Recessão Económica

INTRODUCTION

It is known today that the economic crisis that hit Europe in 2007 had a negative impact on the population's health, both through a direct economic impact on the family budgets and indirectly through the application of austerity measures on the health system.[1,2]

Portugal is among the most affected countries by this economic crisis, having required additional international financial support from 2011 to 2014, under the supervision of the International Monetary Fund, European Central Bank and the European Commission. From 2011 to 2013, the country lost approximately 7% of its gross domestic product (GDP) and the annual unemployment rate increased

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from 8.8% in 2008 to 16.4% in 2013, one of the highest in Europe.[3] The health sector was also affected by increased barriers in access to healthcare, as well as disinvestment in healthcare equipment and infrastructure.[4]

Major depression is more frequent in patients with specific risk factors. Three main pathways have been described that interact and could explain the development of the illness: intrinsic factors such as neuroticism or low self-esteem, extrinsic factors such as substance abuse or other adverse life events, for example, marital problems or low social support.[5] The relationship between socio-economic factors and mental health status has also been widely assessed and the relationship between socio-economic instability and the development of mental health problems is well known.[6,7] Periods of economic recession lead to a higher prevalence of mental health problems such as depression, anxiety disorder, substance abuse and suicidal behaviour due to increased unemployment, financial difficulties, indebtedness and work-related problems.[8] In particular, increasing unemployment during periods of economic crisis has been used as one of the macroeconomic indicators associated with mental health impairment.[8]

A positive correlation between unemployment rate and the incidence rate of depression in men during the period of economic crisis (between 2007 and 2013) has been found in previous studies carried out in Portugal by our research team and it was then hypothesised that the increase in the incidence rate of depression in Portugal could be related to the economic crisis.[9]

By the beginning of the COVID-19 pandemic, Portugal was slowly recovering from the crisis, with a progressive increase in real GDP growth rate, showing positive values since 2014 and a decrease in the unemployment rate.[10]

A regular implementation of studies on the impact of economic crises on mental health has been found, with an increasing trend during the recession period and immediately afterwards.[11] However, there is a scarcity of studies aimed at the assessment of the impact of the economic recovery period (post-crisis) on mental health. The relevance of these studies is based on the need for knowledge about a potential variation on mental health status of the population during this period, as well as the analysis of the evolution of the prevalence of mental health disorders throughout the periods before and following a socio-economic crisis, namely aimed at assessing whether pre-crisis values are found in the post-crisis period.

In order to address this gap of knowledge in Portugal, this study was aimed at describing the evolution of the incidence rate of depression throughout the periods before, during and after the economic crisis and whether the correlation between the unemployment rate and the incidence of depression, previously found during the economic crisis period, remains in the post-crisis period (2016 to 2018).

MATERIAL AND METHODS

This was an ecological study aimed at the analysis of the evolution of the incidence rate of depression in the years 1995, 1996, 1997, 2004, 2012, 2013, 2016, 2017 and 2018 and the correlation with the unemployment rate in Portugal.

Data on the incidence of depression (initial and relapsing episodes) were obtained from the *Rede Médicos-Sentinela* – RMS (General Practitioner Sentinel Network) and data on the unemployment rate were available from the *Instituto Nacional de Estatística* - INE (Statistics Portugal).[10]

A predetermined set of health events affecting their patients were voluntarily notified, on a continuous and systematic basis, by the RMS network, a healthcare observation system involving family physicians working within the National Health Service.

All patients newly diagnosed with depression (first episode and relapse) were represented by the numerator while the population effectively assessed by the RMS network corresponded to the denominator in order to obtain the incidence rate of depression. The population corresponded to the sum of the user lists of active physicians within each week, i.e., physicians who have reported cases in each week. Within the study time, the population assessed by the network ranged between a minimum of 28,184 individuals in 2013 and a maximum of 164,676 individuals in 1995.

Different events for notification by the RMS network are considered each year; depression was considered for notification in 1995, 1996, 1997, 2004, 2012, 2013, 2016, 2017 and 2018, which is why only incidence rates for these years are available. In all the years under study, the case definition of depression was based on the best clinical knowledge, i.e. following the same criteria used in diagnostic and therapeutic approach of patients while a procedure manual was available, in order to standardise the way in which the notification of cases was carried out.

The presence of depression disorder (first episode and relapses) were the notification events in 1995 - 1997 and 2017, 2018, while depression-related consultations were the notification events in 2004, 2012 and 2013. Therefore, only the first depression-related consultations corresponding to first episodes or relapses were considered in these years.

The incidence rate of depression was standardised by the direct method using the 1976 European standard population.

The correlation between unemployment rate and the incidence rate of depression was estimated by applying a linear regression model with gender-disaggregated data. The normality of the data was checked through visual observation of the histogram and residual plots. A 5% level

of statistical significance was considered. SPSS statistical analysis software, version 22 has been used.

The collection of anonymised data within the scope of the surveillance activities of the RMS network was approved by the Ethics Committee of the *Instituto Nacional de Saúde* and the *Comissão Nacional de Proteção de Dados* (CNPD – the Portuguese data protection authority). These data are collected primarily for the monitoring of different healthcare problems; therefore, aggregated and anonymised secondary data were used in this study.

RESULTS

A significant increase in the incidence rate of depression has been found in both genders from 2004 onwards, while the highest rate was found in 2013, with a consistent decrease in both genders from that year onwards. Higher incidence rates have been found in females in all study years (Table 1).

Table 1 – Incidence of depression (initial episode and relapses) in Portugal (/100,000)

Year	Male		Female	
	Gross (/100 000)	Standardised (/100 000)	Gross (/100 000)	Standardised (/100 000)
1995	178.0	181.1	789.0	788.2
1996	143.3	143.7	879.9	882.5
1997	172.3	164.7	841.3	828.2
2004	476.6	451.8	1963.9	1873.3
2012	571.5	539.5	2136.0	1968.0
2013	731.4	668.3	2103.5	1928.7
2016	518.1	472.2	1632.0	1469.1
2017	471.6	411.9	1467.8	1328.5
2018	269.1	247.6	820.7	740.4

A higher correlation was found between unemployment and depression in males (R = 0.833, p = 0.005) when compared to females (R = 0.742, p = 0.022), showing statistically significant correlations (Table 2, Fig. 1 and 2).

An increase of 37.8 cases of depression per 100,000 population has been found in male patients between 1995 and 2018, for each unit increase in the unemployment rate, with an increase of 110.2 per 100,000 in female patients.

DISCUSSION

The results of this study have confirmed a positive correlation between unemployment and depression in the Portuguese population, up to 2013.[9] This monitoring study aimed at assessing whether the correlation remained after the crisis, i.e. in the period of economic recovery. The study showed a reduction in the incidence rate of depression, in both genders, with the integration of data referring to later years (2016, 2017 and 2018), years of economic recovery with lower unemployment rates.

The differences found in the incidence of depression between genders were in line with Van de Velde *et al.* who have analysed the prevalence of depressive symptoms in different European countries and found the greatest gender differences in Portugal.[12]

The fact that the correlation between unemployment

Table 2 – Variation of the incidence of depression (/100,000) by unit variation of the unemployment rate in Portugal (1995 *vs.* 2018)

Gender	Variation	95% CI	*p*
Male	37.8	15.3 – 60.3	0.005
Female	110.2	21.3 – 199.1	0.022

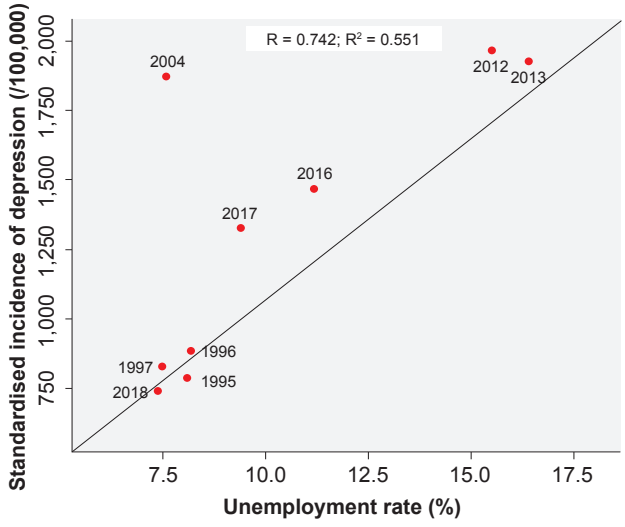

Figure 1 – Scatter plot chart between unemployment and incidence of depression in male gender in Portugal in 1995, 1996, 1997, 2004, 2012, 2013, 2016, 2017 and 2018 (single years with notification of depression in RMS network)

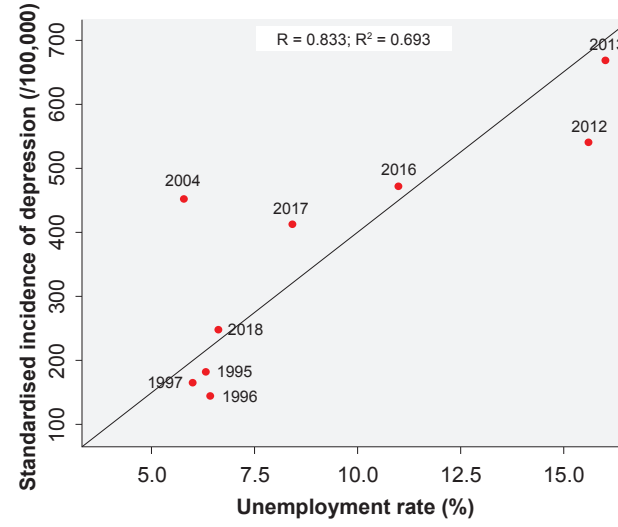

Figure 2 – Scatter plot chart between unemployment and incidence of depression in female gender in Portugal in 1995, 1996, 1997, 2004, 2012, 2013, 2016, 2017 and 2018 (single years with notification of depression in RMS network)

and depression was not statistically significant in females in the previous study may have been due to the shorter study time.[9] There is conflicting literature on differences regarding the impact of unemployment on mental health in men and women, showing that namely socio-political factors could explain these differences.[13] Van de Velde *et al.* hypothesised that in Southern European countries, such as Portugal, the family has an important weight and, as such, there is a more traditional gender ideology, leading women's depressive symptoms to be more associated to family factors while men's were more associated to socio-economic factors, such as unemployment, although this was not analysed.[12] In this study, an association was found between the levels of depression and socioeconomic factors in both women and men, but not with family factors.[12] Lower levels of mental wellbeing were also found in unemployed people from Southern European countries characterised by a social protection system with gaps in support for the unemployed population.[13] Additionally, the same authors have described that high unemployment rates during an economic crisis impair the bargaining power of workers and trade unions, increasing precarious work and insecurity for those in employment, with the subsequent acceptance of poorer working conditions, which may also affect mental wellbeing of the employed population.[13] Unemployment rates seem to function as a marker of the economic environment and wellbeing of the population.[11,14]

The fact that an estimate of the real incidence rate of depression in the Portuguese population was not available with this study (only the estimated rate of users of primary healthcare who sought a consultation due to depression was available), was a limitation. A potential selection bias could also exist as the group of family physicians within the network corresponded to a convenience sample and were not randomly selected. These results should be interpreted taking into account the possibility of variation in the notification of cases of depression in the population of the RMS network, the definition and the short study time. It is worth mentioning that the ecological study design does not allow establishing causal relationships at the individual level between the exposure variable (unemployment) and the outcome variable (depression) and that the lack of control for confounding variables such as mean family income, accessibility to healthcare, area of residence and patient's age may lead to an error with implications on the validity of this study. An approximately 69% percentage of variance is explained in male patients (R2) with 55% in female patients (R2), showing that other factors could in fact explain the remaining percentage.

Despite the limitations and to the best of our knowledge, this is the first study showing the positive impact of the economic recovery on mental health in Portugal (through the decrease in unemployment rates). Drydakis compared pre- and intra-crisis periods in Greece and reached the conclusion that job loss is more damaging to mental health in periods of high unemployment rates.[15]

CONCLUSION

A reduced incidence rate of depression in post-crisis period in both genders has been found in this study, as well as a positive correlation with the unemployment rate in the Portuguese population. Despite the improvement in economic growth rates in Portugal, recession episodes tend to be cyclical and preventive measures that could really minimise the impact of a future economic crisis on the mental health of Portuguese people should be considered. These results also show the need to monitor mental disorders in the Portuguese population, particularly at times of greater social vulnerability.

HUMAN AND ANIMAL PROTECTION

The authors declare that this project complied with the regulations that were established by the Ethics and Clinical Research Committee, according to the 2013 update of the Helsinki Declaration of the World Medical Association.

DATA CONFIDENTIALITY

The authors declare that they have followed the protocols of their work centre on the publication of patient data.

CONFLICTS OF INTEREST

The authors declare that there were no conflicts of interest in writing this manuscript.

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