CHARACTERIZATION OF HOSPITALIZATIONS FOR GLAUCOMA

CARACTERIZAÇÃO DAS INTERNAÇÕES POR GLAUCOMA

CARACTERIZACIÓN DE LAS HOSPITALIZACIONES POR GLAUCOMA

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ABSTRACT

Objective: to characterize the hospitalizations for glaucoma notified in Brazil. **Method:** a quantitative study, retrospective of ecological type. It was used the database of the Hospital Information System/Department of Informatics of the Unified Health System of the Ministry of Health, in the period from January 2008 to October 2017. The data were processed and analyzed in the Tabwin version 4.14 for Windows and Microsoft Excel 2013. **Results:** we obtained 33,079 notifications of hospitalizations. With a predominance of males, color/race unreported, character of elective care and public system. The age group most notified was between 60 and 69 years old and in relation to the year with larger notifications, stood out 2016 and 2017. **Conclusion:** there is a great number of hospitalizations for glaucoma, despite underreporting and undetected cases. We identified the profile of hospitalizations for glaucoma in the country, in order to promote subsidy to the creation of public policies and to plans of care that promote the prevention of aggravation of the disease. Thus, it facilitates the work of the multiprofessional team, in order to direct its actions in health education, important to decrease the consequences, hospitalizations, and irreversible blindness. **Descritores:** Glaucoma; Information Systems; Epidemiology; Nursing; Health Education; Risk Factors.

RESUMO

Objetivo: caracterizar as internações por glaucoma notificadas no Brasil. **Método:** estudo quantitativo, retrospectivo do tipo ecológico. Foi utilizado o banco de dados do Sistema de Informações Hospitalares/Departamento de Informática do Sistema Único de Saúde do Ministério da Saúde, no período de janeiro de 2008 a outubro de 2017. Os dados foram processados e analisados no Tabwin versão 4.14 para Windows e Microsoft Excel 2013. **Resultados:** obteve-se 33.079 notificações de internações. Com predominância do sexo masculino, cor/raça não declarada, caráter de atendimento eletivo e em regime público. A faixa etária mais notificada foi entre 60 e 69 anos e em relação ao ano com maiores notificações, destacou-se 2016 e 2017. **Conclusão:** há grande número de internações por glaucoma, apesar das subnotificações e casos não detectados. Identificou-se o perfil das internações por glaucoma no país, de forma a promover subsídio à criação de políticas públicas e aos planos de cuidado que favoreçam a prevenção dos agravos da doença. Assim, facilita o trabalho da equipe multiprofissional, no sentido de direcionar as suas ações de educação em saúde, importantes à diminuição das consequências, internações e cegueira irreversível. **Descritores:** Glaucoma; Sistemas de Informação; Epidemiologia; Enfermagem; Educação em Saúde; Fatores de Risco.

RESUMEN

Objetivo: caracterizar las hospitalizaciones debido a glaucoma notificados en Brasil. **Método:** un estudio cuantitativo, retrospectivo del tipo ecológico. Se utilizó la base de datos del Sistema de Información Hospitalaria/Departamento de Informática del Sistema Único de Salud del Ministerio de Salud, en el período comprendido desde enero de 2008 hasta octubre de 2017. Los datos fueron procesados y analizados en el Tabwin versión 4.14 para Windows y Microsoft Excel 2013. **Resultados:** hemos obtenido 33,079 notificaciones de hospitalizaciones. Con un predominio del sexo masculino, raza/color no declarada, de carácter electivo y el sistema público de atención. El grupo de edad más notificado fue entre 60 y 69 años de edad y en relación con el año con mayor número de notificaciones sobresalió en 2016 y 2017. **Conclusión:** existe un gran número de hospitalizaciones debido al glaucoma, a pesar del subregistro y los casos no detectados. Hemos identificado el perfil de hospitalizaciones por glaucoma en el país, a fin de promover la subvención la creación de políticas públicas y planes de cuidado que promueven la prevención del agravamiento de la enfermedad. Por lo tanto, facilita el trabajo del equipo multiprofesional para dirigir sus acciones en educación para la salud, importante para reducir las consecuencias, hospitalizaciones y ceguera irreversible. **Descriptores:** Glaucoma; Sistemas de Información; Epidemiología; Enfermería; Educación en Salud; Factores de Riesgo.

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INTRODUCTION

Glaucoma is defined as a chronic optic neuropathy characterized by progressive and irreversible lesion of the optic nerve and layers of nerve fibers of the retina those result in loss of the visual field, especially the peripheral.^{1,2} It is considered a public health problem responsible for one of the main causes of irreversible blindness in the world. The estimated number of people with visual disabilities is 253 million; however, more than 80% of the cases of this clinical condition can be cured or prevented.³⁻⁴

The symptoms can occur with progressive loss of vision and the sudden visual disturbances. However, it is important to emphasize that the majority of patients with this disease are asymptomatic.⁵ The main risk factor includes the increase of the intraocular pressure for more than 21 millimeters of mercury (mmHg).² Thus, the treatment aims mainly to reduce and control of intraocular pressure, which may be effected through clinical treatment based on the use of hypotensive drops or surgical, when the clinical treatment is not indicated or is insufficient.⁵⁻⁶

The clinical treatment may impair the patient's quality of life, which promotes the low fidelity to treatment, since it requires the chronic use of eye drops that must be administered in quantity and correct way. In addition, there is the possibility of the occurrence of possible adverse effects and the feeling of concern and anxiety in being the carrier of a chronic disease that may have irreversible consequences, added to the cost of treatment.⁵ So, studies have demonstrated that the treatment preferred by patients is surgical, by less negatively impact on everyday life.⁵⁻⁶

The lack of knowledge about the disease, the non-understanding on how to use the eyedrops, the difficulty of access to health service and the difficulty of communication with the health team are factors those may result in non-adherence to treatment. In this sense, it can lead to the progression of the disease and serious consequences such as the increase in the number of hospitalizations and blindness.^{1,7} Thus, health education becomes paramount in preventing complications of glaucoma.

This study is justified by the need to identify the assistance developed for patients with glaucoma, in particular, the process of admission of these individuals. In addition, the vast territorial extension of Brazil identifies that the provision of care is not fair, which

leads to an unequal health care among populations of distinct regions. In view of the foregoing, asks: How are distributed in Brazil and its regions hospitalizations for glaucoma?

OBJECTIVE

- To characterize the hospitalizations for glaucoma notified in Brazil.

METHOD

It is a quantitative study, retrospective, ecological type. The ecological study defines itself as a research design that uses as a unit of analysis sets of individuals (households), which in most cases correspond to geographical areas.⁸

It was used the database of the SIH/DATASUS (Hospital Information System/Department of Informatics of the Health Unic System) of the Ministry of Health, by means of health information (TABNET); and epidemiological data and morbidity of SUS, by place of hospitalization, from January 2008.

It was used the information relevant to this study, available on the internet, identified in the following electronic page: <http://datasus.saude.gov.br/>. The data collection occurred during the months of November and December 2017, was performed by two trained investigators, with dual data collection and then reviewed for greater reliability of information.

The population was comprised of notified cases of hospitalizations for glaucoma in Brazil and Brazilian region in the period from January 2008 to October 2017. The months of November and December 2017 were not included by the unavailability of data in the Datasus website. The variables analyzed included: sex, age, color/race, region, year of care, character of care and hospitalization.

At the end of data collection there were identified 33,079 notifications of hospitalization for glaucoma in the whole country. Then, the data were processed and analyzed in the Tabwin (DATASUS) Version 4.14 for Windows and Microsoft Excel 2013 and the results published in the form of consolidated.

Because it is a database of public domain in which there occurs the direct or indirect identification of individuals, is not required for consideration by the Committee for Ethics in research, in this way, does not contravene the ethical precepts of research involving human beings. The data were treated in its entirety and during the stage of data collection does not hear the occurrence of defaulting data at any time.

RESULTS

In the period from January 2008 to October 2017 obtained 33,079 notifications of hospitalizations for glaucoma in Brazil. Of these, as shown in table A, 16,756 (50.65%) were male patients, 12,998 (39.27%) showed

no information in relation to the color/race, the majority of hospitalizations occurred in the southeastern region of 17,290 (52.27%), with 26,033 (78.70%) of the cases occurred in elective character and mostly from the public network of hospitalization 12,961 (39.18%).

Table 1. Characterization of hospitalizations by glaucoma as to sex, color, race, region, character and service network. Natal (RN), Brazil, 2008-2017.

Variables	N	%
Gender		
Male	16756	50,6
Female	16323	49,4
Color/race		
Without information	12988	39,27
White	11405	34,48
Pardo	6560	19,83
Black	1890	5,71
Yellow	225	0,68
Indigenous	11	0,03
Region		
Southeast	17290	52,27
Northeast	8188	24,75
South	4779	14,44
Midwest	2618	7,91
North	204	0,63
Character of service		
Elective	26033	78,70
Urgency	7045	21,30
Other types of injuries and/or physical/chemical poisoning	1	0,00
Hospitalization Network		
Public	12961	39,18
Private	11833	35,77
Ignored	8285	25,05

Source: Ministry of Health - Hospital Information System of SUS (SIH/SUS). Information collected in 12/19/2017.

Figure a represents the number of hospitalizations for glaucoma each year in Brazil. The largest number of reported cases occurred in the year 2016 with 3,868 (11.69%) notifications.

Figure 1. Number of hospitalizations for glaucoma. Natal (RN), Brazil, 2008-2017. Source: Ministry of Health - Hospital Information System of SUS (SIH/SUS). Information collected in 12/19/2017.

Table 2 shows the distribution of data on hospitalizations for glaucoma according to each Brazilian region. It's worth pointing out that when it comes to sex, all regions showed similar numbers of men and women, but in the South-East, South, Midwest and North there was a greater frequency of male. The color/race varied between regions, in

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Southeast predominated the white color in 8,405 (25.40%) cases; in the other regions predominated not info on this variable.

Table 2. Distribution of data on hospitalizations for glaucoma according to each region. Natal (RN), Brazil, 2008-2017.

Variables	Regions									
	Southeast		Northeast		South		Midwest		North	
	N	%	N	%	N	%	N	%	N	%
Sex										
Male	8856	26,77	3980	12,03	2440	7,38	1369	4,14	111	0,34
Female	8434	25,50	4208	12,72	2339	7,07	1249	3,77	93	0,28
Total	17290	52,27	8188	24,75	4779	14,45	2618	7,91	204	0,62
Color/race										
Without information	3855	11,65	5233	15,82	2252	6,80	1546	4,67	102	0,31
White	8405	25,40	570	1,72	2239	6,77	188	0,57	3	0,01
Pardo	3491	10,55	2019	6,10	121	0,36	836	2,53	93	0,28
Black	1428	4,32	271	0,82	157	0,47	30	0,09	4	0,01
Yellow	102	0,31	95	0,29	10	0,03	16	0,05	2	0,00
Indigenous	9	0,03	0	0,00	0	0,00	2	0,00	0	0,00
Total	17290	52,27	8188	24,75	4779	14,45	2618	7,91	204	0,62
Type of attendance										
Elective	14061	42,50	7311	22,10	3439	10,39	1120	3,38	102	0,31
Urgency	3229	9,76	877	2,65	1339	4,04	1498	4,53	102	0,31
Other types of injuries and/or physical/chemical poisoning	0	0,00	0	0,00	1	0,00	0	0,00	0	0,00
Total	17290	52,27	8188	24,75	4779	14,45	2618	7,91	204	0,62
Hospitalization Network										
Public	9106	27,52	1947	5,88	1262	3,81	570	1,72	76	0,23
Private	4418	13,35	4251	12,85	1805	5,46	1298	3,92	61	0,18
Ignored	3766	11,38	1990	6,01	1712	5,17	750	2,27	67	0,20
Total	17290	52,27	8188	24,75	4779	14,45	2618	7,91	204	0,62

Source: Ministry of Health - Hospital Information System of SUS (SIH/SUS). Information collected in 12/19/2017.

It is observed that the character of most service notified was the elective in Southeast 14,061 (42.50%), northeast 7,311 (22.10%), South 3,439 (10.39%) and 102 North (0.31%). Just the Midwest showed predominance in urgency 1,498 (4.53%). Moreover, only one case was notified in the South resulting from other types of injuries and/or physical/chemical poisoning. In relation to the admission network in the Northeast, South and Midwest most often obtained from the private, in counterpoint, the Southeast and Northern public.

The two and three figures show respectively the number of hospitalizations by glaucoma in relation to age group by region and the number of hospitalizations by glaucoma each year by region. It is observed that the number of hospitalizations according to age group is prevalent in all regions between 60 and 69 years old. The years between 2016 and 2017 encompassed the greater number of hospitalizations for glaucoma in the regions, with 3,868 (11.69%) and 3,755 (11.35%) of hospitalizations, respectively.

Figure 2. Number of hospitalizations for glaucoma in relation to age group by region. Natal (RN), Brazil, 2008-2017. Source: Ministry of Health - Hospital Information System of SUS (SIH/SUS). Information collected in 12/19/2017.

Figure 3. Number of hospitalizations for glaucoma per year and per region. Natal (RN), Brazil, 2008-2017. Source: Ministry of Health - Hospital Information System of SUS (SIH/SUS). Information collected in 12/19/2017.

DISCUSSION

The high number of hospitalizations for glaucoma in Brazil, despite the knowledge of the presence of underreporting and existing cases not yet detected, demonstrates the maintenance of the proportion of hospital admissions over the years by several factors, which one can cite the ignorance of the population about this chronic optic neuropathy, its complications, diagnostic methods and treatments, which are based mainly on routine ophthalmological examination.¹

In the United States there has been a decrease in cases of hospitalization for glaucoma. Study analyzed the period from 1994 to 2012 in that country and pointed to a decrease in the number of beneficiaries despite the increase in the number of procedures for treating glaucoma, due to greater adherence to treatment of patients diagnosed along the years. The procedures for

the reduction of eye pressure were the most used in five years.⁹

It is known that this neuropathy brings the death of ganglion cells of the retina and damage to the optic nerve, with loss of the visual field.² and that the inadequate use of eye drops relates to evil control of intraocular pressure which causes the optic neuropathy.¹⁰ Therefore, early diagnosis of the disease is as important as good adherence to treatment in the prevention of complications.

A cross-sectional study designed to assess the adherence to eye drops for patients with glaucoma identified that the group of non-members had more young patients than the group of members. The main reason for not using the drop between these participants were: Oblivion, life style, problems with time and effects.¹⁰ To improve adherence to treatment you must create strategies of counselling to these patients so that they and their escorts are educated in order to

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understand the importance of the use of eye drops and the severity of the disease.¹⁰

Study developed with the objective of evaluating the incidence of risk factors and epidemiological data on suspected cases of glaucoma suggests campaigns such as fundamental strategies to stimulate the early diagnosis of the disease in the community, in order to include the recognition of the magnitude of the problem, to facilitate access to primary care in health and educate the population about the disease.²

In relation to sex, the data show that in Brazil there is a predominance of males, other authors corroborate with this result.¹¹⁻¹² In contrast, other studies showed that there was a greater number of glaucoma in female patients.¹³⁻¹⁴ This corroborates with the regions North and South. However, it is important to highlight that the difference between the predominance of the sexes in all regions of the country was small.

An Indian study with 300 subjects, whose goal was to identify the correlations between the variables sex, age, waist-hip ratio and glaucoma revealed that there is no significant difference between the predominance of men and women in glaucoma,¹⁵ in order to corroborate with the small differences found in this research.

In accordance with the color/race, predominated in Brazil cases without information and the second most evidenced was white, this goes against the results of another study.¹⁰ Research points out that the black race is considered a risk factor for the development of glaucoma. Other factors include: age, diabetes mellitus, socioeconomic level in the family, family history and presence of myopia.⁷

The results showed that the region with the largest number of hospitalizations was the southeastern Brazil. However, there is no evidence to corroborate or disagree with this finding.

The character of elective care prevailed in Brazil and in the regions Southeast, Northeast, North and South. Otherwise, in the Center-West predominated hospitalizations with a character of urgency. The literature does not demonstrate studies that classify the character of care in relation to hospitalizations due to glaucoma, but considers that to be a disease of slow progression, often asymptomatic and which presents clinical treatment; it is believed that the hospitalizations are justified to be electives in their majority.

In relation to the network of admission, there was a greater predominance of public service 12,961 (39.18%). This may be related to different socioeconomic and cultural conditions that exist in the country, a fact that commits more accentuated the quality of life in its various aspects.

In the graph two was demonstrated the age group most affected by the hospitalizations due to glaucoma in Brazil. It emphasizes the unanimous majority both in Brazil, as in all its regions of ages between 60 and 69. In this regard, study⁷ explains age above 60 years old as a risk factor for this chronic optic neuropathy. In addition, it is known that the greater involvement by glaucoma are in patients with age above 40,¹⁶ a fact that also corroborates with the findings of the present study showed that in Brazil the predominance of hospitalizations for this disease in the following age ranges: 60 to 69 years old in 8,948 (27.05%) of the cases, followed by 70 to 79 with 7,146 (21.60%), 50 to 59 in 6,071 (18.35%) and 40 to 49 years old with 3,124 (9.44%).

For both, a cross-sectional study that aimed to verify the influence of age on the behavior of the intraocular pressure (IOP) in the population above 40 concluded with their results that age as an isolated factor does not influence in the IOP; however, the presence of glaucoma, hypertension, diabetes mellitus, female gender and race were compared with the values of IOP.⁴

In relation to the year of the largest number of notifications of hospitalizations for glaucoma in Brazil and its regions was evidenced in graphs 1 and 3 that there was a majority among the years 2009 to 2017 with higher peaks in 2016 and 2017. However, the literature does not demonstrate evidence that would justify such an outcome. It is believed to be due to the increase in the aging of the population in the country.

It is worth noting that the prevention, diagnostic methods and the guidelines on the treatment are of fundamental importance for the detection of the disease and treatment adherence, in order to reduce its progression and consequently the number of hospitalizations. It is known that nursing occupies an important role in the notification of health aggravations and health education, therefore, is of utmost importance that these professionals understand the characterization of hospitalizations for glaucoma in the country, in order to direct their actions in the difficulties of conducting an effective treatment, in order to prevent complications of the disease.

This study presents limitations by own experimental which is vulnerable to various sources of biases, mainly in relation to the impossibility of extrapolation of results for individual level. In addition, the use of secondary data in the public domain is vulnerable the quality and coverage of information sources, which vary between the areas studied, in addition to the non-availability of some data and the level of reliability of the same. Still, one must take into account the temporal autocorrelation and the differences between the populations of the aggregates.

So, we suggest that other types of research, whether at the local or multicentric with other designs, such as the longitudinal, in order to provide a more reliable characterization of hospitalizations for glaucoma.

CONCLUSION

Thus, it became evident that there are a large number of hospitalizations for glaucoma in the country, in spite of the underreporting and existing cases, but not detected. The characteristics of the hospitalizations demonstrated in Brazil were similar in all regions, with the presence of small differences. In general, predominated, a greater number of hospitalizations in the male gender, however, differences in proportion with the females were small.

The Southeast led the largest number of notifications and the majority of hospitalizations occurred in individuals of color/race is not defined. The character of the service and the network of hospitalization were similar between the regions and the elective character prevailed and the public network. The age range of higher frequency in Brazil and in all member states was between 60 to 69 years of age, and the years of 2016 and 2017 revealed a greater quantity of notifications.

It should be noted that the study allowed us to identify the profile of hospitalizations for glaucoma in the country, in order to promote subsidy the creation of public policies and plans of care that promote the prevention of aggravation of the disease. Thus, facilitates the work of the multiprofessional team of health in order to direct their actions.

The patient with glaucoma needs to be oriented about the disease and for this reason, health professionals need to develop actions that lead information the population about the importance of monitoring to

minimize or prevent complications, forms of treatment, ways to administer the medication and the importance of complying with the prescribed times.

In this sense, health education on the part of the multiprofessional team provides extremely valuable to decrease the consequences, hospitalizations and especially of irreversible blindness, because from there, it is possible to operationalize the patient care, in order to strengthen relations with the professional. This relationship allows greater knowledge on the state of health of the individual and the early detection of diseases of the disease.

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