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Epidemiological study of neurodegenerative diseases in the Guarda Region - Portugal

Estudio epidemiológico de las enfermedades neurodegenerativas en la Región de Guarda - Portugal

Estudo epidemiológico das doenças neurodegenerativas na Região da Guarda - Portugal

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Abstract

The aim was to characterize the population with neurodegenerative diseases in the region of Guarda. An epidemiological, descriptive, cross-sectional study was carried out of the user population of the Local Health Unit of Guarda, EPE, located in the Central Region of Portugal, with an active diagnosis of neurodegenerative disease, according to the International Classification of Primary Health Care - ICPC-2 : P70 - Dementia, N86 - Multiple Sclerosis - and N87 - Parkinsonism. The data source was the Regional Health Administrations Information System (SIARS), and the sample consisted of 2500 people with neurodegenerative disease. Dementia is the most prevalent of these diseases (62%), followed by Parkinsonism (32%). The proportion of active diagnoses was 1.66%. Most are women (66%), the average age is 79 (± 11.99) years, with a range of 92 years, minimum 19 and maximum 111 years. The characterization of the population with an active diagnosis of neurodegenerative diseases proves to be an important contribution to delineating specific and targeted intervention strategies for the target population and, thus, proceeding with the study of the quality of life of people with neurodegenerative diseases and their families.

Descriptors: Neurodegenerative Diseases; Dementia; Parkinsonian Disorders; Multiple Sclerosis; Epidemiological Studies.

Resumén

El objetivo fue caracterizar la población con enfermedades neurodegenerativas en la región de Guarda. Se realizó un estudio epidemiológico, descriptivo, transversal de la población usuaria de la Unidad Local de Salud de Guarda, EPE, ubicada en la Región Centro de Portugal, con diagnóstico activo de enfermedad neurodegenerativa, según la Clasificación Internacional de Salud Primaria Atención - ICPC-2 : P70 - Demencia, N86 - Esclerosis múltiple - y N87 - Parkinsonismo. La fuente de datos fue el Sistema de Información de las Administraciones Regionales de Salud (SIARS), y la muestra estuvo constituida por 2500 personas con enfermedad neurodegenerativa. La demencia es la más prevalente de estas enfermedades (62%), seguida del parkinsonismo (32%). La proporción de diagnósticos activos fue del 1,66%. La mayoría son mujeres (66%), la edad promedio es de 79 (± 11,99) años, con un rango de 92 años, mínimo 19 y máximo 111 años. La caracterización de la población con diagnóstico activo de enfermedades neurodegenerativas demuestra ser un aporte importante para delinear estrategias de intervención específicas y dirigidas a la población diana y, así, proceder al estudio de la calidad de vida de las personas con enfermedades neurodegenerativas y sus familias.

Descriptores: Enfermedades Neurodegenerativas; Locura; Trastornos Parkinsonianos; Esclerosis Múltiple; Estudios Epidemiológicos.

Resumo

Objetivou-se caracterizar a população portadora de doenças neurodegenerativas da Região da Guarda. Realizou-se um estudo epidemiológico, descritivo, transversal da população utilizadora da Unidade Local de Saúde da Guarda, EPE, localizada na Região Centro de Portugal, com diagnóstico ativo de doença neurodegenerativa, segundo a Classificação Internacional de Cuidados de Saúde Primários – ICPC-2: P70 - Demência, N86 - Esclerose Múltipla - e N87 - Parkinsonismo. A fonte de dados foi o Sistema de Informação das Administrações Regionais de Saúde (SIARS), sendo a amostra constituída por 2500 pessoas portadoras de doença neurodegenerativa. A Demência é a mais predominante dessas doenças (62%), seguida do Parkinsonismo (32%). A proporção de diagnósticos ativos foi 1,66%. A maioria são mulheres (66%), a média de idades situa-se nos 79 (± 11,99) anos, com uma amplitude de 92 anos, mínimo 19 e máximo 111 anos. A caracterização da população com diagnóstico ativo de doenças neurodegenerativas, revela-se um importante contributo para delinear estratégias de intervenção especificas e direcionadas para a população-alvo e, assim, prosseguir para o estudo da qualidade de vida da pessoa portadora de doença neurodegenerativa e família.

Descritores: Doenças Neurodegenerativas; Demência; Transtornos Parkinsonianos; Esclerose Múltipla; Estudos Epidemiológicos.

Introduction

Neurodegenerative diseases result from the progressive degeneration and/or death of neurons, are very debilitating conditions and affect people of all ages.

As it is a progressive degenerative process, as time goes by they become more and more serious. They are assumed to be one of the main causes of disability and dependence in the world, which has a strong impact on the health and physical, psychological and social well-being of the person with these diseases and their family, and may lead to a total inability to exercise any type of daily activity. For this reason, the caregivers and family members who accompany the daily lives of these patients also end up being invisible victims of the disease, causing a strong negative impact on the family nucleus[1].

These diseases are considered one of the most important health and socioeconomic problems today, exerting great pressure on public health systems.

The three main neurodegenerative diseases are Alzheimer's Disease and other dementias, Parkinson's Disease and Multiple Sclerosis. The first two are related to advanced age, which makes their prevalence very high, while Multiple Sclerosis generally appears in a highly productive phase of life, when people are planning to form families and start professional life and, as such, can have a significant impact on affected individuals, their families and society. Although age is an indisputable factor in the pathology and clinical manifestation of these three diseases, studies also suggest that gender can be an important modifying factor in the development and progression of the diseases[2-5].

Thus, due to the strong impact that neurodegenerative diseases have, both on the carrier person and on the family, and in order to adopt appropriate intervention strategies, it becomes relevant to study the magnitude of this problem at a local level, namely in the region of Guarda, which is located in the Center Region of Portugal. The focus of this study is the area of influence of ULS da Guarda. The resident population of the coverage area in 2020 was 138,211, which represents 6.2% of the population of the central region. It presents percentage values in the age group of young people slightly lower (9.2%), compared to the central region (10.4%) and the country (10.7%), contrary to the age group of the elderly that presents higher percentage values (29.7%) than the central region (24.6%) and the country (22.4%). This is a predominantly rural territory and, as is the natural tendency of the territory, with a very high aging rate, particularly in the municipalities of Almeida (597.1%), Sabugal (462.0%) and Mêda (434.2%)[6].

The 2021 Census, reveal in the provisional results available for consultation, that the district of Guarda accounts for 143,019 resident people, 17,920 (11.1%) less than in the 2011 Census, when it registered a total of 160,939 inhabitants. All the district's municipalities lost inhabitants, with emphasis on Almeida and Figueira de Castelo Rodrigo, located near the border with Spain, which lost the highest percentage (-18.8% and -17.7%, respectively). The municipality of the district capital, Guarda, was the second that had the lowest rate of population loss (-5.6%)[7].

Since this is a predominantly rural territory, with a low population density, demographic reduction, population aging, low socioeconomic status of the population, low health literacy, this study aimed to know the magnitude of neurodegenerative diseases and characterize the population carrier in the Region of Guarda.

Methodology

A descriptive, cross-sectional, population-based epidemiological study of people with neurodegenerative disease was carried out in the geographic area of influence of ULS da Guarda. The geographic area under study has health care coverage through the ULS, integrating 2 hospitals and 14 functional units in Primary Health Care (CSP) that respond in terms of health care to a population of 150,328 enrolled users, 71,687 men and 78,641 women. The total number of people with an active diagnosis of neurodegenerative diseases (Dementia, Parkinsonism and Multiple Sclerosis) amounted, in 2020, to 2,500 (sample).

The data source was SIARS - data updated in December 2020. The International Classification of Primary Health Care - ICPC-2 was used, namely: P - PSYCHOLOGICAL - P70 - Dementia; N – NEUROLOGICAL SYSTEM - N86 – Multiple Sclerosis - N87 – Parkinsonism.

Data were provided by ULS da Guarda in Excel files and exported to SPSS, version 25.0, for statistical analysis. For nominal and ordinal variables, the absolute and relative frequencies were determined, and for continuous variables, the mean and standard deviation. In the bivariate analysis, the Chi-Square Test was used to study the relationship between categorical variables (nominal and ordinal) and the One-Way Anova test with a nominal factor, to study the relationship between categorical and continuous variables. The exposed data do not allow identifying or locating any of the patients with neurodegenerative disease. The study obtained a favorable opinion from the Ethics Committees of the Polytechnic Institute of Guarda and ULS of Guarda.

The study obtained a favorable opinion from the Ethics Committee of the Polytechnic Institute of Guarda (Opinion No. 7/2019) and by the Health Ethics Committee of the Local Health Unit of Guarda, EPE.

Results and Discussion

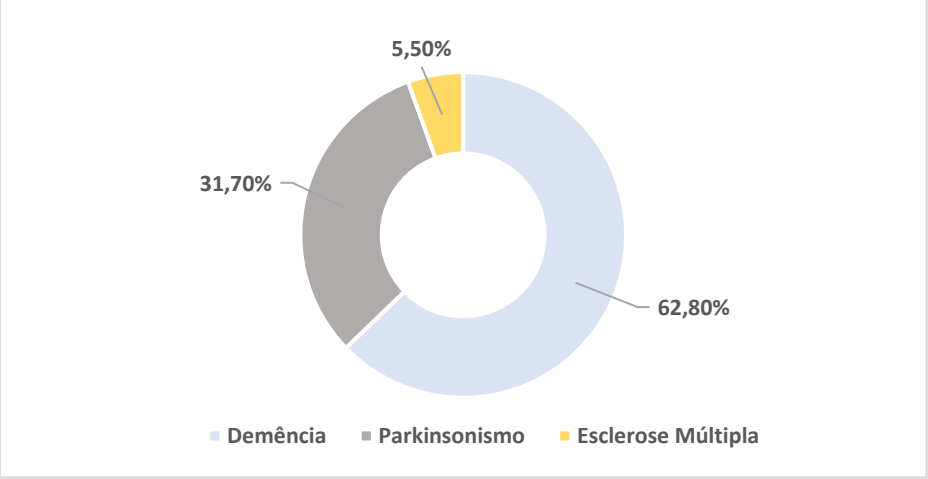
In the Guarda Region, more specifically in the area of influence of the ULS da Guarda, the total number of people with an active diagnosis of neurodegenerative diseases (P70 – Dementia, N86 – Multiple Sclerosis, N87 – Parkinsonism) registered in the SIARS in December 2020, situated up to 2,500, which represents a proportion of active diagnoses of 1.66%.

The active diagnoses of the three diseases, object of the study, increased in the period from 2014 to 2019. In 2020, there is a change in this trend, observing that Dementia and Parkinsonism decreased, which may be due to the pandemic situation caused by COVID-19, either by the delay in diagnoses or by the increase in mortality, especially in older age groups. Another factor that could contribute to

these results is the decrease in the population in the geographic area under study, which in the last intercensal period (2011-2021) lost 17,920 people, - 11.1%[7].

As can be seen in Graph 1, Dementia occupies the highest percentage (62.8%) of neurodegenerative diseases, which may be a reflection of the accentuated demographic aging of the region, whose aging index, in 2020, was situated at a value minimum of 204, 8 seniors per 100 young people in the municipality of Guarda and a maximum value of 609.2 in the municipality of Almeida8 and also because it is the most common neurodegenerative disease in people over 65 years old. The active diagnoses of Parkinsonism (31.7%) are consistent with the evidence that places it as the second most recurrent neurodegenerative disease associated with aging, just after Dementia[9-11].

Graph 1. Distribution of active diagnoses of neurodegenerative diseases, both sexes, all ages (n= 2,500). Guarda, Portugal, 2020



The distribution of people with neurodegenerative disease, according to sex, shows that the female sex totals 1,659 people (66.4%) in the sample, has higher values in the three diagnoses, and it is not clear whether it represents a true increase in risk or if constitutes a bias due to early mortality in men and a higher demand for health care by women, although the difference between genders is more pronounced for the Dementia group (Table 1). The female/male ratio is 1.97 (1,659/841), which means that for every 100 men with neurodegenerative disease in the region of Guarda, there are 197 women, 66% vs. 34%.

The mean age (± SD) of people with neurodegenerative disease is 79 (± 11.99) years, with a range of 92 years, minimum of 19 and maximum of 111 years.

Table 1. Active diagnoses of neurodegenerative diseases in Guarda, by sex (n=2500). Guarda, Portugal, 2020

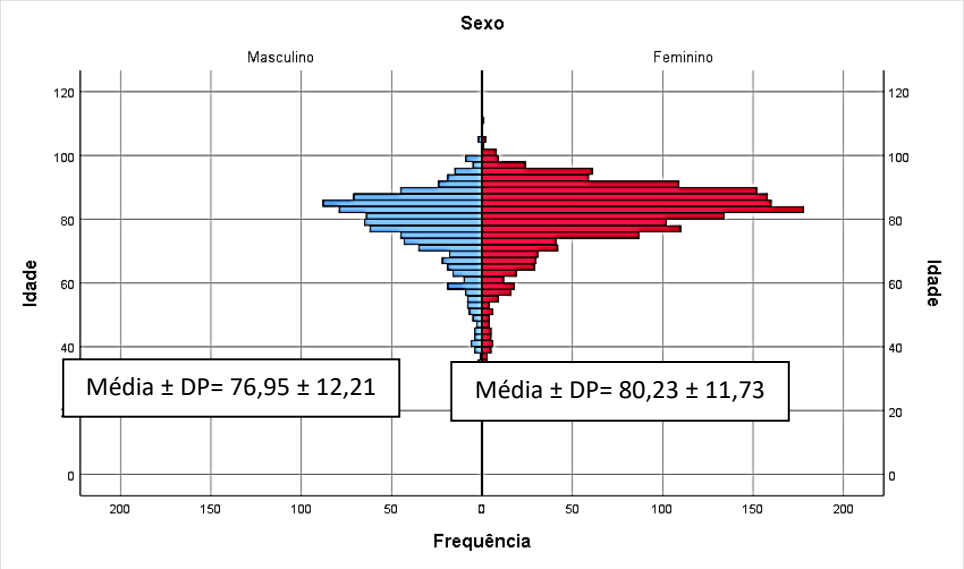
Gender	Male		Female	
Diagnosis	**N**	**%**	**N**	**%**
Dementia	468	29,8	1.102	70,2
Multiple sclerosis	45	41,4	93	58,6
Parkinsonism	328	32,6	464	67,4
Total	**841**	**33,6**	**1.659**	**66,4**

Table 2. Active diagnoses of neurodegenerative diseases in Guarda, by gender and age group. Guarda, Portugal, 2020

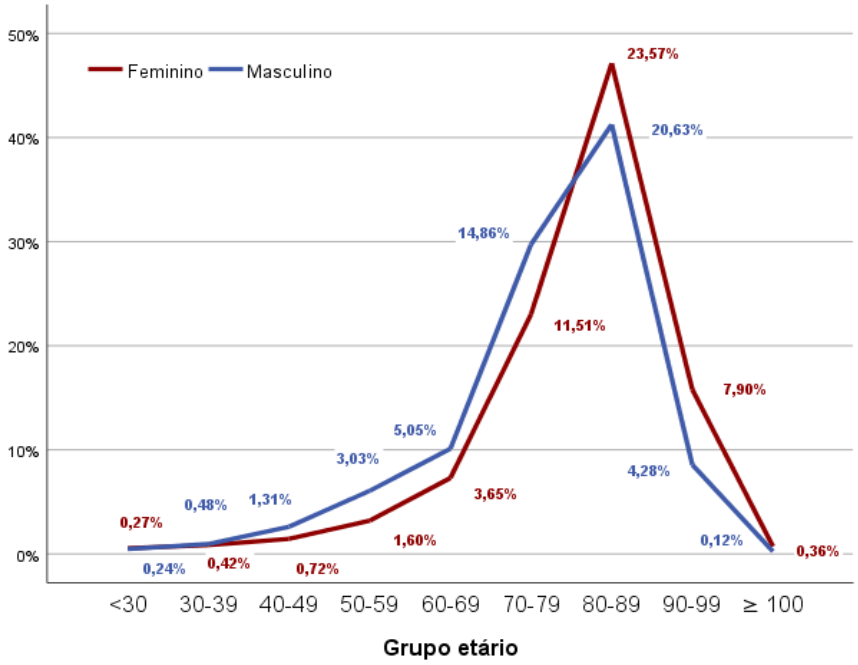
Diagnosis	**P70 – Dementia**						**N86 - Multiple sclerosis**						**N87 – Parkinsonism**					
Gender	Male		Female		Total		Male		Female		Total		Male		Female		Total	
Grupo etário	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
< 30	2	**0,4**	0	**0,0**	2	**0,1**	2	**4,4**	9	**9,7**	11	**8,0**	0	**0,0**	0	**0,0**	0	**0,0**
30-39	3	**0,6**	0	**0,0**	3	**0,2**	4	**8,9**	14	**15,1**	18	**13,0**	1	**0,3**	0	**0,0**	1	**0,1**
40-49	5	**1,1**	2	**0,2**	7	**0,4**	14	**31,1**	17	**18,3**	31	**22,5**	3	**0,9**	5	**1,1**	8	**1,0**
50-59	14	**3,0**	11	**1,0**	25	**1,6**	15	**33,3**	27	**29,0**	42	**30,4**	22	**6,7**	15	**3,2**	37	**4,7**
60-69	37	**7,9**	52	**4,7**	89	**5,7**	4	**8,9**	17	**18,3**	21	**15,2**	44	**13,4**	52	**11,2**	96	**12,1**
70-79	135	**28,8**	237	**21,5**	372	**23,7**	5	**11,1**	6	**6,5**	11	**8,0**	110	**33,5**	139	**30,0**	249	**31,4**
80-89	222	**47,4**	567	**51,5**	789	**50,3**	1	**2,2**	3	**3,2**	4	**2,9**	124	**37,8**	212	**45,7**	336	**42,4**
90-99	48	**10,3**	222	**20,1**	270	**17,2**	0	**0,0**	0	**0,0**	0	**0,0**	24	**7,3**	40	**8,6**	64	**8,1**
≥ 100	2	**0,4**	11	**1,0**	13	**0,8**	0	**0,0**	0	**0,0**	0	**0,0**	0	**0,0**	1	**0,2**	1	**0,1**

For dementia, most of the active diagnoses are in the 80-89 age group (50.3%), both for men and women, as well as for Parkinsonism (42.4%). In Multiple Sclerosis, the highest percentage falls in the 50-59 age group - 30.4% (Table 2). The evidence found, particularly for the case of dementia, confirms the results obtained in the Europe Alzheimer study[12] which highlights the increase in the number of people over 70 years old, namely in the age group above 85 years old and which is estimated to double between 2018 and 2050. Likewise, increasing age seems to be the main risk factor for Parkinson's disease[13-15], affecting about 1% of the population over age 60 and 5% over age 85[14-16]. On the other hand, Multiple Sclerosis affects young people, 90% of them aged between 15 and 50 years, being uncommon in the extremes of age, 10% or less after 50 years and 1% after 60 years[17].

Graph 2. Sample distribution according to age and gender. Guarda, Portugal, 2020



Graph 3. Percentage distribution according to age (decades) of men and women studied. Guarda, Portugal, 2020



The pyramid of the population with neurodegenerative disease (Graph 2) shows a higher frequency of diagnosed women, as well as the different profiles of the pyramid in men and women, where the wider bars correspond, in both cases, to individuals aged between 80 and 90 years old. The mean age of women with neurodegenerative disease is higher than that of men, 80.23 ± 11.73 vs. 76.95 ± 12.21 years. There are also more women diagnosed with some type of degenerative disease after the age of 80, in line with the higher average life expectancy associated with the female gender. In the three-year period 2018-2020, life expectancy at birth in Portugal was estimated at 81.06 years, 78.07 years for men and 83.67 years for women[6].

In 2020, according to the health profile drawn up by the OECD, life expectancy in Portugal was six months higher

than the European Union (EU) average, despite a temporary decrease of 0.8 years between 2019 and 2020, attributed to deaths from COVID-19, a decrease similar to the EU average. Along with other EU member countries, in Portugal there is still a significant inequality between men and women with regard to life expectancy. However, this discrepancy between men and women has reduced little in the previous two decades.[18].

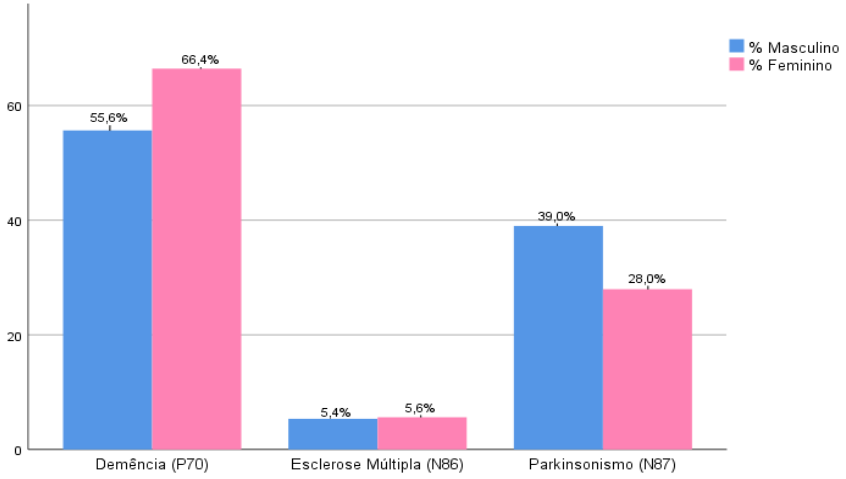
The distribution of male and female percentages in age groups - decades - (Graph 3) shows statistically significant differences (p<0.001). Thus, for example, the percentage of men included in the decade 70-79 years is higher than that of women (14.86% vs. 11.51%), with the inverse relationship being in the decade 80-89 years (23.57 % vs. 20.63%).

To verify the relationship between gender and diagnostic groups, the chi-square test was applied, with no statistically significant differences being observed in the percentages of men and women with Multiple Sclerosis, 5.4% and 5.6% respectively. However, the morbidity pattern is different (p<0.001) when it comes to Dementia, more frequent in women (66.4% vs. 55.6%) and Parkinsonism, more frequent among men - 39% vs. 28% (Chart 4).

These results are similar to those found in other studies for the Dementia group, explained by the fact that women live, on average, more years than men and advanced age is the greatest risk factor for the disease[19-21].

Likewise, for Parkinsonism and Parkinson's disease, the higher prevalence in males and the increase in prevalence with age are common results consistent with other studies[13,22,23]. Para a Esclerose Múltipla, a distribuição percentual no our study reveals values that do not follow the evidence of other studies, which identify it as a predominant disease in females, in a ratio of 3:1[17,24-26] or 2:1[27].

Graph 4. Percentage distribution according to sex and diagnostic groups (n= 2500). Guarda, Portugal, 2020



As can be seen in Table 3, people diagnosed with Dementia have a higher mean age of 82.13 (± 9.09) years, which confirms the estimates by age groups published in an epidemiological study on dementias and Alzheimer's disease, which states that as age advances, the number of patients increases and, after the age of 85, there would be around 62,826 patients in Portugal[28]. At the same time, it confirms the trend towards higher mean age values for dementia, found in another Portuguese study with 1405 participants in which the mean was 74.9 years old, of which 55.5% were women[29], people with Parkinsonism have a slightly lower average age of 77.99 (± 10.01) years, which, in a way, corroborates the result obtained in a clinical-epidemiological study recently carried out in Brazil in which the average age in a total of 79 patients was similarly lower (66.7 years), but approximately ten years less, and the predominant gender was similarly male[30].

In turn, the average age of people with Multiple Sclerosis is situated at 51.45 (± 14.76) years (Table 3), a result that is slightly above the average found in a study of the profile of patients with Multiple Sclerosis, carried out in Brazil, with a sample of 13 patients, in which the mean age found was 45 ± 11 years (Mean ± SD), with a higher prevalence for females[31]. This value also proved to be much higher than the average age value found in another Portuguese study on the quality of life of users with MS[32], in which the average age of people with Multiple Sclerosis was 41 years, in a sample made up mostly of women (64%) and, even higher than that of another similar study with 32 patients, predominantly female (74%) and with an average of age of 35 (± 12) years, verifying a ratio between women and men of 2.5[33]. The mean age (± SD) varies in each diagnostic group in a statistically significant way (p<0.001).

Table 3. Mean age by sex and diagnosis (n= 2500). Guarda, Portugal, 2020

Gender	Male	Female	Total
Diagnosis/Age	**Mean (±SD)**	**Mean (±SD)**	**Mean (±SD)**
Dementia	79,51 (±10,48)	83,25 (±8,18)	82,13 (±9,09)
Multiple sclerosis	52,18 (±12,67)	51,10 (±15,73)	51,45 (±14,76)
Parkinsonism	76,70 (±10,53)	78,89 (±9,53)	77,99 (±10,01)

In Portugal, published studies on the epidemiology of neurodegenerative diseases are scarce and do not allow knowing the prevalence of these diseases, which makes it difficult to compare with the reality studied. Therefore, it is considered that the European estimates are a reliable source of data and that allows to portray the Portuguese reality.

The Alzheimer Europe[11] estimated that in 2018 the prevalence in Portugal was 1.88% and in Europe at 1.73%. However, with the forecast of a significant increase in the number of people over 70 years old and, in particular, people over 85 years old, an increase in prevalence in Portugal was expected to 2.29 in 2025 and 3.82% in 2050. Contrary to this estimate, the Global Burden of Disease Study[34] revealed a decrease in this pathology in Portugal of approximately 1%, despite maintaining the label of the most prevalent disease in all regions compared (Table 4). This break may be associated with underdiagnosis or lack of codification of the disease and the devaluation and/or stigma often associated with the disease, leading to a lower demand for adequate care that allows a correct diagnosis.

On the other hand, this study revealed the existence of a higher prevalence (1.04%) for the local region evaluated, compared to the European and global realities, which would be less expected due to the increase in the mortality rate due to COVID-19 in 2020, the consequent decrease in demand for care in the pandemic context and, simultaneously, the decrease in the supply and delay of face-to-face consultations, but which could also be explained by the demographic characteristics of the target population, namely its high rate of aging and dependency.

Regarding Multiple Sclerosis, the present study demonstrated the existence of a higher prevalence in the Guarda region in 2020 (0.09%) compared to national, European and global values published by the Global Burden of Disease Study[34] (Table 4). At the same time, the International Federation of Multiple Sclerosis[35] estimates that in the year 2020, Portugal will have 5,787 people with the disease, with an average prevalence of 56/100,000 inhabitants.

Regarding to Parkinson's disease, the study carried out revealed a prevalence of 0.53% for the studied region, identically higher than the global, European and national values, as shown in Table 4. A study carried out in 2017, indicated an adjusted prevalence for the population resident in mainland Portugal aged ≥50 years of 0.24%, estimating a total number of cases of 180/100,000 inhabitants[36]. According to WHO[37], world estimates of people with Parkinson's disease, in 2019, indicated values greater than 8.5 million, a number well above the 6 million cases in 2016[38]. This increase in prevalence estimates draws attention to the increased individual and social burden and the urgent need to find measures that reduce the impact of the disease.

Table 5 presents the proportion of active diagnoses of neurodegenerative diseases in the Guarda Region, verifying that this proportion is higher in Dementia, followed by Parkinsonism, which is similar to the trend in the country, Europe and the World.

After mapping by geographical area (Figure 1), it appears that the municipality of Seia, the most populous after Guarda, is the one with the highest number of people with neurodegenerative disease, while the municipality of Pinhel, not being the least populous, is the one with a smaller number of people with carriers.

Table 4. Prevalence of neurodegenerative diseases by diagnostic group in Guarda, Portugal, Europe and the World. Guarda, Portugal, 2020

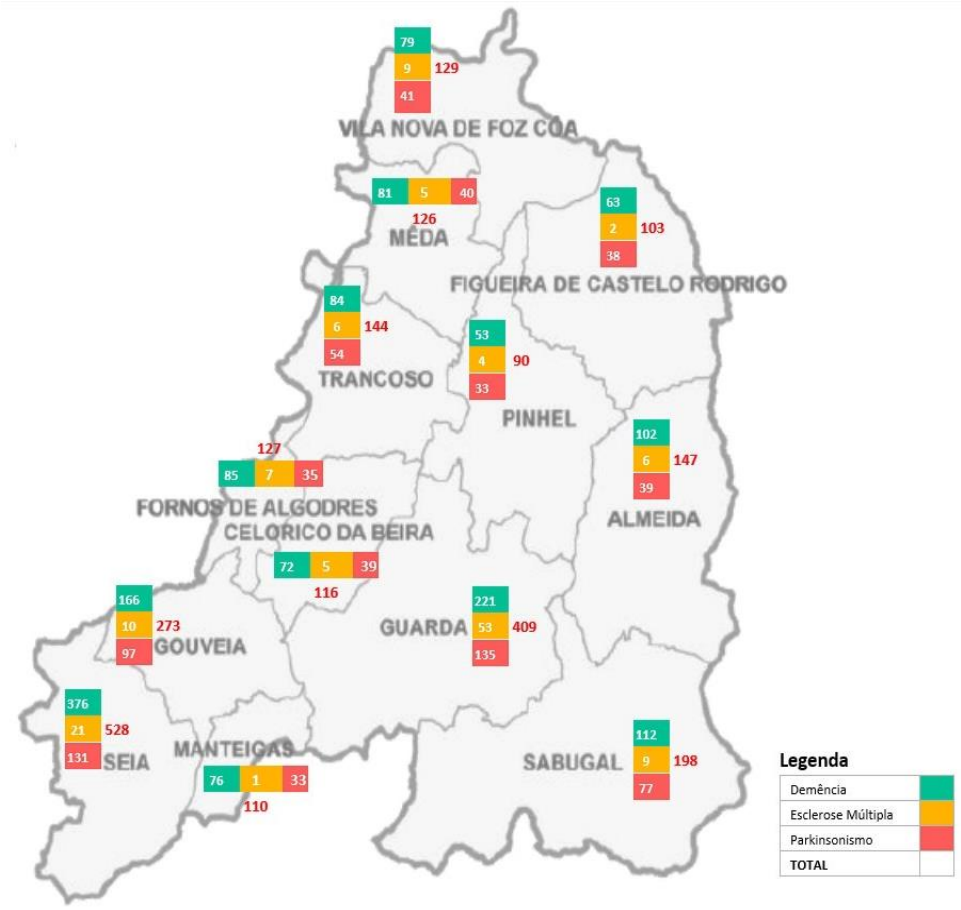
YEAR	2020	2019	2019	2019
Neurodegenerative Diseases	**Region of Guarda***	**Portugal**	**Europe**	**Global**
Alzheimer's disease and other dementias	1,04 %	0,7%	0,74%	0,71%
Parkinsonism and Parkinson's Disease	0,53%	0,12%	0,12%	0,11%
Multiple sclerosis	0,09%	0,03%	0,07%	0,02%

Note: *Active Diagnostics – ICPC-2.
Source: Adapted from the Global Burden of Disease Study[34].

Table 5. Proportion of active diagnoses of neurodegenerative diseases, by diagnosis group and gender. Guarda, Portugal, 2020

ICPC-2 Diagnostic Group	Proportion of active diagnoses		
	Total	Men	Women
P 70 - Dementia	1,04	0,31	0,73
N 86 - Multiple sclerosis	0,09	0,03	0,06
N 87 - Parkinsonism	0,53	0,22	0,31

Figure 1. Active diagnoses of neurodegenerative disease, by geographic area. Guarda, Portugal, 2020



Regarding the proportion of people with neurodegenerative diseases per Functional Health Unit, the highest values in the Personalized Health Care Unit (UCSP) of Manteigas for Dementia (2.20%) and Parkinsonism (0.20%) stand out. 96%). On the other hand, the Family Health Unit (USF) "A Ribeirinha" presents the highest values for Multiple Sclerosis (0.16%). If we consider the three diagnoses together, it is again the UCSP of Manteigas that assumes the highest proportion of active diagnoses (3.19%), which is in line with the demographic characteristics of these municipalities.

In summary, the information obtained allowed characterizing people with neurodegenerative disease and mapping the region of Guarda, which is considered to be an approximation to the reality of the situation in the geographical area under study and from which it was possible to describe some patterns and behavior models that are presented below.

Dementia

Total of 1,570 carriers; proportion of active diagnoses of 1.04%, higher than the estimated prevalence for Portugal (0.7%). The mean age (± SD) is 82.13 (± 9.08) years, with a higher proportion of women than men, 66.4% vs. 55.6%. The highest proportion of active diagnoses of Dementia occurs at UCSP de Manteigas (2.20%), while UCSP da Guarda is the health unit with the lowest proportion (0.49%).

Multiple sclerosis

Total of 138 carriers; proportion of active diagnoses of 0.09%, higher than the estimated prevalence for Portugal (0.03%). The mean age (± SD) is 51.45 (± 14.76) years, with the proportion of women similar to that of men, 5.6% vs. 5.4%. The highest proportion of active diagnoses of Multiple Sclerosis occurs at USF A Ribeirinha, in Guarda and at UCSP in Vila Nova de Foz Côa, (0.14%). On the other hand, the health units with the lowest proportion are UCSP Figueira de Castelo Rodrigo and UCSP de Manteigas with the same percentage (0.03%).

Parkinsonism

Total of 792 carriers; proportion of active diagnoses of 0.53%, higher than the estimated prevalence for Portugal (0.12%). The mean age (± SD) is 77.99 (± 10.01) years, with a higher proportion of men than women, 39.0% vs. 28.0%. The highest proportion of active diagnoses of Parkinsonism occurs at UCSP de Manteigas (0.96%), while USF A Ribeirinha, in Guarda, is the health unit with the lowest proportion (0.26%).

Conclusion

The study carried out allowed characterizing the population with an active diagnosis of neurodegenerative diseases in the Guarda Region, thus constituting a reference that will allow the evaluation of the evolution of these diseases in the region. However, there is a need to carry out more in-depth epidemiological studies that allow obtaining

the real prevalence of these pathologies locally, using other data collection methods.

The data obtained in this epidemiological study did not allow obtaining data for calculating the prevalence of neurodegenerative diseases under study, since the data presented correspond to active diagnoses, according to the International Classification of Primary Health Care - ICPC-2.

Notwithstanding the limitations of the study, the results obtained will make it possible to outline more specific and targeted intervention strategies for this target population and, specifically for the geographical areas where the highest values were found, and thus proceed with the study of the quality of life of the person with a neurodegenerative disease and their family.

Financing

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References

1. Fundação Calouste Gulbenkian. Dossier Ciência em Cena: O Cérebro e as Doenças Neurodegenerativas: Lisboa. Fundação Calouste Gulbenkian; 2015 [acesso em 2021, agosto 24]. Disponível em: https://content.gulbenkian.pt/wp-content/uploads/sites/16/2018/04/24100926/Dossie_2015_Neurodegenerativas.pdf
2. Walton C, King R, Rechtman L, Kaye W, Leray E, Marrie, et al. Rising prevalence of multiple sclerosis worldwide: Insights from the Atlas of MS, third Editions. Multiple Sclerosis Journal. 2020;26(14):1816–1821. Doi: 10.1177/1352458520970841
3. Magyari M, Sorensen PS. The changing course of multiple sclerosis: Rising incidence, change in geographic distribution, disease course, and prognosis. Curr. Opin. Neurol. 2019 jun;32(3):320-326. Doi: 10.1097/WCO.0000000000000695
4. Beinhoff U, Tumani H, Brettschneider J, Bitnner D, Riepe, MW. Gender-specificities in Alzheimer's disease and mild cognitive impairment. J Neurol. 2008;255:117–122. Doi: 10.1007/s00415-008-0726-9
5. Van Den Eeden, SK, Tanner CM, Bernstein AL, Fross RD, Leimpeter A, Bloch DA, Nelson LM. Incidence of parkinson's disease: Variation by age, gender, and race/ethnicity. American Journal of Epidemiology. 2003;157(11):1015-22. Doi: 10.1093/aje/kwg068
6. Intituto Nacional de Estatística (IP). População residente (n.º) por Local de residência (NUTS - 2013), Sexo e Grupo etário (Por ciclos de vida); Anual - INE, Estimativas anuais da população residente [Internet]. 2020 [atualizada em 2021 jun 14; acesso em 2021 dez 15]; Disponível em: https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_unid_territorial&menuBOUI=13707095&contexto=ut&selTab=tab3
7. Instituto Nacional de Estatística (IP). Censos 2021 Resultados Provisórios [Internet]. Lisboa: INE; 2022. [atualizada em 2021 dez 16; acesso em 2022 abril 21]. Disponível em: https://www.ine.pt/scripts/db_censos_2021.html
8. Pordata. índice de Envelhecimento [Internet]. 2020 [atualizada em 2020 jun 16; acesso em 2022 dez 21. Disponível em: https://www.pordata.pt/Municipios/%C3%8Dndice+de+envelhecimento-458
9. Poewe W, Seppi K, Tanner CM, Halliday GM, Brundin P, Volkmann, J. et al. Parkinson disease. Nat Rev Dis Primers. 2017;3(17013). Doi: 10.1038/nrdp.2017.13
10. Mhyre TR, Boyd J, Hamill RW, Maguire-Zeiss KA. Parkinson's disease. Subcell Biochem. 2012;65:389-455. Doi: 10.1007/978-94-007-5416-4_16
11. Scorza FA, Carmo AC, Fiorini AC, Nejm MB, Scorza CA, Finsterer J et al. Sudden unexpected death in Parkinson's disease (SUDPAR): a review of publications since the decade of the brain. Clinics. 2017;72(11):649-651. Doi: 10.6061/clinics/2017(11)01
12. Alzheimer-Europe. Dementia in Europe Yearbook 2019 Estimating the prevalence of dementia in Europe [Internet]. 2019 [acesso em jun 10]. Disponível em: www.alzheimer-europe.org/sites/default/files/alzheimer_europe_dementia_in_europe_yearbook_2019.pdf
13. Llibre-Guerra JJ, Prina M, Sosa AL, Acosta D, Jimenez-Velazquez IZ, Guerra M et al. Prevalence of parkinsonism and Parkinson disease in urban and rural populations from Latin America: A community-based study. Lancet Regional Health. Americas. 2022;7. Doi: 10.1016/j.lana.2021.100136
14. Lau LM, Breteler MM. Epidemiology of parkinson's disease. Lancet Neurology. 2006;5(6):525-535. Doi: 10.1016/S1474-4422(06)70471-9
15. Lee A, Gilbert RM. Epidemiology of parkinson disease. Neurologic Clinics. 2016;34(4):955-965. Doi: 10.1016/j.ncl.2016.06.012
16. Nussbaum, RL, Ellis CE. Alzheimer's disease and parkinson's disease. New England Journal of Medicine. 2003; 348(14):1356-1364. Doi: 10.1056/NEJM2003ra020003
17. Coyle PK. What Can We Learn from Sex Differences in MS? Journal of personalized medicine. 2021;11(10):1006. Doi: 10.3390/jpm11101006
18. Observatório Europeu de Sistemas e Políticas de Saúde (OCDE). Portugal: Perfil de Saúde do País 2019: Bruxelas: Publicação da OCDE, Observatório Paris/Observatório Europeu de Sistemas e Políticas de Saúde. 2019. Doi: 10.1787/75b2eac0-pt
19. Chêne G, Beiser A, Au R, Preis SR, Wolf PA, Dufouil C, et al. Gender and incidence of dementia in the framingham heart study from mid-adult life. Alzheimer's and Dementia. 2015;11(3):310-320. Doi: 10.1016/j.jalz.2013.10.005
20. Seshadri S, Wolf PA, Beiser A, Au R, McNulty K, White R. Lifetime risk of dementia and alzheimer's disease: The impact of mortality on risk estimates in the framingham study. Neurology. 1997;49(6):1498-1504. Doi: 10.1212/WNL.49.6.1498
21. Hebert LE, Scherr PA, McCann JJ, Beckett LA, Evans DA. Is the risk of developing alzheimer's disease greater for women than for men? American Journal of Epidemiology. 2001;53(2):132-136. Doi: 10.1093/aje/153.2.132
22. Benito-León J, Bermejo-Pareja F, Rodríguez J, Molina JA, Gabriel R, Morales JM. Prevalence of PD and other types of parkinsonism in three elderly populations of central Spain. Mov Disord. 2013;18(3):267-274. Doi: 10.1002/mds.10362
23. Wirdefeldt K, Gatz M, Bakaysa SL, Fiske A, Flensburg M, Petzinger GM et al. Complete ascertainment of Parkinson disease in the Swedish Twin Registry. Neurobiol Aging. 2008;29(12):1765-1773. Doi: 10.1016/j.neurobiolaging.2007.04.009
24. Murtonen A, Sumelahti M. Multiple sclerosis prevalence in 2000 and 2010 in Western Finland. Acta Neurol. Scand. 2019;141:311–318. Doi: 10.1111/ane.13203

25. Magyari M, Sorensen PS. The changing course of multiple sclerosis: rising incidence, change in geographic distribution, disease course, and prognosis. Curr Opin Neurol. 2019;32(3):320-326. Doi: 10.1097/WCO.0000000000000695
26. Koch-Henriksen N, Thygesen LC, Stenager E, Laursen B, Magyari M. Incidence of MS has increased markedly over six decades in Denmark particularly with late onset and in women. Neurology. 2018;90(22):1954–1963. Doi: 10.1212/WNL.0000000000005612
27. Branco M, Alves I, da Silva AM, Pinheiro J, Sá MJ, Correia I, et al. The epidemiology of multiple sclerosis in the entre Douro e Vouga region of northern Portugal: a multisource population-based study. BMC Neurol. 2020;20(195):2-7. Doi: 10.1186/s12883-020-01755-8
28. Santana I, Farinha F, Freitas S, Rodrigues V, Carvalho A. Epidemiologia da Demência e da Doença de Alzheimer em Portugal: Estimativas da Prevalência e dos Encargos Financeiros com a Medicação. Acta Médica Portuguesa. 2015;28(2):182-188. Doi: 10.20344/amp.6025
29. Gonçalves-Pereira M, Cardoso A, Verdelho A, da Silva JA, Almeida MC, Al, Fernandes, C, et al. A prevalência de demência em uma amostra comunitária portuguesa: um estudo do Grupo de Pesquisa de Demência 10/66. BMC Geriatr. 2017;17(261):2-11. Doi: 10.1186/s12877-017-0647-5.pdf
30. Fernandes I, Filho ASA. Estudo Clínico-Epidemiológico de pacientes com doença de Parkinson em Salvador-Bahia. Revista Brasileira de Neurologia e Psiquiatria. 2018;22(1):45-49.
31. Baggio BF, Teles RA, Renosto, Alvarenga LFC. Perfil epidemiológico de indivíduos com Esclerose Múltipla de uma associação de referência. Rev Neurocienc [Internet]. 2011 [acesso em 2022 abr 22];19(3):458-461. Disponível em: https://www.revneuropsiq.com.br/rbnp/article/view/244?msclkid=297dd127c29e11ec96d7a9bd74953896
32. Neves C, Rente J, Ferreira A, Garrett A. Quality of life of people with multiple sclerosis and their caregivers. Revista de Enfermagem Referência. 2017;Serie IV(12):85-96. Doi: 10.12707/RIV16081
33. Souza LM, Oliveira ES, Sousa NAC, Arêas GPT, Arêas FZS. Perfil epidemiológico e funcional de pacientes com diagnóstico de esclerose múltipla em Manaus, Amazonas. Acta Fisiátr. 2018;25(4):174-178. Doi: 10.11606/issn.2317-0190.v25i4a163863
34. Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2019 (GBD 2019) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME) [Internet]. 2020 [acesso em 2022 abr 22]. Disponível em: https://ghdx.healthdata.org/gbd-results-tool?params=gbd-api-2019-permalink/4007a45309c3b1a7931d372c3f439227
35. Federação Internacional de Esclerose Múltipla. Estadísticas importantes y datos recopilados del Atlas de EM de MSIF. 2020.
36. Ferreira JJ, Gonçalves N, Valadas A, Januário C, Silva MR, Nogueira L, et al. Prevalence of Parkinson's disease: a population-based study in Portugal. Eur J Neurol. 2017;24(5):748-750. Doi: 10.1111/ene.13273
37. Organización Mundial de la Salud (OMS). Enfermedad de Parkinson [Internet]. 2022 [acesso em 2022 jul 15]. Disponível em: https://www.who.int/es/news-room/fact-sheets/detail/parkinson-disease
38. Dorsey ER, Elbaz A, Nichols E, Abbasi N, Abd-Allah F, Abdelalim A, et al. Global Burden of Disease (GBD) 2016 Parkinson's Disease Collaborators. Global, regional, and national burden of Parkinson's disease, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. Lancet Neurology. 2018;17:939–953. Doi: 10.1016/S1474-4422(18)30295-3