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A PROFILE OF ADMITTANCES TO HOSPITAL DUE TO NON-CONTAGIOUS CHRONIC DISEASES SENSITIVE TO PRIMARY HEALTH CARE AMONG CHRONOLOGICALLY ADVANTAGED PATIENTS IN THE SOUTHERN HALF OF RIO GRANDE DO SUL

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ABSTRACT

The purpose here established was that of establishing, within the municipalities in the southern part of the Brazilian State of Rio Grande do Sul, the profile of admittances to hospital resulting from Non-Contagious Chronic Diseases Sensitive to Primary Health Care (NCCDSPHC) among chronologically advantaged patients. This is a transversal study with secondary data obtained from the Information Technology Department of the Brazilian Public Health System – SUS (DATASUS), including variables related to admittance to hospital and also the mortality rates in hospitals (according to causes, gender, age, and time spent in hospital). The NCCDSPHC are responsible for 43.99% of hospital admittances for all causes (AAC), with Pulmonary Diseases standing out as the most prevalent single group (18%), followed by Heart Failure (12.28%). The female sex, with the exception of the Pulmonary Disease category, is the one that causes most admittances to hospital through other causes. We also found a linear trend towards an increase in the mortality rate of the NCCDSPHC when grouped together. Our conclusion is that, due to the magnitude of the admittances to hospital, as also the increase in the mortality caused by the NCCDSPHC, it is urgent to embark on more in-depth considerations about care to be taken as part of primary care for the chronologically advantaged in this region.

Descriptors: Senior Citizens. Admittance to Hospital. Chronic Disease. Primary Health Care.

RESUMO

Objetivou-se delinear, em municípios da metade sul do Rio Grande do Sul, o perfil das internações por Doenças Crônicas Não Transmissíveis Sensíveis à Atenção Primária (DCNTSAP) entre idosos. Trata-se de um estudo transversal com dados secundários do Departamento de Informática do SUS (DATASUS), englobando variáveis relacionadas às internações e à mortalidade hospitalar (de acordo com as causas, sexo, idade e tempo de permanência). As DCNTSAP são responsáveis por 43,99% das Internações por Todas as Causas (ITC), destacando-se as Doenças Pulmonares como o grupo mais prevalente (18%), seguida de Insuficiência Cardíaca (12,28%). O sexo feminino, com exceção das Doenças Pulmonares, é o que mais interna pelas demais causas. Encontrou-se também tendência linear de aumento na taxa de mortalidade das DCNTSAP agrupadas. Conclui-se que, dada a magnitude das internações, bem como o aumento da mortalidade pelas DCNTSAP, são urgentes reflexões mais aprofundadas sobre o cuidado na atenção primária aos idosos nesta região.

Descritores: *Idoso. Hospitalização. Doença crônica. Atenção primária à saúde.*
Título: *Perfil das internações por doenças crônicas não-transmissíveis sensíveis à atenção primária em idosos da Metade Sul do RS.*

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RESUMEN

El objetivo del estudio fue delinear, en municipios del sur de Rio Grande do Sul, el perfil de las hospitalizaciones por enfermedades crónicas no transmisibles Sensibles a la Atención Primaria (DCNTSAP) en ancianos. Es un estudio transversal a partir de datos secundarios del Departamento del SUS (DATASUS), utilizando variables relacionadas con las hospitalizaciones y mortalidad hospitalaria (según la causa, el sexo, la edad y la duración de la estancia hospitalaria). Las DCNTSAP son responsables por el 43,99% de la hospitalización por todas las causas (ITC), destacando la enfermedad pulmonar como grupo más prevalente (18%), seguido de la insuficiencia cardíaca (12,28%). Las mujeres, con excepción de enfermedades pulmonares, son las más internadas de otras causas. Hay tendencia creciente en la tasa de mortalidad de DCNTSAP agrupados, 43,32 ± 1,11%. Dada la magnitud de las admisiones, así como aumento de mortalidad por DCNTSAP es urgente reflexionar sobre la atención primaria a los ancianos en esta región.

Descriptores: *Anciano. Hospitalización. Enfermedad crónica. Atención primaria de salud.*
Título: *Perfil de las hospitalizaciones de ancianos por Enfermedades Crónicas no Transmisibles Sensibles Atención Primaria Mitad Sur de RS.*

INTRODUCTION

Hospital admittances as a result of Conditions Sensitive to Primary Care (CSAP) are those that could be avoided through prompt and appropriate health care at this level of attention. At present, we have increasingly sought to use hospital admittances for such conditions as tools through which we can assess the general health care scenarios of the municipalities within the considered universe. The CSAP index was created in 2008, based on a national list of such conditions, and comprises 19 types of cause groups[1], being that Chronic Non-Communicable Diseases (NCD) make up seven of these groups.

Based on this indicator, we also discuss the fact that the analyses that focus on the CSAP would be available to reflect "the quality of attention or the different care lines offered to the population, assessing elements of structure and process of the health units and health teams associated with this attention"[2:636].

Of the 57 million deaths that occurred globally in 2008, 63% were due to non-communicable diseases, mainly cardiovascular disease, diabetes, cancer and chronic respiratory disease. In Brazil, in 2007, the mortality rate as a result of NCD was 540 deaths per 100,000 inhabitants[3], and is now the focus of important policies for prevention[4].

This way, NCDs represent a significant and growing demand for health care, which, in addition to the proposal of new ways to address the problem, also requires the need for epidemiological monitoring. Also, according to the perspective that NCDs need long-term attention[5-6], understanding the potentialities and the deficiencies of the complex health care network, although a challenge, is considered important because it would allow the qualification of services, and the organization and articulation of these services from Primary Health Care, in order to cause a positive impact on overall health results.

For the conditions considered as CSAP, we know that the risk of hospital admittance due to these causes is greater in early infancy and among the elderly [7]. According to some authors, these life cycles, the effectiveness of preventive health care and the quality of the assistance offered by Primary Healthcare (APS), deserve special attention[2,8]. Consequently, and considering estimates that by 2050, the elderly population will account for 19% of total population[9], the intention of this study is to specifically address hospital admittances among elderly patients as a result of NCD that compose CSAP.

The aging of the population is a current phenomenon and singlehandedly contributes to increasing the risk of NTD. In this regard, there is an ever-greater imposition of new challenges both for managers and professionals in the health sector and other government sectors [10]; even more so if we consider that NTD have been characterized as a present-day epidemic and a serious global public health issue.

In the present study we sought to establish, in municipalities in the Southern Half of the State of Rio Grande do Sul, Brazil, the profile of hospital admittances resulting from Chronic Non-Communicable Diseases Sensitive to Primary Care (NCCDSPHC) among the elderly population.

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METHODOLOGY

This is a transversal study based on secondary data collected on January 2012, in thirteen different municipalities of the Brazilian state of Rio Grande do Sul, between 2000 and 2010. The studied municipalities are part of the geographical region often known as the "Southern Half" of Rio Grande do Sul, and they are generically referred to as empirical area in this study.

Due to their diversity in terms of occupation history of rural areas, local social dynamics, environment and public policies, they were selected as empirical area for the studies of the Programme for Interdisciplinary Research of the Federal University of Rio Grande do Sul (PROINTER/UFRGS), with the collaboration of the authors of the present study by means of the Collective Health Study Group of the Federal University of Rio Grande do Sul - GESC/UFRGS[11].

For the definition of the Conditions Sensitive to Primary Care (CSAP), we used the official list published by the Brazilian Ministry of Health (MS)[6]. The studied CSAP groups were labelled NCD because they were part of Groups 7 to 13 of the National List of such conditions (Asthma, Pulmonary Diseases, Hypertension, Angina, Heart Failure, Cerebrovascular Diseases and Diabetes Mellitus). An individual is considered elderly when he or she is over 60 years old.

In terms of hospital admittances, information was collected directly at the Hospital Information System of the Brazilian National Health System (SIH/SUS). For estimated populations, information was obtained from the Brazilian Institute for Geography and Statistics (IBGE), collected through the website of the Information Technology Department of the SUS (DATASUS).

Hospital admittances were calculated based on the number of Authorisations for Hospital Admittances (AAHs) as compiled in the SIH-SUS. The reduced files in .def format (compacted definition file) related to the AIHs were then tabulated using TabWin™ software, made available by the Brazilian Ministry of Health, and arranged in Excel™ spreadsheets to allow construction of the systemized indicators used in this study.

The hospital admittance profile for NCCDSPHC among the elderly population, based on each cause group, was calculated using raw data, as follows: simple percentage participation of the groups in Hospital Admittances for All Causes (ITC), in Hospital Admittances for Conditions Sensitive to Primary Care (ACSPC) and for genders. The proportion of hospital mortality was based on the ratio between the number of deaths by group of investigated illnesses and Hospital Admittances for the NCCDSPHC group for each year, multiplied by 100. Using simple linear regression between the rates during the study years,the percentage variation was calculated for groups that showed a coefficient of linear correlation (plotting the variables against the study years), $r > 0.6$ (in the empirical area Pulmonary Disease, Hypertension and Heart Failure; in Rio Grande do Sul (RS), the group of Asthma, Pulmonary Disease, Hypertension, Heart Failure and Diabetes Mellitus); and a significance test with a confidence interval (CI) of 95% (seeking a significant relationship between the studied variables). Mean and Standard Deviation (StD) was calculated for the groups that did not show any statistical significance.

Hospital stay was calculated by means of a simple proportion according to each cause group and number of days.

The research project in which this study is inserted is approved by the Research Ethics Committee of the Federal University of Rio Grande do Sul (UFRGS) under No. 20494 of December 15, 2011.

RESULTS

The secondary data collected from DATASUS about the admittances to hospital from municipalities in the Southern Half of the state of Rio Grande do Sul has made up the indicators mentioned in this study and have also made it possible to establish the profiles of the hospital admittances through NCCDSPHC in the region.

In Table 1, we can see that, in the empirical area, the average annual number of admittances to hospital because of NCCDSPHC as grouped together accounts for 43.99% of the IRC among the chronologically advantaged, with Pulmonary Diseases being responsible for some 18% of these hospital admittances, and Heart Failure for another 12.28% more or less.When the expression. of the NCCDSPHC in hospital admittances is sized by CSPC, then the proportions take on a

more considerable size, these being responsible for 76.65% of admittances to hospital. In this universe, Pulmonary Diseases are also the causative group that has led to most admittances to hospital, being responsible for 30.08% of the hospitalisations, followed by Heart Failure with 21.38%.

The data referring to hospital mortality show that the causative group that has given the greatest percentage average of deaths over the period studies is that of Cerebrovascular Diseases, with 19.79±4.46%, followed by Heart Failure with 13.94±15.96%. The groups of Angina, Hypertension and Asthma were those which showed the lowest values. Based on linear regression by groups of causes of hospital mortality, it was observed that these have not shown a tendency to linear variation over the years. However, analysing the set of groups, considered as grouped NCCDSPHC, we found a linear trend showing an increase in the hospital mortality rate, of 43.32±1.11%, with an average of 7.36±1.11%.

In relation to the hospital admittance rates by grouped NCCDSPHC, it is observed that the empirical area has shown, over the period, values above the average for the State and with a greater trend towards reduction, with the average rate of admittance for the empirical area is 91.8‰ and for the State 62.30‰.

In relation to the analysis of variation trends for the hospital admittance rates by groups of causes, we see that the Angina and Cerebrovascular Disease groups were those that did not show linearity in the variation of the rates. A similar phenomenon was observed for the Asma group, but only for the empirical group.

In Table 2, we see that the two main causes of hospital admittances, Pulmonary Diseases and Heart Failure, are respectively more prevalent among males and females. Also in relation to gender, the feminine gender has higher rates of hospital admittances for all other causes, with more than 70% of admittances caused by *diabetes mellitus* and 65% of admittances in the case of Hypertension.

Analysing the duration of the hospital stays resulting from NCCDSPHC, we see in the diagram of Figure 1 a panorama of how the proportion of hospital stay duration is distributed (grouped into 0

Table 1 – General Profile of Admittances to Hospital through Non-Contagious Chronic Diseases Sensitive to Primary Care. Empirical Area, Rio Grande do Sul, between 2000 and 2010.

	Groups of Causes of NCCDSPHC							
	Grouped NCCDSPHC	**Asthma**	**Pulmonary Diseases**	**SAH**	**Angina**	**HF**	**CVD**	**DM**
Participation NCCDSPHC*								
-AAC	43.99 (± 8.06)	0.83 (± 0.23)	17.53 (± 5.70)	2,30 (± 0.53)	2.99 (± 0.65)	12.28 (± 4.35)	4.13 (± 1.45)	3.92 (± 0.74)
-ACSPC	76.65 (± 5.67)	1.51 (± 0.57)	30.08 (± 6.68)	4.04 (± 0.78)	5.24 (±1.60)	21.38 (± 6.35)	10.07 (± 9.38)	7.06 9 (± 1.96)
Hospital Mortality	7.36 (±1.11) +43.32§	2.74 (±2.58)	8.19 (±8.48)	2.2 (±1.02)	2.01 (±1.02)	13.94 (±15.96)	19.79 (±4.26)	10.6 (±20.23)
Variation of the Hospital Admittance Rates†								
-Empitical Area	-63.6	NES	-79.2	-50,4	NES	-122.9	NES	NES
-RS	-50.16	-53.68	- 69.41	61.40	NES	-53,10	NES	-10.31

Non-Contagious Chronic Diseases Sensitive to Primary Care (NCCDSPHC); Systemic Arterial Hypertension (SAH); Heart Failure (HF); Cerebrovascular Disease (CVD); Diabetes mellitus (DM), Admittances from all causes (AAC); Admittances for Conditions Sensitive to Primary Care (ACSPC); The empirical area refers to the 13 municipalities studied, in the Brazilian state of Rio Grande do Sul (RS).
*Values shown in average proportion (±SD); §Variation of the mortality rate shown as percentages; it has not been possible to calculate in the other groups, as there is no trend adjusted by simple linear regression. †Variation of hospital admittance rates observed over the period, data shown as percentages. NES = No statistically significant trends, based on linear regression analysis.
Source: Hospital Information System-SIH/SUS/DATASUS, population data from IBGE/DATASUS/RS.

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days; 1 to 4 days; 5 to 7 days; 8 to 14 days; 15 to 21 days; 22 to 28 days; 29 days and over) as a function of the total number of hospital admittances during the period, shown as a percentage. The diagram presents a wide view of how the variable behaves. It is possible to see that about 55% of hospital stays are between 1 and 4 days long. Another 35% of hospital stays are between 5 and 7 days long, and a smaller percentage of 13% are between 8 and 14 days long. It is possible to confirm, through the straight lines that make up the drawing on the diagram, that in the other groups of hospitalisation times, there is no significant proportion of participation in hospital admittances through the causes mentioned. One single exception can be identified, in the segment for hospital stays of 29 days or more, with a small proportion of some 8%.

DISCUSSION

The dimensions of the participation of the NTCD in the AAC and then by CSPC shows that

Table 2 – Profile of Hospital Admittances for Non-Contagious Chronic Diseases Sensitive to Primary Care, according to sex. Empirical Area, Rio Grande do Sul, between 2000 and 2010.

	Causative Groups of NCCDSPHC							
	Grouped NCCDSPHC	**Asthma**	**Pulmonary Diseases**	**SAH**	**Angina**	**HF**	**CVD**	**DM**
Female*	17518	373	5350	1158	1238	5658	1620	2121
	51.14%	58.65%	38.90%	65.06%	54.12%	58.93%	50.96%	70.96%
Male*	16737	263	8404	622	1054	3944	1559	891
	48.86%	41.35%	61.10%	34.94%	45.88%	41.07%	49.04%	29.04%

Non-Contagious Chronic Diseases Sensitive to Primary Care (NCCDSPHC); Systemic Arterial Hypertension (SAH); Heart Failure (HF); Cerebrovascular Disease (CVD); Diabetes mellitus (DM), Admittances from all causes (AAC); Admittances for Conditions Sensitive to Primary Care (ACSPC); The empirical area refers to the 13 municipalities studied, in the Brazilian state of Rio Grande do Sul (RS).
*Total admittances to hospital by NCCDSPHC and proportion (%)
Source: Hospital Information System-SIH/SUS/DATASUS, population data from IBGE/DATASUS/RS.

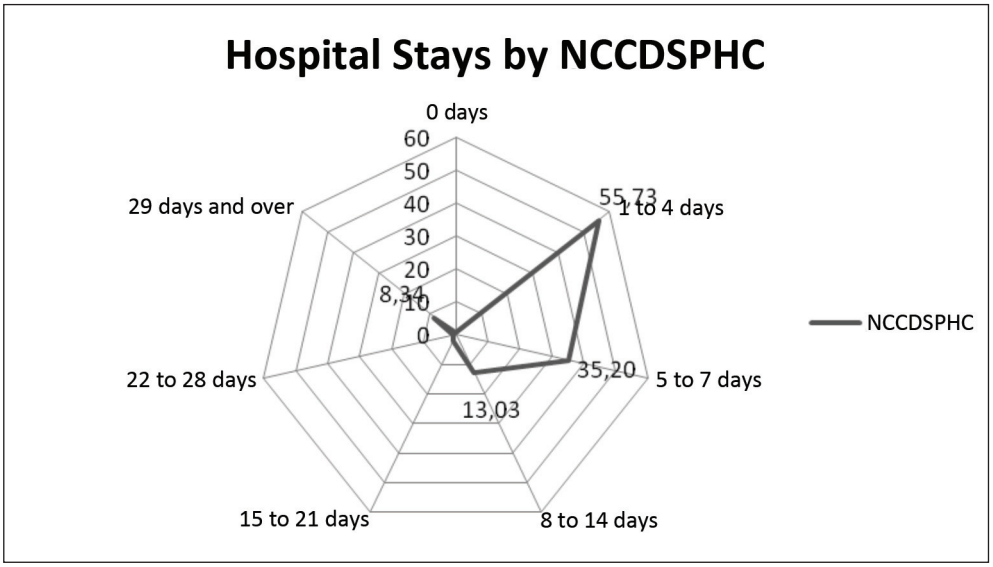

Figure 1 – Hospitalisation time according to grouped NCCDSPHC, in the municipalities of the study. Empirical Area, Rio Grande do Sul, between 2000 and 2010.

Source: Hospital Information System-SIH/SUS/DATASUS, population data from IBGE/DATASUS/RS.

the causes under study are responsible for a significant part of the admittances to hospital among the chronologically advantaged within the empirical area. This brings grounds so that the public policies dedicated to health care for this population, which has been admitted to hospital because of groups of illnesses that could be either avoided and/or followed in a network (since basic care), can be assessed and also reviewed in their approach.

When the unit of analysis is the Federation[12], the main causes of admittances to hospital among the chronologically advantaged are heart failure, followed by bronchitis and emphysema and other chronic pulmonary obstruction diseases, and pneumonias. Studies have shown that diseases of the respiratory tract and circulatory tract, apart from being among the main causes for admittance to hospital by non-contagious chronic diseases, also have an important representation when we consider hospital admittances through all causes[12-13].

In the area as here considered, the profile of causes of admittances to hospital is very similar to those presented around the country, but admittances to hospital caused by Pulmonary Diseases are the first causes of admittances to hospital among the chronologically advantaged, followed by Heart Failure and Cerebrovascular Diseases. Here we point out that these last items could be occurring in situations of worsening of other important cardiovascular conditions such as Hypertension, and another addition to the fact is that this represents an importante risk factor for the development of cardiovascular disease[14].

Based on an analysis of the data studied, the female sex has been identified as the sex that has most admittances to hospital for all groups of NCCDSPHC, except for Pulmonary Diseases which are more prevalent in men. The fact that Pulmonary Diseases are the largest cause of admittances to hospital in the groups studied and also due to the fact that they are occurring mainly among men, brings importante questions regarding the situation of the health situation in the Municipalities under study. There is also acknowledgement[14] of the greater prevalence of cigarette smoking among men, which could be having consequences regarding admittances to hospital in the empirical area as studied.

We also mention the high occurrence of hospital admittances as a result of Diabetes *mellitus* among females. In agreement, authors say [15] that the hospitalisations for this cause among females are more than among males, for all age brackets, and increases as age becomes more advanced, particularly after 45 years old. This could be explained by the fact that the demand for health care services is mainly from women, which leads to a higher usage of hospital resources[15]. The distribution between the sexes, as confirmed in the groups for Pulmonary Diseases and Diabetes Mellitus, shows important differences in the use of the services, and also raises specific approaches on the part of the health policies.

On analysing the Hospital Mortality Proportion, we see that the greatest causes of death are Cerebrovascular Diseases, followed by Heart Failure and Diabetes Mellitus, which shows the need for greater care from the professional people involved directly with the capillarity of public health policies, considering that these problems have already been identified[16] as important causes of death in Brazil.

Another point to be stressed refers to the increase, within the empirical area, of the Hospital Mortality Proportion by grouped NCCDSPHC. Different from this profile, in a study with data of the Country[16], we see a reduction of 26% in the mortality rates for non-contagious chronic diseases, with more important declines within the group of cardiovascular diseases, followed by chronic respiratory diseases.

On comparing the variation of the hospital admittance rates with the variation of the Mortality Proposition by grouped NCCDSPHC, we see that while the former shows a trend towards reduction in the empirical area, hospital mortality, on the contrary, tends to increase. In addition, we see that the duration of the hospital stays is concentrated within a band between 1 and 4 days, showing that they are not enforcing long hospital stays. Based on these findings, we argue that admittances to hospital among the chronologically advantaged are taking place possibly in situations of acutisation, in which the chances of death are higher due to the reduction in the reversal of the clinical prognosis of the disease.

The lack of a linear trend for the variation of the admittance rates for some groups shows a possible regional disparity between the Municipalities, when it comes to the rates shown. This situation is

linked to issues involving specificities of the Municipalities, in relation to the focus of such actions of Basic Care and also the difficulties not only for the users to have physical access to the services, but also to be guaranteed access to health care. In studies[17] about the issue, we have raised the issue that ACSPC could be the result of a fragmented and punctual type of assistance. Together with this, it is known[10] that public policies that prioritise the importance of actions to prevent the acutisation of these conditions, or treating them when already installed, does not suffice. What exists is latency for network actions in the area of health practices, modifications to the models of health care and also in the relations established between users and professionals.

As researchers, we recognise the frailness currently present in the promotion of studies focused on admittances to hospital using secondary databases, as we have seen that, in the Country, there is no single standardised document to declare the diagnosis on discharge or the reason for hospitalisation, different from what happens in cases of mortality[18]. Even with this type of limitation, we stress the importance of studies that involve the databases of national involvement, as in addition to reinforcing the use of the feeding thereof, one would be contributing with bases for comparisons, assessments and possible re-directioning of health actions. With lower costs and relative ease in conducting research with this type of data, this tool also has the potential to become an interesting instrument for social control.

CONCLUSION

The study shows a considerable participation of the NCCDSPHC in admittances to hospital for all causes and admittances to hospital through CSPC, with pulmonary disease and heart failure being the most prevalent causes, respectively, among males and females. In addition, in relation to the gender issue, the female gender is the one which presents most admittances to hospital for all causes, particularly for those admittances to hospital caused by Diabetes Mellitus and Hypertension. In relation to the causes that generate most deaths, the groups with the greatest participations were Cerebrovascular Diseases, followed by Heart Failure.

Accepting that admittances to hospital for NCCDSPHC represent an important social burden for the chronologically advantaged, as also for the health system as a whole, it would be interesting to use this indicator as an ally in terms of analysis of the health situation in the municipalities and also as part of brief appraisals of Primary Health Care.

Here we also highlight that the magnitude of the participation of NCCDSPHC in admittances to hospital among the chronologically advantaged, especially when the trend towards increases in mortality rates in hospitals warrants attention by the decision-makers of the Municipalities and also of the Region. In addition, the high rates of admittances to hospital in the empirical area and the differences between the genders offer grounds for additional thoughts about the work processes of the teams directly involved in health care and also in how much fuller actions and practices of health care are required.

This indicator here being used for an analysis of primary health care, we suggest that this should not be used in isolation, as this could lead researchers and planners to create superficial hypotheses about the reality of the different Municipalities. On the other hand, as intended here, on being understood as one of the tools to pay attention to what is happening in terms of health care, this indicator can offer greater consistency to other studies that use it to deepen queries and more complex analyses.

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