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Rafael Sarmento Pinto Correia
Consumo de medicamentos
antidepressivos e ansiolíticos:
evolução e determinantes
contextuais / Consumption of
antidepressants and anxiolytics:
evolution and contextual
determinants

Março, 2021

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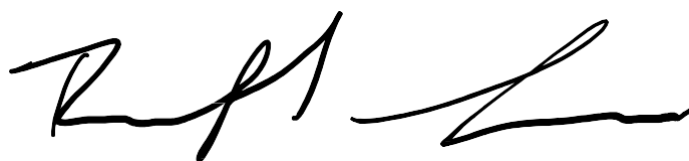
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Consumption of antidepressants and anxiolytics: evolution and contextual determinants

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É AUTORIZADA A REPRODUÇÃO INTEGRAL DESTA TRABALHO APENAS PARA EFEITOS DE INVESTIGAÇÃO, MEDIANTE DECLARAÇÃO ESCRITA DO INTERESSADO, QUE A TAL SE COMPROMETE.	<input type="checkbox"/>
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Title page

Consumption of antidepressants and anxiolytics: evolution and contextual determinants

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*À minha mãe, que me ensinou a rir
Ao meu pai, que me ensinou a pensar
Ao meu irmão, o meu melhor amigo*

Consumption of antidepressants and anxiolytics: evolution and contextual determinants

Abstract:

Introduction: Portugal is one of the European countries with highest consumption rates of antidepressants and anxiolytics. It is known that mental health is influenced by multifarious factors, including socioeconomic, and lower education and income, unemployment and socioeconomic deprivation have a clear impact on depression and anxiety. Though, we don't know how these factors affected these substances' consumption rates in the last decade. This study will help to shed a light in what could be done to improve mental health in Portugal.

Methods: This observational ecological study assessed for associations between socioeconomic and demographic factors and the consumption of antidepressants and anxiolytics, using linear regression analyses.

Results: Significant associations were found between the consumption of antidepressants and age index (coef:1.35, $p < 0.001$) and sex ratio (coef:24.67, $p < 0.001$), and between anxiolytics and sex ratio (coef.:120.75, $p < 0.05$) education (coef.: -291.02, $p < 0.05$), income (coef.:2.31, $p < 0.05$), purchasing power (coef.:22.76, $p < 0.01$) and the proportion of inhabitants with social benefits (coef.:315.12, $p < 0.01$).

Discussion: To improve mental health in Portugal we need to improve (1) the understanding on how socioeconomic and demographic factors influence mental health, (2) policies on antidepressants' and anxiolytics' prescriptions and making other approaches available, (3) professionals' awareness and (4) combat the poor socioeconomic conditions in which these diseases capitalise.

Conclusion: This study brought light to the importance and evolution of anxiety and depressive disorders in Portugal and to the better understanding of its contextual determinants. This knowledge can contribute to better manage these conditions and to gain healthy life years.

KEY-WORDS: *"Antidepressive Agents"[Mesh], "Anti-Anxiety Agents"[Mesh], Socioeconomic Factors"[Mesh], "Portugal"[Mesh], "Depression"[Mesh], Anxiety"[Mesh]*

Resumo:

Introdução: Portugal é um dos países europeus com maior taxa de consumo de antidepressivos e ansiolíticos. A saúde mental é influenciada por múltiplos fatores, incluindo socioeconómicos, nível de educação, rendimento, desemprego e privação socioeconómica que têm claro impacto no risco de desenvolver depressão e ansiedade. Porém, não sabemos como estes fatores afetaram a taxa de consumo destas substâncias na última década.

Métodos: Estudamos através de um estudo observacional associação entre fatores socioeconómicos e demográficos e o consumo de antidepressivos e ansiolíticos usando uma regressão linear simples e múltipla.

Resultados: Associações significativas foram encontradas entre o consumo de antidepressivos e o ano (coef:47.34, $p<0.001$), índice de idade (coef:1.35, $p<0.001$), índice de masculinidade (coef:24.67, $p<0.001$) e também entre o consumo de ansiolíticos e o índice de masculinidade (coef.:120.75, $p<0.05$), a escolaridade (coef.: -291.02, $p<0.05$), o rendimento (coef.:2.31, $p<0.05$), poder de compra (coef.:22.76, $p<0.01$) e a proporção de habitantes beneficiados pelo RSI (coef.:315.12, $p<0.01$).

Discussão: Para melhorar saúde mental em Portugal temos de melhor compreender a influência dos fatores socioeconómicos e demográficos na saúde mental, políticas sobre a prescrição de antidepressivos e ansiolíticos e abrindo caminho para que outras abordagens sejam possíveis, sensibilizar profissionais de saúde para estes distúrbios e combater as condições socioeconómicas sobre as quais estes distúrbios capitalizam.

Conclusão: Este estudo expôs a importância e a evolução do consumo de antidepressivos e ansiolíticos em Portugal, assim como ajuda na compreensão das suas determinantes contextuais. Este conhecimento pode auxiliar na gestão destas doenças assim como no ganho de ano de vida sem doença.

Introduction

Mental health disorders are widespread in society¹. Anxiety and depression are the most common mental health disorders². In 2017, 163,044,600 people suffered from major depressive disorder and 284,360,100 from anxiety disorders worldwide³, with age-standardised prevalence of 3.44% for depression and 3.76% for anxiety disorders². In the same year, in Western Europe the age-standardised prevalence for depression was of 3.92% and 5.71% for anxiety disorders, and 4.43% of the Portuguese population had the diagnosis of depression and 5.38% of anxiety disorders². Portugal was the 5th country in Europe with highest prevalence of mental health issues^{4,5}.

Major depression and anxiety disorders were the fifth and sixth main causes of years lived with disability in the Western Europe in 2019, leading to the loss of 2.72% and 1.92% of healthy life years (DALY). In Portugal depression was responsible for the loss of 3.16% of DALY, and anxiety for 2.58%⁶.

Depressive disorders can range from mild to moderate to severe⁷. All three varieties share the same characteristics: depressed mood, loss of interest and enjoyment, and reduced energy leading to increased fatigability and diminished activity. Other common symptoms, as reduced concentration and self-esteem, ideas of guilt and unworthiness, bleak and pessimistic views of the future, ideas or acts of self-harm or suicide, disturbed sleep and diminished appetite, can also be found⁷. Anxiety disorders are associated with symptoms as apprehension, motor tension, and autonomic overactivity⁷, which occur on most days for at least several weeks, and usually lasting several months⁷.

Though common, people with these diagnoses are often stigmatised¹. A survey showed that a third of participants believed that a weak personality caused depression⁸. Despite their pronounced prevalence, the costs with treatment fall behind circulatory, digestive, musculoskeletal diseases or cancer⁹. Nonetheless costs have been growing and, in 2016, 14% of health spending was on mental health disorders⁹.

In 2015 the Organisation for Economic Cooperation and Development (OECD) estimated that over 600 billion Euros were spent in mental health (in terms of costs with

healthcare, social support, unemployment and productivity), about 4% of the Gross Domestic Product (GDP) across the 28 EU countries⁴. Portugal presented high expenditures on mental health, with 6.6 billion euros, the equivalent of 3.7% of its GDP⁴. Pharmaceutical treatments are an important part of that expenditure: in 2016 8.4% of all the total ambulatory expenditure was on antidepressants and antipsychotics which amounted to 69,562,976€ for antipsychotics and 32,646,389€ on antidepressants⁵.

Treatment for depression and anxiety disorders have two possible paths - pharmacological or non-pharmacological – often combined¹⁰. Non-pharmacological therapies are often overlooked, as they depend on human resources^{10,11}. In Portugal, the pharmacological treatment is usually preferred^{12,13} and, in 2018, the country presented the highest consumption of anxiolytics and was the fourth with higher consumption of antidepressants among OECD countries¹⁴.

The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) states three categories of risk factors for these disorders: temperamental, environmental, genetic and physiological¹⁵. Depression risk factors include neuroticism as temperamental risk factors, adverse childhood experiences as environmental risk factors and, for genetic and physiological risk factors, literature shows that first-degree family members of individuals with major depressive disorder are 2-4 times at higher risk of developing it¹⁵. Regarding anxiety disorders, behavioural inhibition, neuroticism and harm are known as temperamental risk factors. Links to childhood adversities and parental protection have been made, while no sufficient correlation has been found when it comes to environmental risk factors; finally the genetic influence that can be found in anxiety disorders explain up to a third of the cases¹⁵.

The literature shows that social determinants can contribute for depression and anxiety disorders. The socioeconomic status has a clear impact in health: lower socioeconomic status is associated with a poorer health and lower life expectancy¹⁶. Similarly, mental health disorders present a social gradient. Lower educational levels have been linked to higher prevalence mental disorders¹⁰. Unemployment is associated with increased mental distress, even in countries that have universal healthcare (i.e. Portugal)¹⁶. Lower incomes were found to be associated with not only poorer mental health, to self-harm and suicide attempts¹⁶.

The observed differences in social determinants develop from unequal distribution of resources: lower education is linked to lower incomes and worst working conditions, which lead to worst living conditions, as poor housing conditions, food insecurity, stress and poorer mental health¹⁶. Financial deprivation, difficulties paying basic expenses and the perceived risk of unemployment also contribute for with mental distress¹⁶. Areas with lower investment in social support and access to health care, especially mental health services, are unable to mitigate the effect financial deprivation¹⁶. As such, depression and anxiety disorders have a strong correlation with income inequalities: a 2018 meta-analysis found a 61.5% positive correlation between income inequality and anxiety disorders¹⁷. Income inequality is especially prominent in Southern Europe¹⁸.

We hypothesise that not only those social determinants have a major role in mental issues, but also that they reverberate on the prevalence of mental disorders and, therefore, on the consumption of antidepressants and anxiolytics. Considering its high consumption rates of in Portugal we aimed to study the association between the above-mentioned contextual determinants and the consumption of antidepressants and anxiolytics per county (distrito) in the last decade.

Methods

We performed an observational ecological study on the consumption of anxiolytics and antidepressants in counties from continental Portugal from 2011 to 2019.

Data and data sources

Data on consumption of antidepressants and anxiolytics were provided by the Portuguese Authority of Medicines and Health Products (Infarmed), as total number of packs prescribed and sold in community pharmacies, by year (from 2011 to 2019) and by counties. We transformed this variable into number of packs per 1000 inhabitants for each county. Yearly data on the population size of municipalities that constituted each county were extracted from the Portuguese National Statistics Institute¹⁹.

As independent variables we selected variables that could reflect the socioeconomic context at county-level. We selected variables related to economic deprivation: purchasing power per capita and mean monthly income were selected as a

proxy of economic wellbeing; proportion of inhabitants with social benefits was selected as a proxy for severe economic deprivation; unemployment rate was selected not only as a measure of economic deprivation but also of social isolation due to the exclusion from societies' working group. The proportion of inhabitants with tertiary education were selected as higher education may contribute to higher health literacy levels, better living and working conditions, as well as higher access to healthcare. We also used economic growth (a measure of the change of gross domestic product from year to year) as economic crises can be associated with increased risk for mental health disorders, and strike the poorer, which are, as seen previously, already at higher risk of developing mental disorders^{20,21}. The variable "medical doctors per 1000 inhabitants" was used as proxy of access to health care, as it could lead to more access to diagnosis and treatment.

Demographic variables were also used. Ageing index (number of elders per 100 persons younger than 15 years old in a certain population) and sex ratio (number of males per 100 females in a certain population) were used, since the prevalence of depression and anxiety can have a positive correlation to ones ageing and with female gender^{22,23}.

Purchasing power per capita, proportion of inhabitants with social benefits, unemployment rate, proportion of inhabitants with tertiary education, medical doctors per 1000 inhabitants, ageing index and sex ratio were available at municipal level in the Portuguese National Statistics Institute website¹⁹. Economic growth was obtained through the World Bank Open Data base²⁴, only available at national level.

We transformed data from municipalities-level into county-level. We calculated a weighted average for all our independent variables for each county and year (considering the population size of each municipality), except for unemployment rate and social benefits, for which we estimated the proportion by county and year. Economic growth, available at country-level, was assumed to be equal in all counties for each year.

We obtained data for 2011-2019 span for all variables except education level (available for 2011, date of the last CENSUS), unemployment rates (2014-2019), proportion of inhabitants with social benefits (2014-2019), and purchasing power per capita (2011, 2013, 2015 and 2017).

Statistical analyses

We performed descriptive analyses in order to first grasp the distribution of the consumption of antidepressants and anxiolytics by year, county and by each independent variable.

We then tested the dependent and independent variables' correlation using a pairwise correlation approach. The variables that showed coefficients of -1 to -0.4 and 0.4 to 1 were included in simple linear regression analyses. Segmented linear regression analyses were performed when non-linear patterns were observed for all 162 county-years (i.e., 18 counties * 9 years). We further analysed how several independent variables would predict antidepressants' and anxiolytics' consumption using multiple linear regressions with backward elimination, using county dummies for adjustment for cultural and other non-measurable characteristics.

Results

Descriptive analysis

The mean consumption of antidepressants almost doubled in continental Portugal (Table 1). This positive trend was found in all counties through the years. The mean consumption of anxiolytics decreased from 10,429,118 in 2011 to 7,539,612 packs in 2019. Évora, Portalegre and Coimbra had the highest consumption of antidepressants in 2019 (1344, 1187 and 1160 packs per 1000 inhabitants, respectively), while Braga, Faro and Bragança had the lowest per capita consumption (630, 669 and 794). Portalegre, Castelo Branco and Coimbra had the highest consumption of anxiolytics (1358, 1307 and 1287), while Braga, Faro and Lisbon had the lowest consumption (780, 805 and 860).

The distribution of the independent variables by year and county can be seen in Table 1. The ageing index had a positive trend in all counties, while the sex ratio declined. The proportion of inhabitants with tertiary education was only available for 2011 and varied between 20.50 in Lisbon and 9.25 in Beja. The purchasing power per capita declined in most counties while mean monthly income showed an uptrend throughout. The proportion of inhabitants with social benefits showed a decline from 2014 to 2019 in most counties. The unemployment rate declined from 2014 to 2019.

The number of medical doctors per 1000 inhabitants increased in all counties. The gross domestic product variation became positive during this period.

Plotting the distribution of the consumption of antidepressants by the independent variables we found different trends. Time (in years) and economic growth showed a positive pattern with antidepressants consumption, while unemployment rate showed a negative pattern. The remaining variables did not show any evident positive or negative trend. Regarding anxiolytics, only ageing index and proportion of inhabitants with social benefits showed a pattern when plotted with anxiolytics, a positive pattern.

Correlation analysis

Out of all independent variables only time, economic growth, and unemployment rate showed a moderate correlation with the consumption of antidepressants. Regarding the consumption of anxiolytics only the ageing index and the proportion of inhabitants with social benefits showed a moderate correlation.

Simple linear regression

Antidepressants consumption increased in 49.21 packs per 1000 inhabitants per year (IC95%[40.23;58.20] $p < 0.001$), in a moderate but constant trend from 2011 until 2019 (Table 2). It was associated with economic growth: when it was situated between -1 and 3 the coefficient was of 70.73 (IC95%[44.06;97.40] $p < 0.001$). Regarding unemployment rate, we observed a negative trend of -73.45 packs for percentual point (IC95%[-99.55;-47.34]; $p < 0.001$). The correlation between these two variables was significant when unemployment rates were inferior to 6 (coef.: -63.56; IC95%[-95.63;-31.49], $p < 0.001$).

The association between the consumption of anxiolytics and ageing index was positive, with a coefficient of 1.51 (IC95%[1.07;1.96]; $p < 0.001$) and, when lower than 250, a coefficient of 2.86 (IC95%[2.14;3.57], $p < 0.001$). The association between the consumption of anxiolytics and proportion of inhabitants with social benefits had a coefficient of 89.32 (IC95%[58.34;120.29]; $p < 0.001$) and, when the was inferior to 3 the correlation had a coefficient of 118.28 (IC95%[55.11;181.44]; $p < 0.001$).

Multiple linear regression

The simultaneous analysis of the several independent variables showed that year (coef.:47.34, IC95%[42.61;52.08], $p<0.001$), ageing index (coef.:1.35, IC95%[0.73;1.96], $p<0.001$) and sex ratio (coef.:24.67 IC95%[12.37;36.97], $p<0.001$) were positively associated with the consumption of antidepressants (Table 3).

The consumption of anxiolytics were associated with mean monthly income (coef.:2.31; IC95%[0.61;4.02], $p<0.05$), proportion of inhabitants with social benefits (coef.:315.12; IC95%[119.61;510.64], $p<0.005$), purchasing power per capita (coef.:22.76; IC95%[6.88;38.63], $p<0.01$); tertiary education (coef.: -291.02 IC95%[-519.47;-62.56], $p<0.005$) and sex ratio (coef.:120.75 IC95%[15.92;225.57], $p<0.001$).

Discussion

From 2011 to 2019 the mean consumption of antidepressants rose in continental Portugal while the consumption of anxiolytics overall decreased. The consumption of antidepressants was associated with economic growth, unemployment, and time (year). These associations changed in multiple regression, as the associations with economic growth and unemployment became non-significant and sex ratio and ageing index became positively associated with antidepressants' consumption. Regarding anxiolytics, single regressions found positive associations with the ageing index and the proportion of inhabitants with social benefits, but multiple regressions unveiled positive associations with the mean income, purchasing power, the proportion of the population with social benefits, sex ratio and a negative association with tertiary education.

Whilst depression prevalence had a slight decline from 2011 to 2017 (from 4.75% to 4.42%)², antidepressants' consumption rose significantly (from 0.52 to 0.92 packs per capita). For anxiety disorders the opposite happened: prevalence rose (from 5.37% to 5.38%)² but anxiolytics' consumption dropped (from 1.15 to 1.01 packs per capita). The positive association between consumption of antidepressants and time can be explained by a higher accessibility and therapeutic mindset. Therapeutic mindset could contribute to this uptrend as the mindset for medical care "a pill for every ill" is still a reality. Portugal's high consumption of antidepressants vouches for that mentality^{9,25}.

Since 2011²⁶ the prices of generic drugs have been reduced and prescribers have been encouraged to prescribe them, leading to the reduction of the costs with drugs for the State and, importantly, for patients, making them more accessible.

Regarding contextual socioeconomic variables, the positive association of anxiolytics' consumption with the proportion of population with social benefits, and the negative association with the proportion of tertiary education may reflect the association between anxiety and socioeconomic deprivation, both by the already described path that leads worse socioeconomic conditions to anxiety¹⁶, and by the fact that anxiety can enhance poverty levels by hindering individuals' learning and producing capacity, which will put them into further deprivation²⁷.

Unexpectedly, counties with higher purchasing power and mean income presented higher consumption of anxiolytics. This may be explained by the fact that people with higher incomes could resort with more ease to consultations with specialists (as psychiatrics), therefore driving the diagnostic of these diseases up and the consumption of anxiolytics with it^{28,29}. While lower incomes are associated to poorer mental health they are not linked to higher intake of psychotropic drugs; higher consumption of psychotropic drugs is more often associated with poverty, educational level and working conditions^{30,31}.

The non-significant association of economic growth and unemployment with antidepressants consumption may be due to the protective effect of social protection policies. Our study found no positive association between the number of doctors per 1000 inhabitants and antidepressants consumption. This may be related to the fact that this number does not reflect the number of psychiatrists nor of general practitioners, nor those working in the National Health Service.

Regarding demographic variables, the literature shows that depression prevalence is about 50% higher in groups with 50 years old or over when compared to those younger than 50 years², and our results are in line with this finding. Regarding anxiety disorders, the literature shows an oxymoronic distribution, with higher prevalence in Portugal being between 15-19 years old, with 7.17%, declining to 5.67% in ages 50-69 years old². The association of anxiolytics consumption with ageing index in simple regression analysis lost its significance in the multiple analysis, possibly due to

the effect captured by tertiary education rates, which tend to be lower among the older age groups³². This can also be attributed to the higher awareness of prescribers to adverse reactions and side effects of anxiolytics prescription, as cognitive impairment, falls and delirium in the elderly^{33,34}. The positive association between sex ratio and antidepressants' and anxiolytics' consumption may be due to the increasing accessibility to primary healthcare through an increasing coverage and autonomy of family health units in this decade³⁵, possibly leading to a better follow-up of the individuals, including men, who are usually less prone to seek healthcare. An increasing awareness of the burden of depression and anxiety disorders among men can also contribute to a higher prescription of those drugs.

The higher consumption of anxiolytics in inland and mainly rural counties may be related to several factors: lower education levels and higher use of social benefits, as previously seen, but also the geographical characteristics, as social isolation, that can further deteriorate one's mental health¹⁶.

These results' interpretation must take into account this study's limitations. First, data were available at county-level. Thus, the ecologic bias needs to be considered: our results are only valid at county-level and, as we are comparing averages, it is probable that the differences found here would be more striking if the study was done at municipal, parish or individual levels. Second, we did not have access to yearly data for some variables (as education) but major changes in time and, especially, major differences in those changes across counties were not expected. Also, economic growth was assumed to be the same throughout all counties disregarding the fact that some counties may have had higher economic growth than others. Though, we expected this variation would be captured by income and purchasing power. Third, the aim of this study was to better understand the factors behind the variation by county and year in Portugal and, as such, these results are valid to Portugal and for these years' span. As shown, the consumption of antidepressants and anxiolytics depends on individual and contextual socioeconomic factors, but may be also influenced by organisational ones. Changes in healthcare guidelines and on access to these diseases' pharmacological and non-pharmacological treatments can change these drugs' consumption rates and attenuate or amplify the associations found with socioeconomic factors.

Consumption of anxiolytics and antidepressants are still a major concern, especially in Portugal. Multiple contextual factors, as unemployment, education, income, purchasing power and the proportion of inhabitants with social benefits influence those consumptions. These factors can be addressed with strong social and health policies, as making mental health accessible in primary healthcare with qualified professionals⁵, assessing high risk groups and address them by providing them the services they need³⁶, interventions in schools to better educate about mental health⁵, especially those from deprived socioeconomic backgrounds, and raising awareness for the weight of mental disorders and the need of greater investments in prevention and more effective treatment³⁶.

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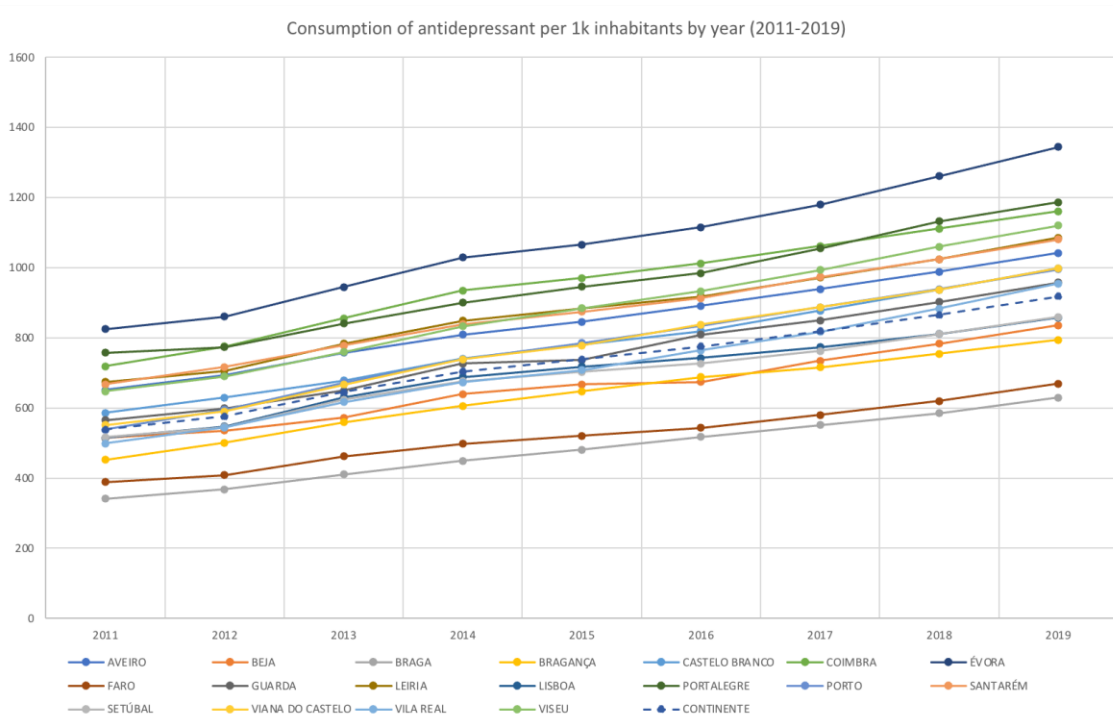
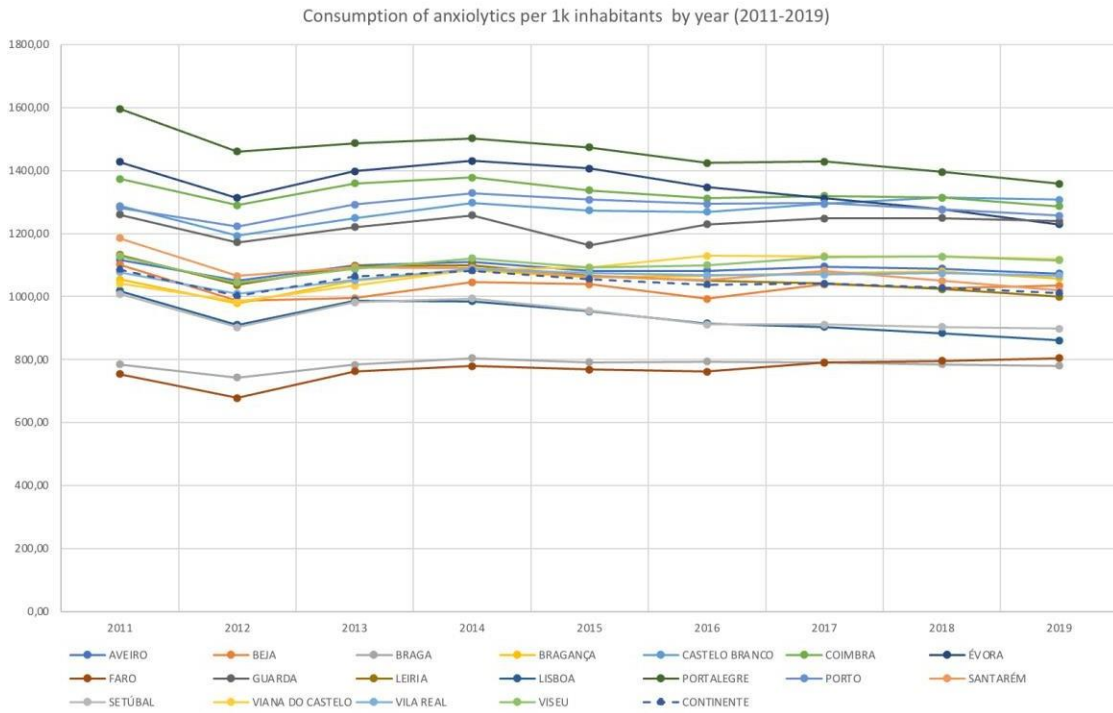


Figure 1: Consumption of anxiolytics and antidepressants per 1000 inhabitants by year (2011-2019)

Table 1: Distribution per county and year (oldest and most recent year) of anxiolytics' and antidepressants' consumption per 1000 inhabitants, ageing index, sex ratio, unemployment rate, proportion of inhabitants with tertiary education, number of medical doctors per 1000 inhabitants, proportion of inhabitants with social benefits, purchasing power per capita, mean monthly income and economic growth.

	Year	Anxiolytics consumption *	Antidepressants consumption *	Ageing index	Sex Ratio	Unemployment rate +	Tertiary Education	Medical doctors *	Social benefits +	Purchasing power per capita °	Mean monthly income #	Economic growth
Aveiro	2011	1.12	0.65	124.08	92.19	5.14	11.71	2.35	2.15	90.01	936.59	-1.70
	2019	1.07	1.04	175.31	90.37	3.30		3.41	1.79	87.82	1059.24	2.16
Beja	2011	1.10	0.52	192.38	96.65	5.79	9.25	1.70	4.30	84.75	910.74	-1.70
	2019	1.03	0.84	206.76	94.18	3.93		2.45	4.09	79.49	998.69	2.16
Braga	2011	0.78	0.34	92.39	93.03	5.88	10.11	2.32	1.50	83.07	839.86	-1.70
	2019	0.78	0.63	146.00	90.89	3.72		3.98	1.08	83.93	952.20	2.16
Bragança	2011	1.05	0.45	269.21	92.87	3.98	11.01	2.20	1.93	79.23	840.58	-1.70
	2019	1.06	0.79	330.92	89.77	2.31		3.14	2.47	71.68	895.50	2.16
Castelo Branco	2011	1.29	0.59	245.15	90.81	4.92	10.80	2.39	2.74	86.02	830.97	-1.70
	2019	1.31	1.00	298.83	90.11	2.72		3.44	2.60	77.09	930.83	2.16
Coimbra	2011	1.37	0.72	177.90	89.39	4.71	15.83	10.10	2.41	99.36	942.30	-1.70
	2019	1.29	1.16	220.96	88.91	2.81		13.58	1.91	90.26	1035.50	2.16
Évora	2011	1.43	0.82	188.36	92.66	5.69	11.33	2.63	3.55	96.36	919.23	-1.70
	2019	1.23	1.34	220.67	90.85	3.15		4.26	2.57	88.05	1000.56	2.16
Faro	2011	0.75	0.39	130.40	94.00	7.97	12.17	3.24	2.45	98.21	931.77	-1.70
	2019	0.81	0.67	150.75	91.08	5.97		4.21	1.71	97.65	985.58	2.16
Guarda	2011	1.26	0.57	264.45	89.64	4.24	9.88	2.23	3.05	80.17	799.66	-1.70
	2019	1.24	0.96	325.06	88.59	2.26		3.61	2.58	69.41	913.91	2.16
Leiria	2011	1.13	0.67	142.53	92.27	5.03	10.88	1.79	1.69	92.37	928.04	-1.70
	2019	1.00	1.09	186.87	91.08	2.89		2.55	1.13	88.60	1022.98	2.16
Lisboa	2011	1.02	0.52	127.62	89.44	5.14	20.51	6.25	2.69	137.67	1258.96	-1.70
	2019	0.86	0.86	139.90	87.92	2.85		7.32	2.12	130.22	1305.47	2.16
Portalegre	2011	1.60	0.76	221.05	91.90	5.79	9.55	3.09	4.65	89.53	865.92	-1.70
	2019	1.36	1.19	250.61	90.09	3.78		3.91	3.87	78.38	940.52	2.16
Porto	2011	1.28	0.54	105.32	91.43	6.65	13.78	5.33	4.84	101.78	977.13	-1.70
	2019	1.26	1.00	151.15	89.08	4.04		6.93	4.04	98.95	1083.60	2.16
Santarém	2011	1.19	0.67	168.95	91.30	5.63	10.89	1.87	2.10	91.30	933.24	-1.70
	2019	1.02	1.08	211.71	89.93	3.23		2.68	1.80	84.21	1017.05	2.16
Setúbal	2011	1.01	0.52	117.03	92.33	5.98	13.81	2.49	3.11	101.39	1093.21	-1.70
	2019	0.90	0.86	146.50	89.66	3.62		3.28	2.96	98.37	1163.90	2.16
Viana do Castelo	2011	1.04	0.55	180.65	87.68	4.37	9.73	2.92	1.59	81.57	844.58	-1.70
	2019	1.12	1.00	232.14	86.15	2.50		3.96	1.22	75.74	958.87	2.16
Vila Real	2011	1.08	0.50	200.23	91.58	4.06	10.74	2.81	3.57	80.25	834.69	-1.70
	2019	1.07	0.96	277.36	88.76	2.62		3.99	3.82	72.33	956.78	2.16
Viseu	2011	1.13	0.65	165.72	90.79	5.09	10.12	2.34	2.84	77.47	841.01	-1.70
	2019	1.12	0.93	227.25	89.72	2.97		3.80	2.60	72.48	936.32	2.16

Note: * per 1000 inhabitants; † from 2014 to 2019; ° from 2011 to 2017; # from 2011 to 2018

Table 2: Simple linear regression results: association between anxiolytics' consumption per 1000 inhabitants and ageing index, social benefits. Simple linear regression between antidepressants consumption per 1000 inhabitants and year, unemployment rate and economic growth.

	Simple Linear Regression		
	Coef.	IC95%	P-value
Antidepressants consumption per 1000 inhabitants			
—Year	49.21	[40.23;58.20]	<0.001
—Unemployment rate	-73.45	[-99.55;-47.34]	<0.001
—Unemployment [<6]	-63.56	[-95.63;-31.49]	<0.001
—Unemployment rate [≥ 6]	-84.80	[-291.28;121.68]	0.282
—Economic Growth	47.64	[36.67;58.61]	<0.001
—Economic Growth [<-1]	-15.81	[-52.27;20.64]	0.384
—Economic Growth [$\geq -1; <3$]	70.73	[44.06;97.40]	<0.001
—Economic growth [≥ 3]	0		
Anxiolytics consumption per 1000 inhabitants			
—Ageing Index	1.51	[1.07;1.96]	<0.001
—Ageing Index [<250]	2.86	[2.14;3.57]	<0.001
—Ageing Index [≥ 250]	-0.70	[-2.41;1.02]	0.411
—Social Benefits	89.32	[58.34;120.30]	<0.001
—Social Benefits [≤ 3]	118.28	[55.11;181.44]	<0.001
—Social Benefits [>3]	68.96	[-62.82;200.74]	0.293

Table 3: Multiple linear regression results: multiple linear regression between antidepressants per 1000 inhabitants and year, ageing index and sex ratio. Multiple linear regression between anxiolytics consumption per 1000 inhabitants and mean monthly income, proportion of inhabitants with social benefits, purchasing power, proportion of inhabitants with tertiary education and sex ratio.

	Multiple Linear Regression		
	Coef.	IC95%	P-value
Antidepressant consumption per 1000 inhabitants			
—Year	47.34	[42.61;52.08]	<0.001
—Ageing index	1.35	[0.73;1.96]	<0.001
—Sex ratio	24.67	[12.37;36.97]	<0.001
Anxiolytics consumption per 1000 inhabitants			
—Income	2.31	[0.61;4.02]	<0.05
—Social benefits	315.12	[119.61;510.64]	<0.005
—Purchasing power	22.76	[6.88;38.63]	<0.01
—Tertiary education	-291.02	[-519.47;-62.56]	<0.05
—Sex ratio	120.75	[15.92;225.57]	<0.05

Note: Adjusted for county. R-squared and adjusted R-squared = 0.99 in final antidepressants' consumption model. R-squared = 0.99 and adjusted R-squared = 0.98 in final anxiolytics' consumption model.

Agradecimentos

Este projeto é o culminar de muitos anos, muitos sonhos, muitos esforços e sem dúvida muitas cedências. Este projeto significa o fim de uma viagem que como qualquer viagem nos transforma.

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Muito longe vai, quem não sabe para onde. Sempre foi assim, assim continua.

Annexes:

STROBE Statement—Checklist of items that should be included in reports of *cross-sectional studies*

	Item No	Recommendation	Page No
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	7 "This observational ecological study..."
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	7 "Methods: This observational ecological study assessed for associations between socioeconomic and demographic factors and the consumption of antidepressants and anxiolytics, using linear regression analyses. Results: Significant associations were found between the consumption of antidepressants and age index (coef:1.35, p<0.001) and sex ratio (coef:24.67, p<0.001), and between anxiolytics and sex ratio (coef.:120.75, p<0.05)education (coef.: -291.02, p<0.05), income(coef.:2.31, p<0.05), purchasing power (coef.:22.76, 'p<0.01) and the proportion of inhabitants with social benefits (coef.:315.12, p<0.01)."
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	9,10,11: "Mental health disorders are widespread in society1. Anxiety and depression are the most common mental health disorders... (...) Portugal was the 5th country in Europe with highest prevalence of mental health issues4,5. (...) in 2018, the country [Portugal] presented the highest consumption of anxiolytics and was the fourth with higher consumption of antidepressants among OECD countries14. (...) The literature shows that social determinants can contribute for depression and anxiety disorders. (...) We hypothesise that not only those social determinants have a major role in mental issues, but also that they reverberate on the prevalence of mental disorders and, therefore, on the consumption of antidepressants and anxiolytics. Considering its high consumption rates of in Portugal..."
Objectives	3	State specific objectives, including any prespecified hypotheses	9,10,11: "we aimed to study the association between the above-mentioned contextual determinants and the consumption of antidepressants and anxiolytics per county (distrito) in the last decade..."
Methods			
Study design	4	Present key elements of study design early in the paper	11,12,13: "We performed an observational ecological study on the consumption of anxiolytics and antidepressants in ..."
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	11,12,13: "counties from continental Portugal from 2011 to 2019..."
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	Does not apply

Variables	7	<p>Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable</p> <p>11,12,13: “Data on consumption of antidepressants and anxiolytics (...) as total number of packs prescribed and sold in community pharmacies, by year (from 2011 to 2019) and by counties. We transformed this variable into number of packs per 1000 inhabitants for each county.</p> <p>As independent variables we selected variables that could reflect the socioeconomic context at county-level. We selected variables related to economic deprivation: purchasing power per capita and mean monthly income were selected as a proxy of economic wellbeing; proportion of inhabitants with social benefits was selected as a proxy for severe economic deprivation; unemployment rate was selected not only as a measure of economic deprivation but also of social isolation due to the exclusion from societies’ working group. The proportion of inhabitants with tertiary education were selected as higher education may contribute to higher health literacy levels, better living and working conditions, as well as higher access to healthcare. We also used economic growth (a measure of the change of gross domestic product from year to year) as economic crises can be associated with increased risk for mental health disorders, and strike the poorer, which are, as seen previously, already at higher risk of developing mental disorders^{20,21}. The variable “medical doctors per 1000 inhabitants” was used as proxy of access to health care, as it could lead to more access to diagnosis and treatment.</p> <p>Demographic variables were also used. Ageing index (number of elders per 100 persons younger than 15 years old in a certain population) and sex ratio (number of males per 100 females in a certain population) were used, since the prevalence of depression and anxiety can have a positive correlation to ones ageing and with female gender^{22,23}.”</p>
Data sources/ measurement	8*	<p>For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group</p> <p>11,12,13: “Data on consumption of antidepressants and anxiolytics were provided by the Portuguese Authority of Medicines and Health Products (Infarmed), as total number of packs prescribed and sold in community pharmacies, by year (from 2011 to 2019) and by counties. We transformed this variable into number of packs per 1000 inhabitants for each county. Yearly data on the population size of municipalities that constituted each county were extracted from the Portuguese National Statistics Institute¹⁹. (...)</p> <p>Purchasing power per capita, proportion of inhabitants with social benefits, unemployment rate, proportion of inhabitants with tertiary education, medical doctors per 1000 inhabitants, ageing index and sex ratio were available at municipal level in the Portuguese National Statistics Institute website¹⁹. Economic growth was obtained through the World Bank Open Data base²⁴, only available at national level.</p> <p>We transformed data from municipalities-level into county-level. We calculated a weighted average for all our independent variables for each county and year (considering the population size of each municipality),</p>

			except for unemployment rate and social benefits, for which we estimated the proportion by county and year. Economic growth, available at country-level, was assumed to be equal in all counties for each year. We obtained data for 2011-2019 span for all variables except education level (available for 2011, date of the last CENSUS), unemployment rates (2014-2019), proportion of inhabitants with social benefits (2014-2019), and purchasing power per capita (2011, 2013, 2015 and 2017).”
Bias	9	Describe any efforts to address potential sources of bias	11,12,13: “We then tested the dependent and independent variables’ correlation using a pairwise correlation approach. The variables that showed coefficients of -1 to -0.4 and 0.4 to 1 were included in simple linear regression analyses. Segmented linear regression analyses were performed when non-linear patterns were observed for all 162 county-years (i.e., 18 counties * 9 years). We further analysed how several independent variables would predict antidepressants’ and anxiolytics’ consumption using multiple linear regressions with backward elimination, using county dummies for adjustment for cultural and other non-measurable characteristics.”
Study size	10	Explain how the study size was arrived at	11,12,13: “Segmented linear regression analyses were performed when non-linear patterns were observed for all 162 county-years (i.e., 18 counties * 9 years).”
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	11,12,13: “We performed descriptive analyses (...) We then tested the dependent and independent variables’ correlation using a pairwise correlation approach. (...) Segmented linear regression analyses were performed when non-linear patterns were observed for all 162 county-years (i.e., 18 counties * 9 years). We further analysed how several independent variables would predict antidepressants’ and anxiolytics’ consumption using multiple linear regressions with backward elimination, using county dummies for adjustment for cultural and other non-measurable characteristics.”
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	11,12,13: “Correlation analysis”; “Simple linear regression”; “Multiple linear regression”
		(b) Describe any methods used to examine subgroups and interactions	Does not apply
		(c) Explain how missing data were addressed	11,12,13: “Economic growth, available at country-level, was assumed to be equal in all counties for each year.”
		(d) If applicable, describe analytical methods taking account of sampling strategy	Does not apply
		(e) Describe any sensitivity analyses	Does not apply
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study,	Does not apply

		completing follow-up, and analysed	
		(b) Give reasons for non-participation at each stage	Does not apply
		(c) Consider use of a flow diagram	Does not apply
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	13,14,15: "Descriptive analysis The mean consumption of antidepressants almost doubled in continental Portugal (Table 1). This positive trend was found in all counties through the years... (...) The distribution of the independent variables by year and county can be seen in Table 1. The ageing index had a positive trend in all counties..."
		(b) Indicate number of participants with missing data for each variable of interest	Does not apply
Outcome data	15*	Report numbers of outcome events or summary measures	13,14,15: "The mean consumption of antidepressants almost doubled in continental Portugal (Table 1). This positive trend was found in all counties through the years. The mean consumption of anxiolytics decreased from 10,429,118 in 2011 to 7,539,612 packs in 2019. Évora, Portalegre and Coimbra had the highest consumption of antidepressants in 2019 (1344, 1187 and 1160 packs per 1000 inhabitants, respectively), while Braga, Faro and Bragança had the lowest per capita consumption (630, 669 and 794). Portalegre, Castelo Branco and Coimbra had the highest consumption of anxiolytics (1358, 1307 and 1287), while Braga, Faro and Lisbon had the lowest consumption (780, 805 and 860)." and Table 1
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	13,14,15: "Simple linear regression Antidepressants consumption increased in 49.21 packs per 1000 inhabitants per year (IC95%[40.23;58.20] p<0.001), in a moderate but constant trend from 2011 until 2019 (Table 2). It was associated with economic growth: when it was situated between -1 and 3 the coefficient was of 70.73 (IC95%[44.06;97.40] p<0.001). Regarding unemployment rate, we observed a negative trend of -73.45 packs for percentual point (IC95%[-99.55;-47.34]; p<0.001). The correlation between these two variables was significant when unemployment rates were inferior to 6 (coef.: -63.56; IC95%[-95.63;-31.49], p<0.001). The association between the consumption of anxiolytics and ageing index was positive, with a coefficient of 1.51 (IC95%[1.07;1.96]; p<0.001) and, when lower than 250, a coefficient of 2.86 (IC95%[2.14;3.57], p<0.001). The association between the consumption of anxiolytics and proportion of inhabitants with social benefits had a coefficient of 89.32 (IC95%[58.34;120.29]; p<0.001) and, when the was inferior to 3 the correlation had a coefficient of 118.28 (IC95%[55.11;181.44]; p<0.001). Multiple linear regression The simultaneous analysis of the several independent variables showed that year (coef.:47.34, IC95%[42.61;52.08], p<0.001), ageing index (coef.:1.35, IC95%[0.73;1.96], p<0.001) and sex ratio (coef.:24.67 IC95%[12.37;36.97], p<0.001) were

			positively associated with the consumption of antidepressants (Table 3). The consumption of anxiolytics were associated with mean monthly income (coef.:2.31; IC95%[0.61;4.02], p<0.05), proportion of inhabitants with social benefits (coef.:315.12; IC95%[119.61;510.64], p<0.005), purchasing power per capita (coef.:22.76; IC95%[6.88;38.63], p<0.01); tertiary education (coef.: -291.02 IC95%[-519.47;-62.56], p<0.005) and sex ratio (coef.:120.75 IC95%[15.92;225.57], p<0.001)."
		(b) Report category boundaries when continuous variables were categorized	Does not apply
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	Does not apply
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	Does not apply
Discussion			
Key results	18	Summarise key results with reference to study objectives	15,16,17,18: "From 2011 to 2019 the mean consumption of antidepressants rose in continental Portugal while the consumption of anxiolytics overall decreased. The consumption of antidepressants was associated with economic growth, unemployment, and time (year). These associations changed in multiple regression, as the associations with economic growth and unemployment became non-significant and sex ratio and ageing index became positively associated with antidepressants' consumption. Regarding anxiolytics, single regressions found positive associations with the ageing index and the proportion of inhabitants with social benefits, but multiple regressions unveiled positive associations with the mean income, purchasing power, the proportion of the population with social benefits, sex ratio and a negative association with tertiary education."
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	15,16,17,18: "These results' interpretation must take into account this study limitations. First, data were available at county-level. Thus, the ecologic bias needs to be considered: our results are only valid at county-level and, as we are comparing averages, it is probable that the differences found here would be more striking if the study was done at municipal, parish or individual levels. Second, we did not have access to yearly data for some variables (as education) but major changes in time and, especially, major differences in those changes across counties were not expected. Also, economic growth was assumed to be the same throughout all counties disregarding the fact that some counties may have had higher economic growth than others."
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	15,16,17,18: "The positive association between consumption of antidepressants and time can be explained by a higher accessibility and therapeutic mindset. (...) Since 2011 the prices of generic drugs have been reduced and prescribers have been encouraged to prescribe them, leading to the

reduction of the costs with drugs for the State and, importantly, for patients, making them more accessible.

(...) may reflect the association between anxiety and socioeconomic deprivation, both by the already described path that leads worse socioeconomic conditions to anxiety¹⁶, and by the fact that anxiety can enhance poverty levels by hindering individuals' learning and producing capacity, which will put them into further deprivation²⁷.

Unexpectedly, counties with higher purchasing power and mean income presented higher consumption of anxiolytics. This may be explained by the fact that people with higher incomes could resort with more ease to consultations with specialists (as psychiatrics), therefore driving the diagnostic of these diseases up and the consumption of anxiolytics with it^{28,29}(...)

The non-significant association of economic growth and unemployment with antidepressants consumption may be due to the protective effect of social protection policies. (...)

This may be related to the fact that this number does not reflect the number of psychiatrists nor of general practitioners, nor those working in the National Health Service.

Regarding demographic variables, the literature shows that depression prevalence is about 50% higher in groups with 50 years old or over when compared to those younger than 50 years², and our results are in line with this finding. Regarding anxiety disorders, the literature shows an oxymoronic distribution, with higher prevalence in Portugal being between 15-19 years old, with 7.17%, declining to 5.67% in ages 50-69 years old². The association of anxiolytics consumption with ageing index in simple regression analysis lost its significance in the multiple analysis, possibly due to the effect captured by tertiary education rates, which tend to be lower among the older age groups³². This can also be attributed to the higher awareness of prescribers to adverse reactions and side effects of anxiolytics prescription, as cognitive impairment, falls and delirium in the elderly ^{33,34}.

The positive association between sex ratio and antidepressants' and anxiolytics' consumption may be due to the increasing accessibility to primary healthcare through an increasing coverage and autonomy of family health units in this decade³⁵, possibly leading to a better follow-up of the individuals, including men, who are usually less prone to seek healthcare. An increasing awareness of the burden of depression and anxiety disorders among men can also contributed to a higher prescription of those drugs.

The higher consumption of anxiolytics in inland and mainly rural counties may be related to several factors: lower education levels and higher use of social benefits, as previously seen, but also the geographical characteristics, as social isolation, that can further deteriorate ones mental health¹⁶."

Generalisability	21	Discuss the generalisability (external validity) of the study results	15,16,17,18: "Third, the aim of this study was to better understand the factors behind the variation by county and year in Portugal and, as such, these results are valid to Portugal and for these years' span. As shown, the consumption of antidepressants and anxiolytics depends on individual and contextual socioeconomic factors, but may be also influenced by organisational ones. Changes in healthcare guidelines and on access to these diseases' pharmacological and non-pharmacological treatments can change these drugs' consumption rates and attenuate or amplify the associations found with socioeconomic factors."
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Other information

Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	No funding
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*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.



Conselho Editorial ACTA MÉDICA PORTUGUESA
Acta Med Port 2016, 01 janeiro 2016

1. Missão

Publicar trabalhos científicos da mais elevada qualidade, elaborados maioritariamente por estudantes, de forma a contribuir ativamente para o incremento do conhecimento científico relevante para uma melhor prática da Medicina.

2. Valores

Promover a qualidade científica.
Promover o conhecimento e atualidade científicos.
Independência e imparcialidade editorial.
Ética e respeito pela dignidade humana.
Responsabilidade social.

3. Visão

Estabelecer-se como o principal veículo de consulta e publicação, pela comunidade estudantil, na área do conhecimento biomédico.

4. Generalidades

A Acta Médica Portuguesa - Student (doravante AMP-Student) é uma secção da Acta Médica Portuguesa, revista científica da Ordem dos Médicos.

A Acta Médica Portuguesa segue a política do livre acesso e não cobra quaisquer taxas relativamente ao processamento ou à submissão de artigos.

Rege-se pelas normas de edição biomédica do International Committee of Medical Journal Editors (ICMJE), do Committee on Publication Ethics (COPE), e do EQUATOR Network (desenho de estudos).

A política editorial da revista incorpora no processo de revisão e publicação as Recomendações de Política Editorial (*Editorial Policy Statements*) emitidas pelo Conselho de Editores Científicos (*Council of Science Editors*).

Os artigos propostos deverão estar de acordo com as [Normas de Publicação da Acta Médica Portuguesa](#).

Após publicação, os autores ficam autorizados a disponibilizar os seus artigos em repositórios das suas instituições de origem, desde que mencionem sempre onde foram publicados.

5. Critérios e responsabilidade autoral

Constituem autores, de acordo com os critérios de autoria do ICMJE, os elementos que reúnam todos os seguintes critérios:

1. Contribuição substancial na conceção ou desenho do trabalho; ou na aquisição, análise ou interpretação dos

dados;

2. Participação na redação do artigo ou na revisão crítica do seu conteúdo;

3. Aprovação da versão final do artigo;

4. Responsabilidade pela exatidão e integridade de todo o trabalho.

O autor principal deverá ser estudante do ensino superior, até ao último ano de curso de Mestrado, ou médico recém-graduado (até um ano após registo na Ordem dos Médicos, ou, sendo estrangeiro, até um ano de exercício da profissão), com trabalho desenvolvido numa das várias áreas do conhecimento biomédico.

A identificação dos co-autores é da responsabilidade do autor.

Todos os que contribuíram para o artigo, mas que não encaixam nos critérios de autoria, devem ser listados na secção "Agradecimentos".

O autor correspondente:

1. Assume a responsabilidade de comunicação com a AMP-Student durante o processo de submissão, revisão e publicação;

2. Garante que todos os potenciais conflitos de interesse mencionados são corretos;

3. Assegura a originalidade do trabalho;

4. Obtém a permissão escrita de cada pessoa mencionada na secção "Agradecimentos".

5. Todos os Autores terão de preencher a [Declaração de Responsabilidade Autoral](#), com as respetivas contribuições e autorização de publicação.

6. Direitos autorais

Quando o manuscrito for aceite para publicação, todos os autores deverão enviar uma Declaração de Cedência de Direitos de Autor, de acordo com o seguinte modelo:

Editor da Acta Médica Portuguesa

O(s) autor(es) certifica(m) que o manuscrito intitulado

_____ (ref. AMP _____) é original, que todas as afirmações apresentadas como factos são baseadas na investigação do(s) autor(es), que o manuscrito, quer em parte quer no todo, não infringe nenhum *copyright* e não viola nenhum direito da privacidade, que não foi publicado em parte ou no todo, e que não foi submetido para publicação em parte ou no todo noutra revista, e que os autores têm o direito ao *copyright*.

Todos os autores declaram que participaram no traba-

lho e se responsabilizam por ele.

Declaram ainda que não existe, da parte de qualquer dos autores, conflito de interesses nas afirmações proferidas no trabalho.

Os autores, ao submeterem o trabalho para publicação, partilham com a Acta Médica Portuguesa todos os direitos a interesses do *copyright* do artigo.

Todos os Autores devem assinar

Data:

Nome (maiúsculas):

Assinatura:

7. Conflitos de interesse

Todos os intervenientes no processo de revisão e publicação (autores, revisores, editores) devem considerar a existência de conflitos de interesse ao desempenhar a respetiva função e devem declará-los.

Os autores são obrigados a divulgar, de forma explícita, todos os interesses secundários que possam enviesar o trabalho e constituir potenciais conflitos de interesse.

Essa informação não influenciará a decisão editorial, mas, antes da submissão do manuscrito, os Autores têm de assegurar todas as autorizações necessárias para a publicação do material submetido.

8. Consentimento informado e aprovação ética

Todos os doentes (ou seus representantes legais) que possam ser identificados nas descrições ou fotografias deverão assinar um formulário de consentimento informado, a submeter com o manuscrito.

Os autores devem informar se o trabalho foi aprovado pela Comissão de Ética da instituição, de acordo com a Declaração de Helsínquia.

9. Língua

Os artigos devem ser redigidos em português ou inglês.

Os títulos e os resumos têm de ser sempre em português e inglês.

10. Estilo

Todos os manuscritos devem ser preparados de acordo com o *AMA Manual of Style* 10th ed. e/ou *Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly work in Medical Journals*.

O estilo de escrita deve ser claro, direto e ativo, usando a primeira pessoa e voz ativa.

Palavras em latim ou noutra língua que não seja a do texto deverão ser colocadas em itálico, exceto quando se tratem de substantivos identificados de um indivíduo, organização ou procedimento.

Abreviaturas, unidades de medida, tabelas, figuras, nomes de medicamentos, dispositivos e outros produtos, agradecimentos e referências deverão ser apresentados conforme as [Normas de Publicação da Acta Médica Portuguesa](#).

11. Estrutura

A página de título deve incluir:

- Título em português e inglês, conciso e descritivo;
- Linha de autoria, que liste o nome de todos os autores (primeiro e último nome) com os títulos académicos e/ou profissionais e respetiva afiliação (departamento, instituição, cidade, país);
- Subsídio(s) ou bolsa(s) que contribuíram para a realização do trabalho;
- Morada e e-mail do autor aorrespondente;
- Título breve para cabeçalho.

A segunda página deve incluir:

- Título (sem autores);
- Resumo em português e inglês (não pode remeter para o texto ou imagens, nem pode conter citações; informação que não conste do manuscrito não pode ser mencionada no resumo);
- Palavras-chave, num máximo de 5, em inglês, utilizando a terminologia que consta no *Medical Subject Headings*.

Terceira página e seguintes:

- A estrutura do texto segue a modalidade do respectivo artigo.

Os agradecimentos devem incluir:

- as contribuições individuais para o estudo, sem o peso de autoria;
- as fontes de apoio financeiro, tecnológico ou de consultoria.

Referências:

- Os autores são responsáveis pela exatidão e rigor das suas referências e pela correta citação no texto, conforme as [Normas de Publicação da Acta Médica Portuguesa](#).

12. Formato

Os formatos de arquivo dos manuscritos autorizados incluem o *Word* e o *WordPerfect*, e excluem o PDF.

13. Processo editorial

Generalidades

A Acta Médica Portuguesa segue um rigoroso processo cego de revisão por pares, externos à revista.

É garantida a confidencialidade dos trabalhos submetidos, incluindo o estado do processo editorial, conteúdo e críticas dos revisores.

Critérios de avaliação

A avaliação dos manuscritos, primeiro pelo editor, depois pelos revisores, contempla os seguintes critérios: originalidade, atualidade, clareza de escrita, métodos apropriados, dados válidos, conclusões adequadas e apoiadas pelos dados, significância e contribuição para o conhecimento da área.

Submissão

Os manuscritos devem ser submetidos nas respetivas modalidades *Student* disponíveis na plataforma eletrónica da Acta Médica Portuguesa.

A submissão de artigos Student nas modalidades regulares da Acta Médica Portuguesa constituirá razão liminar

de rejeição dos mesmos.

Os manuscritos devem ser submetidos *online*, via [Submissão Online](#) no *site* da Acta Médica Portuguesa. Após submissão, o Autor receberá confirmação de receção e um número para o manuscrito.

14. Modalidades de submissão

Estão previstas as seguintes modalidades de submissão, de acordo com as [Normas de Publicação da Acta Médica Portuguesa](#):

Artigo de Opinião: abrange grande diversidade de temas de interesse, desde a atualidade científica e educação médica aos presentes desafios sociais, políticos e humanos (máx. 1200 palavras) na área biomédica e da saúde; os artigos são submetidos por convite do Editor; em alternativa, um Autor que deseje propor um artigo de opinião, deverá remeter previamente ao Editor da AMP-Student um resumo do mesmo;

Perspetiva: ensaio não científico ou académico, podendo explorar a natureza da Medicina numa perspetiva alternativa, nomeadamente através do seu impacto noutras áreas do conhecimento, da sociedade ou da cultura (máx. 1200 palavras); um Autor que deseje propor uma perspetiva deverá remeter previamente ao Editor da AMP-Student um resumo do mesmo;

Artigo Original: reporta um trabalho de investigação, nomeadamente ensaio clínico (registo público, *CONSORT Statement*), uma revisão sistemática ou meta-análise (*PRISMA guidelines*), um estudo observacional (*MOOSE guidelines*) ou um estudo de precisão de diagnóstico (*STARD guidelines*), estruturando-se em Introdução, Métodos, Resultados, Discussão e Conclusões (máx. 4000 palavras);

Artigo de Revisão: aborda de forma aprofundada o *estado da arte* numa determinada área do conhecimento biomédico, através da revisão da literatura existente (máx. 3500 palavras). Estes artigos serão previamente propostos (via actamedicaportuguesastudent@gmail.com) e avaliados pelo Conselho Editorial da Acta Médica Portuguesa;

Caso Clínico: relata um caso clínico com justificada razão de publicação, nomeadamente raridade, aspetos inusitados, evoluções atípicas, inovações terapêuticas e de diagnóstico (máx. 1000 palavras);

Imagem Médica: são aceites imagens clínicas, de imagiologia, histopatologia, cirurgia, etc., relevantes para a aprendizagem e prática médica, acompanhadas de informação clínica (máx. 150 palavras, dispensa resumo);

Cartas ao Editor: comentário a um artigo da AMP-Student ou uma pequena nota sobre um tema ou caso clínico (máx. 400 palavras, dispensa resumo);

Adicionalmente, existe, exclusivamente na AMP-Student, a seguinte modalidade de submissão:

Online post: destinado à publicação exclusiva no *site* oficial da AMP-Student, que explora temas da atualidade científica, académica, política, social e cultural (máx. 600 palavras). Esta modalidade segue um processo de verificação da adequação do conteúdo ao âmbito da secção, sendo submetido a revisão editorial que permite assegurar o cumprimento de normas formais mínimas até à sua publicação *online*. Estes *posts* não serão indexados, devendo ser propostos através do correio electrónico actamedicaportuguesastudent@gmail.com.

15. Processo editorial

Estipula-se, para o processo de publicação na Acta Médica Portuguesa, revista indexada, na sua secção Student, o seguinte plano temporal:

Após a receção do artigo e da Declaração de Responsabilidade Autoral, o editor de secção comunicará ao(s) autor(es) a aceitação, ou não, do manuscrito e enviá-lo-á, em caso de aceitação, para revisão.

O editor de secção assegurará a receção de, pelo menos, duas revisões. No prazo máximo de quatro semanas, cada revisor deverá responder ao editor com os seus comentários e a sua sugestão quanto à aceitação ou rejeição do trabalho.

O editor de secção comunicará, nos 15 dias subsequentes, uma primeira decisão, que poderá ser a aceitação do artigo sem modificações, o envio dos comentários dos revisores para que os autores procedam de acordo com o indicado, ou a rejeição do artigo.

Os autores dispõem de 20 dias para submeter a nova versão revista do manuscrito. Quando são propostas alterações, os autores deverão responder a todas as questões colocadas e enviar uma versão revista do artigo com as alterações destacadas com cor diferente.

O editor de secção dispõe de uma semana para recomendar ao editor-chefe a decisão sobre a nova versão: aceitar o artigo na sua nova versão, enviá-lo a revisores externos ou rejeitá-lo.

Caso o manuscrito seja reenviado para revisão externa, os peritos dispõem de quatro semanas para o envio dos seus comentários e da sua sugestão quanto à aceitação ou rejeição do trabalho.

Atendendo às sugestões dos revisores, o editor de secção poderá voltar a solicitar modificações aos autores, ou recomendar ao editor-chefe a respectiva aceitação ou rejeição. Em caso de necessidade de efetuar modificações, aplicam-se as condições acima definidas.

Em caso de aceitação do manuscrito, em qualquer uma das fases anteriores, a mesma será comunicada ao autor correspondente, que deverá enviar uma Declaração de Cedência de Direitos de Autor, de acordo com o modelo no anexo I. Num prazo inferior a um mês, o editor de secção enviará o artigo para revisão dos autores já com a formatação final. Os autores dispõem de cinco dias para revisão do texto e comunicação de quaisquer erros tipográficos e/

ou ortográficos (não modificações de fundo, sob pena de o artigo ser rejeitado por decisão do editor-chefe).

Após a resposta dos autores, ou na ausência desta no decurso dos cinco dias, o artigo considera-se concluído.

As provas tipográficas são responsabilidade do Conselho Editorial, se os autores não indicarem o contrário. Os autores receberão as provas para publicação em formato PDF para correção e deverão devolvê-las num prazo de 48 horas.

16. Publicação *Fast-track*

Sistema de publicação para manuscritos urgentes e importantes, desde que cumpram os requisitos definidos nas

[Normas de Publicação da Acta Médica Portuguesa.](#)

17. Erratas e retracções

A Acta Médica Portuguesa publica alterações, emendas ou retracções relativas a artigos anteriormente publicados. Alterações posteriores à publicação assumirão a forma de errata.

NOTA FINAL

Este regulamento tem um carácter suplementativo no que se refere às normas de publicação na AMP-Student, não dispensando o cumprimento das [Normas de Publicação da Acta Médica Portuguesa.](#)