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Social Security Expenses with Patients with Headache by the National Institute of Social Security from 2008 to 2014 - Brazil

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Abstract

Studies have shown high costs associated with diseases of the nervous system. The present study aims to analyze the social security expenses arising from headache, from 2008 to 2014, Brazil. This is a descriptive study, with a retrospective and cross-sectional design in data collection and quantitative approach. The Social Security database was consulted in order to obtain information about the main benefits offered to headache patients by the National Social Security Institute (INSS). There was an increase in headache expenses over the years 2008-2014, totaling US$ 5,922,694.65, with predominance in the urban area and in the female gender. The main social security benefit was sickness aid, with an annual average cost of US$ 809,208.48 and total expenses during the period of US$ 5,664,459.33. The total number of individuals during this period was 12,440, with an annual average of 1,777. The average annual increase in social security spending for this pathology was 14%. It was noted that the headache damages go beyond the patient's physical well-being and have a great social security impact, since there is a loss of productivity at work due to the absence rates or even the work disability.

Keywords: *headache, social security, epidemiology, costs and cost analysis.*

Introduction

In a global scale, chronic pain has become a public health problem that has caused personal, professional and social damages. Headache is an example of chronic pain that directly interferes with quality of life, being one of the most important causes for missing at work and involve costs with health services.[1,2] Papers point to headache as a universal symptom and more than 90% of the population will have at least one episode throughout their lives. [3] In a study conducted in a small Brazilian city more than 60% of the inhabitants reported having headache within a year.[4]

In Brazil, Social Security is responsible for ensuring maintenance of its assisted people, for reasons such as incapacity, unemployment, senescence, length of service and family responsibilities, among other cases.[5] The social security benefits of the General Social Security System (RGPS, for the acronym in Portuguese) are granted after examination of the application and the applicant must meet all the criteria of the type of benefit.[6] Concepts of the types of benefits mentioned throughout the text are presented below:

Retirement for disability is the social security benefit of the RGPS to be paid to the insured who is considered

incapable of work and unsusceptible to rehabilitation to perform the activity that guarantees his livelihood.

Sickness benefit is a social security benefit of the RGPS to be paid to the insured for the disability resulting from an illness or accident that makes him temporarily unable to work. In this study, when sickness benefit was cited, individuals were excluded when the incapacity was due to work or illness arising from it.

Accidental assistance is a social security benefit of the RGPS to be paid to the insured due to the temporary incapacity caused by an accident at work or illness resulting from the conditions of the latter, being required the removal of the worker for a minimum period of 15 days.

Retirement due to accident invalidity is a social security benefit of the RGPS to be paid to the insured due to incapacity resulting from an accident at work. In this type of benefit, the insured becomes unable to work and no longer has rehabilitation conditions for the exercise of activity that guarantees subsistence.

The present study aims to analyze the social security benefits and its costs due to headache in Brazil in the period between 2008 and 2014.

Methods

Information on the main benefits offered to headache patients by the National Social Security Institute (INSS) was extracted from the Social Security database. Thus, the following benefits were assessed: disability pension, sickness benefit, accident-related sickness insurance and accidental retirement. The conditions were investigated from the Social Security resulting from headache (included migraine) in the period from 2008 to 2014 and system according to the ICD-10 ICD-BR Tabulation List (eg, G43, G44 and R51). The databases were tabulated through descriptive statistics using Microsoft Office Excel 2007 software. The study did not require the approval of the Research Ethics Committee due to the open data character that makes it impossible to identify the individuals, as recommended in Resolution 466 / 12 of the National Health Council.

A bibliographical research was carried out in literature, searching for papers published in the last 45 years, in Portuguese and English. The inclusion criteria of the researches included the adequate methodology used, the actuality and the similarity in some aspect with the present study. The exclusion criteria were low relevance of some papers, no approach to the area of interest and lack of essential information. The following descriptors were used: headache, migraine, costs and social security.

As digital libraries and open access electronic data sources, the SciELO (Scientific Electronic Library Online) and the Virtual Health Library (BVS, for the acronym in Portuguese) were accessed. An evaluation was carried out of the insured persons who benefit from the following benefits: Retirement due to disability, sickness insurance, accident sickness insurance and retirement due to accident.

The analysis of the data was made taking into account the amount spent, in reais and converted to dollar (average quotation of the dollar for each year considered), in each year.[7] The values were grouped in tables, in which the data were compiled for the investment made by the INSS referring to all the benefits offered to the population of rural and urban areas, separated by their gender.

Results

The data on expenditures with the types of headache considered were described in table 1. It is possible to notice that, although the expenditures presented a reduction between the period of 2008 to 2009, there was an increase in total expenditure when considering the following years until 2014. This shows a trend of increasing social security expenditure with headache for the coming years. The increases ranged from 12% (2013-2014) to 21% (2010-2011). There was a greater demand for women, with a minimum annual expenditure of US $ 303,595.03 in 2009 and US $ 700,157.23 in 2014. Total expenditure during the period was US $ 5,922,694.65, annual average of US $ 846,099.24. The total number of individuals during the period was 12,440, with an annual average of 1,777. The average annual growth of social security spending for this pathology was 14%.

Table 1. *Expenditures in dollars with headache by INSS in Brazil during the period from 2008 to 2014.*

Year	Area	Gender	N°	Value (US$)
2008	Urban	Male	610	272,138.78
		Female	886	328,329.75
	Rural	Male	52	11,557.07
		Female	61	13,644.02
		Total:	**1,609**	**625,669.62**
2009	Urban	Male	538	231,308.68
		Female	763	294,370.06
	Rural	Male	45	10,412.50
		Female	40	9,225.00
		Total:	**1,386**	**545,316.24**
2010	Urban	Male	530	282,238.91
		Female	926	425,125.22
	Rural	Male	53	15,281.25
		Female	55	15,911.93
		Total:	**1,564**	**738,557.31**
2011	Urban	Male	657	391,089.95
		Female	1,006	524,058.56
	Rural	Male	30	9,717.26
		Female	51	16,511.90
		Total:	**1,744**	**941,377.67**
2012	Urban	Male	656	390,191.00
		Female	1,138	569,845.15
	Rural	Male	38	12,121.03
		Female	26	8,293.33
		Total:	**1,858**	**980,450.51**
2013	Urban	Male	671	367,216.08
		Female	1317	631,801.03
	Rural	Male	43	13,497.22
		Female	48	15,066.67
		Total:	**2,079**	**1,027,581,00**
2014	Urban	Male	663	354,034.44
		Female	1,464	687,237.23
	Rural	Male	31	9,550.64
		Female	42	12,920.00
		Total:	**2,200**	**1,054,191.67**
***Overall Total*: US$ 5,922,694.65**				

In order to help the analysis of the variables considered in the study, comparative charts of dispersion (Figure 1) and column (Figure 2) were plotted. The graph shown in figure 1 illustrates the increase in headache expenditures over the years. In addition, it shows that when compared to genders, women have represented a larger share of the amounts spent by social security.

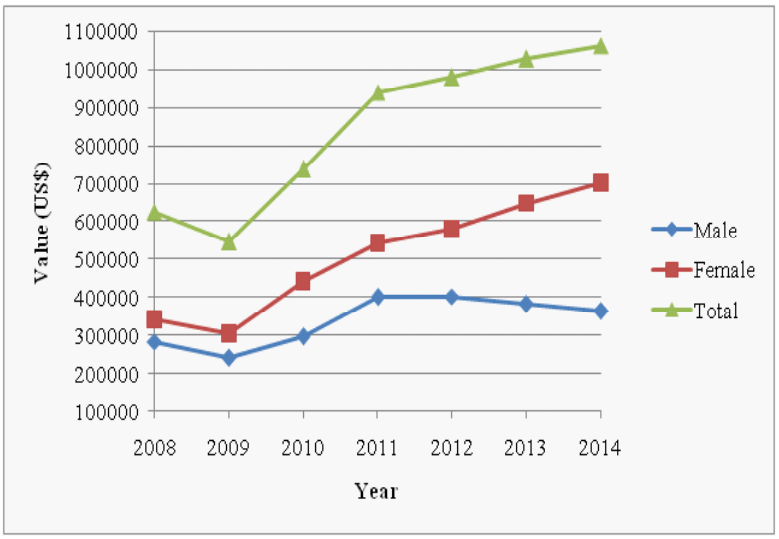

Fig 1. *Social security expenditures in dollars with headache, by gender, of INSS in Brazil during the period 2008-2014.*

Figure 2 shows a stacked column chart, representing the percentages of expenditures for the urban and rural areas. This type of graph was used because it allows easy comparison of the variables involved in relation to the total. It can be noticed that the figures are in percentage, starting from 90%, since the social security costs with headache in urban areas is at least 96%, as it is the case observed for the year 2010, when the percentage share of the rural population was higher.

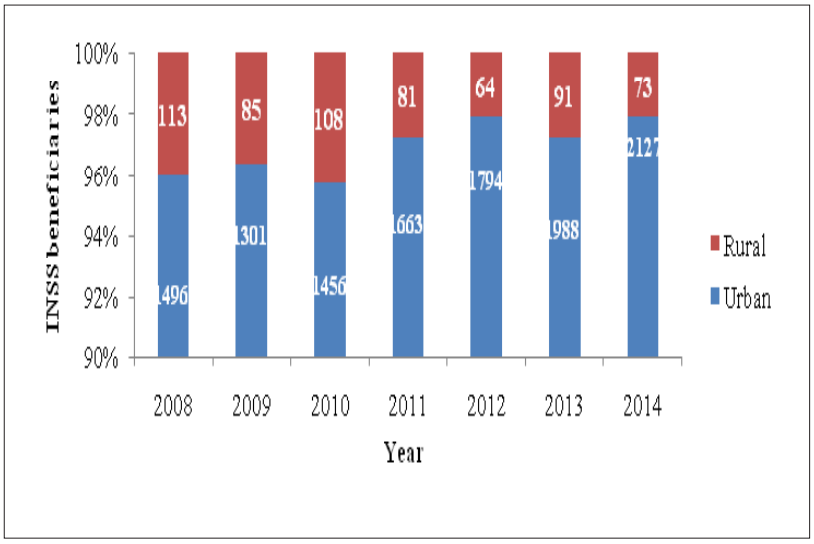

Fig 2. *Distribution of beneficiaries with headache, according to the beneficiary's area of residence, by INSS in Brazil during the period 2008-2014.*

Another aspect to be analyzed is the distribution of expenses according to the kind of benefit. Table 2 separates the annual expenditures for the different types of benefit: disability retirement, sickness aid, accidental sickness insurance and accidental retirement. Sickness aid, in addition to increasing from 2009 to 2014, has two orders of magnitude higher than the others, corresponding to the main kind of social security expenditure. The average annual expense for this benefit was US$ 809.208,48 and total over the period of US$ 5.664.459,33. In relation to the other types of benefits, in addition to presenting expenses considerably lower than the sickness aid, they have been inconstant over the years, with variations in their values for more or less.

Table 2. *Expenses with headache in dollars, by type of benefit, from 2008 to 2014*

Year	Disability retirement	N°	Sickness aid	N°	Sickness aid due to accident	N°	Retirement due to accident	N°
2008	US$ 16,279.2	28	US$ 587,704.51	1526	US$21,685.91	55	–	–
2009	US$ 11,241.00	21	US$506,310.57	1291	US$27,331.39	73	US$433.26	1
2010	US$ 14,929.96	23	US$ 701,263.85	1498	US$ 21,978.1	42	US$ 385.4	1
2011	US$ 9,449.2	15	US$ 902,934.93	1670	US$ 28,993.56	59	–	–
2012	US$ 17,463.79	26	US$ 943,059.48	1792	US$ 19,927.23	40	–	–
2013	US$ 18,748.39	30	US$ 990,557.44	2012	US$ 17,153.97	36	US$ 1,121.21	1
2014	US$ 11,768.83	17	US$ 1,032,628.55	2146	US$ 19,344.92	37	–	–
Total:	**US$ 99,880.37**	160	**US$ 5,664,459.33**	11935	**US$ 156,415.08**	342	**US$ 1,939.87**	3

In order to better illustrate the comparison between the variables presented in table 2, the stacked bar chart shown in Figure 3 was elaborated. Expenditures related to disease aid correspond to about 96% of total headache expenses, being the most prevalent benefit.

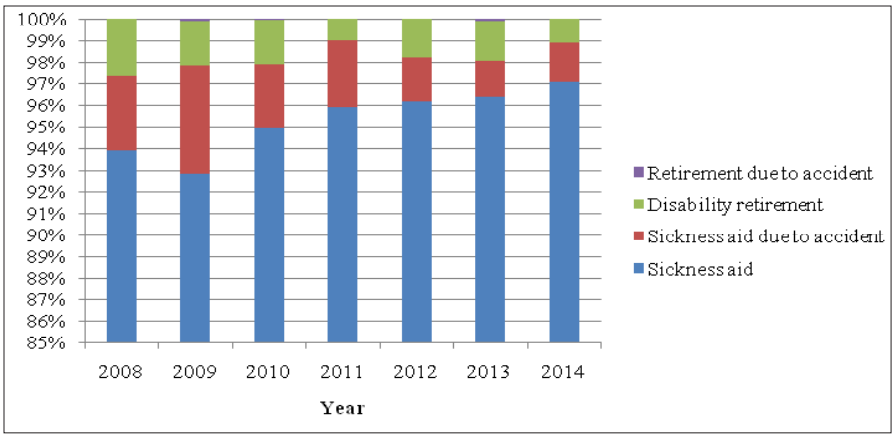

Fig 3. *Annual distribution of expenses among individuals with different categories of social security benefits granted to the beneficiary by the INSS in Brazil during the period from 2008-2014.*

Discussion

Over the past decade, the government spending on sickness benefits has increased dramatically. The number of benefits granted rose from 909 thousand in 2000 to 2.1 million in 2007. Annual expenses increased more than four times the value in the same period. Thus, between 2000 and 2007, expenditures with this benefit increased by 412 percent.[7] In the present study, it was observed that expenditures with headache patients receiving social security benefits increased 117% from 2008 to 2014, with an average annual rate of 14%. It is estimated that in 2030 the expenses will reach a value higher than 10 million dollars.

Regarding the epidemiology of headache in Brazil, studies are scarce, and the majority are studies restricted to cities. A study carried out in 2002 in the city of Porto Alegre with 1,174 individuals over 18 years established the following prevalence among types of headache: 66.2% of the type of tension, 16.3% of the migraine type and 7.3% of the daily chronic type.[19] The first population-based study was conducted between the years 2006 and 2007, interviewed 3.848 individuals between 18 and 79 years and all 27 Brazilian states, with the results of a prevalence of tension headache of 13%, migraine of 15.2% and the daily chronicle of 6.9%.[20] Tension-type headache was 1.62 times more prevalent in men and 1.54 times higher in individuals with more than 11 years

of schooling. Migraine was 2.2 times more prevalent in women, 1.5 times in individuals with more than 11 years of schooling, 1.59 times in individuals with a family income of less than 5 minimum wages and 1.43 times in individuals that don't practice regular physical exercise. Chronic daily headache was 2.4 times more common in women, 1.72 times higher in the unemployed and 1.63 times higher in individuals with a family income greater than 10 times the minimum wage and 2 times higher in individuals who did not practice regular physical activities.[20]

Regarding medical expenses with headache treatments, an analysis performed in MEDSTAT's MarketScan database 1994, it was estimated that in the United States the economic burden generated by migraine was about 14 billion dollars, 1 billion for direct medical care due to Migraines and US$13 billion in indirect costs due to low productivity and absent days at work.[26] The present study revealed an average annual social security expenditure of US$ 846,099.24 between 2008 and 2014 in Brazil.

A study published in The Journal of Head and Face Paine based on data from MEDSTAT MarketScan CCAE 2004, estimated the annual expenditure due to migraine as US$11.07 billion, considering the fact that migraine can cause or exacerbate other conditions of health, the following costs were considered: medicines, ambulatory care, first aid and hospital admission. Patients with migraine had an average expenditure of 57.95% higher relative to health care than the control group. [27]

A retrospective and comparative study that took place in Michigan, USA, between 1989 and 1990 with 2,672 patients aged 18-64 years, all of whom had a health plan for at least 12 months, showed that patients with headache of the migraine type presented greater comorbidity, evidencing that for this affection, both the number of people who generated complaints and the number of complaints by people was greater. Patients belonging to the group diagnosed with migraine sought more medical care compared to the control group, in a ratio of 1.7: 1, spent more on drugs in a ratio of 2.5: 1 and sought the emergency service more often. The total costs of patients in the group diagnosed with migraine accounting for medical and drug costs were US$ 3.4 million and the control group was US $ 2.1 million.[28]

Another retrospective analysis from a large database of health insurance companies in the United States estimated that patients with migraine when compared to the control group had spent 1.5 times more in medical appointments; 1.2 times more hospitalization; a cost with medical emergencies 2.2 times higher, cost also of 2.2 times more with medications, totaling an expenditure of 60% more with their health than the patients of the control group. [27]

Clouse and Osterhaus demonstrated in their research that patients with migraine have an estimated cost of 697.00 dollars more in health, compared to those who do not have this diagnosis.[28]

The medical demands and expenditures may be even greater if the patient develops into the transformed migraine, which is, according to Dodick, the most common and difficult to control daily chronic headache subtype.[29] A longitudinal study conducted in the United States and published in 2009 shows that patients with transformed migraine compared to patients diagnosed with sporadic migraine have a 3.01 times higher demand for primary care, 4.52 greater for specialists and 3.27 more for emergency rooms.[30]

There are other, internationally classified types of secondary headaches, such as trigeminal neuralgia (G50) and puerperium-related headaches (O29, O74 and O89). However, the present study did not cover these cases. In addition, the work covers public social security, not investigating private pension.

Conclusion

The present study highlighted the social impact caused by this group of diseases related to headache, which in the period from 2008 to 2014, only in social security expenditures for granting benefits, cost more than 5 million dollars to the public coffers, benefiting a total of 12,440 individuals, with an annual average of 1,777 individuals. It was evidenced the prevalence of the female gender among the beneficiaries, besides the majority of the beneficiary population residing in the urban area. The type of benefit most commonly contemplated was sickness aid, with an average annual expenditure of US$809,208.48, with an annual average of individuals in this group of 1,705.

The present analysis proved to be important for raising the discussion about social security expenditures caused by this disease group, as well as highlighting the need to formulate strategies for reducing work loss, disability and consequent stability of social security costs related to headache.

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