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Temporal trend of hospitalization for ambulatory care sensitive conditions in the elderly in Brazil

Tendência temporal das internações por condições sensíveis à atenção primária em idosos no Brasil

Tendencia temporal de las hospitalizaciones por condiciones sensibles de la atención primaria en mayores de Brasil

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ABSTRACT

Objective: To evaluate the temporal trend of hospitalizations for Ambulatory Care Sensitive Conditions (ACSC) in the elderly, according to their structure, magnitude, and causes, in Brazil, between 2000 and 2018. **Methods:** An ecological study based on data from the Hospital Information System of the Unified Health System (Sistema Único de Saúde - SUS) and the Primary Care Information System (S*istema de Informações sobr à Atenção Básica - SIAB*), between 2000 and 2018, referring to individuals aged 60 years or older, including 20,695,407 hospitalizations. Gross and specific coefficients of hospitalizations were calculated according to sex, age group, and region, and the coverage of the Family Health Strategy (*Estratégia Saúde da Família – ESF*), and the number of medical consultations in primary care were estimated. For the time series analysis, the simple linear regression method was used, and the correlation was tested by Pearson's Correlation Coefficient ($p<0.05$). **Results:** There was a trend of reduction in the rates of hospitalizations for ACSC in the elderly in Brazil, from 2000 to 2018, for both sexes, all age groups, and regions ($p<0.001$). The main causes of ACSC were concentrated in diseases of the circulatory system (14.42%), respiratory (11.52%), and endocrine, metabolic and nutritional (4.42%). There was a 61.50% decrease in hospitalizations for heart failure and a 27.29% increase in hospitalizations for pneumonia. There was a tendency to increase the coverage of the ESF and the average number of consultations ($p<0.001$) in the elderly in Brazil from 2000 to 2015. There was a negative correlation between hospitalizations and indicators of access to primary care ($p<0.001$). **Conclusion:** There is a trend of a reduction in the general rates of hospitalizations for ACSC in the elderly in Brazil due to improvements in primary care coverage.

Descriptors: Elderly; Hospitalization; Primary Health Care.

RESUMO

Objetivo: *Avaliar a tendência temporal das Internações por Condições Sensíveis à Atenção Primária (ICSAP), em idosos, segundo sua estrutura, magnitude e causas, no Brasil, entre 2000 e 2018.* ***Métodos:*** *Estudo ecológico realizado com base em dados do Sistema de Informação Hospitalar do Sistema Único de Saúde (SUS) e Sistema de Informação da Atenção Básica (SIAB),*

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entre 2000 e 2018, referentes a indivíduos com 60 anos ou mais, sendo incluídas 20.695.407 internações. Calcularam-se os coeficientes brutos e específicos de hospitalizações segundo sexo, faixa etária e região e estimaram-se a cobertura da Estratégia de Saúde da Família e o número de consultas médicas na atenção primária. Para análise da série temporal utilizou-se o método de regressão linear simples, sendo testada a correlação pelo Coeficiente de Correlação de Pearson (p<0,05). ***Resultados:*** *Observou-se tendência de redução nas taxas de ICSAP em idosos no Brasil, de 2000 a 2018, para ambos os sexos, todas as faixas etárias e regiões (p<0,001). As principais causas de ICSAP concentraram-se nas doenças do aparelho circulatório (14,42%); respiratório (11,52%); e endócrinas, metabólicas e nutricionais (4,42%). Ocorreu diminuição de 61,50% de internações por insuficiência cardíaca e um aumento de 27,29% nas internações por pneumonia. Constatou-se tendência de aumento da cobertura da Estratégia de Saúde da Família (ESF) e do número médio de consultas (p<0,001), em idosos, no Brasil, de 2000 a 2015. Houve correlação negativa entre internações e indicadores de acesso à atenção primária (p<0,001).* ***Conclusão:*** *Há tendência de redução nas taxas gerais de ICSAP em idosos no Brasil, em função de melhorias na cobertura da atenção primária.*

Descritores: Idoso; Hospitalização; Atenção Primária à Saúde.

RESUMEN

Objetivo: *Evaluar la tendencia temporal de las Hospitalizaciones por Condiciones Sensible de la Atención Primaria (HCSAP), de mayores, según la estructura, la magnitud y sus causas, en Brasil, entre 2000 y 2018.* ***Métodos:*** *Estudio ecológico realizado en la base de datos del Sistema de Información Hospitalaria del Sistema Único de Salud (SUS) y del Sistema de Información de la Atención Básica (SIAB), entre 2000 y 2018, referentes a los individuos de 60 años o más, con la inclusión de 20.695.407 hospitalizaciones. Se ha calculado los coeficientes brutos y específicos de las hospitalizaciones según el sexo, la franja de edad y la región y se ha estimado la cobertura de la Estrategia Salud de la Familia y el número de citas médicas de la atención primaria. Para el análisis de la serie temporal se ha utilizado el método de regresión linear simple y se ha testada la correlación por el Coeficiente de Correlación de Pearson (p<0,05).* ***Resultados:*** *Se observó la tendencia para la reducción de las tasas de HCSAP de mayores en Brasil entre 2000 y 2018, para ambos sexos, todas las franjas de edad y regiones (p<0,001). Las principales causas de HCSAP se han concentrado en las enfermedades del aparato circulatorio (14,42%); del respiratorio (11,52%); y las endocrinas, las metabólicas y las nutricionales (4,42%). Hubo una disminución del 61,50% de ingresos por insuficiencia cardiaca y el aumento del 27,29% de los ingresos por neumonía. Se ha constatado la tendencia de aumento de la cobertura de la Estrategia Salud de la Familia (ESF) y del número medio de citas (p<0,001) de mayores en Brasil entre 2000 y 2015. Hubo correlación negativa entre los ingresos y los indicadores de acceso a la atención primaria (p<0,001).* ***Conclusión:*** *Hay una tendencia para la reducción de las tasas generales de HCSAP de mayores en Brasil debido las mejorías de la cobertura de la atención primaria.*

Descriptores: *Anciano; Hospitalización; Atención Primaria de Salud.*

INTRODUCTION

Ambulatory Care Sensitive Conditions (ACSC) are a set of conditions and pathologies that can be prevented and controlled at the level of primary access to the health system and, this way, contribute to the reduction of hospitalizations for some causes such as infections and chronic diseases. From this, it is understood that the elderly have the highest number of Hospitalizations for Ambulatory Care Sensitive Conditions (HACSC), with proportionality between the elderly population and the number of HACSC[1-3].

In England, it is estimated that about 14% of all emergency room visits are due to ACSC, with a reduction of up to 6% in these admissions being possible if these elderly patients had more consultations with their general practitioner[4]. In Portugal, admissions of the elderly represented 70% in 2000 and 79% in 2014, with heart failure, lung edema, and chronic obstructive pulmonary disease (COPD) as the main causes[6] of HACSC[5]. In Brazil, the higher costs related to the elderly are also mainly due to heart failure, angina, and cerebrovascular diseases[7]. Following the global epidemiology, in Brazil, the most common causes of HACSC are diseases related to the respiratory and cardiovascular systems[3,8].

Indirectly, hospitalizations for ambulatory care sensitive conditions (HACSC) are used to evaluate the health system. Primary Health Care (PHC) is considered the gateway to the Brazilian public health system. It is the priority level for the establishment and implementation of health prevention and promotion projects, in addition to the control of chronic diseases and comprehensive, coordinated, and longitudinal monitoring[9,10]; as well as access and adequate resolution of pathologies related to the primary level that result in lower rates of HACSC[4,11].

Studies in Espírito Santo and Rio Grande do Norte have shown a marked reduction in the rate of HACSC in the elderly[12,13]. In Rio de Janeiro, there was a decrease in all HACSC causes from 2000 to 2010, except for angina. The highest reduction is reported among men between 70 and 74 years old[8]. In Caxias do Sul, Rio Grande do Sul, there was a decrease in all HACSCs between 2000 and 2007, except infections of the skin and subcutaneous tissue. However, a slight increase in rates was observed for men aged 80 years and older[14].

In this sense, with the estimate that the elderly population will triple between 2010 and 2050, it is necessary to investigate the temporal behavior of HACSC[15]. Despite the existence of specific studies analyzing the rate of HACSC in the elderly in different Brazilian cities or regions[8,12,14], more research on a national scale is needed to identify the behavior of the HACSC rates among the elderly in Brazil and enable indirect assessments of the health system, in addition to supporting and directing subsidies for public policies.

Therefore, the objective of the present study is to evaluate the temporal trend of hospitalization for ambulatory care sensitive conditions, in the elderly, according to their structure, magnitude, and causes, in Brazil, between 2000 and 2018.

METHODS

An ecological study of temporal series, carried out from 2000 to 2018, based on the numbers of hospitalization for ambulatory care sensitive conditions (HACSC), according to Ministry of Health Ordinance No. 221, of April 17, 2008[16], at a national level, according to data obtained through the Hospital Information System (*Sistema de Informação Hospitalar - SIH/SUS*)[17] available on the website of the Department of Informatics of the Unified Health System (*Departamento de Informática do Sistema Único de Saúde - DATASUS*)[18], as well as information on the registration of the elderly in the Family Health Strategy (*Estratégia Saúde da Familia – ESF*), and consultations in primary care, in the same period, through the Information System on Primary Care (*Sistema de Informações sobre a Atenção Básica - SIAB*)[19].

The study included 20,695,407 hospitalizations of individuals aged 60 years or older, having as the primary cause of hospitalization the ambulatory care sensitive conditions between 2000 and 2018. Information on the elderly population comes from demographic censuses between 2000 and 2010, with inter census estimates considering sex, age group, and region, from the DATASUS website[20].

The following are considered dependent variables: gross hospitalization rates; the specific rates – according to sex, age group, and region –; and, as independent, the variable by year (2000 – 2018).

The tabulation and primary treatment of the data were performed using the Tabwin software, available in DATASUS, and later exported to the Microsoft Excel program. Data analysis was performed using the Statistical Package for the Social Sciences (SPSS) program. Version 18.0. [Computer program]. Chicago: SPSS Inc; 2009.

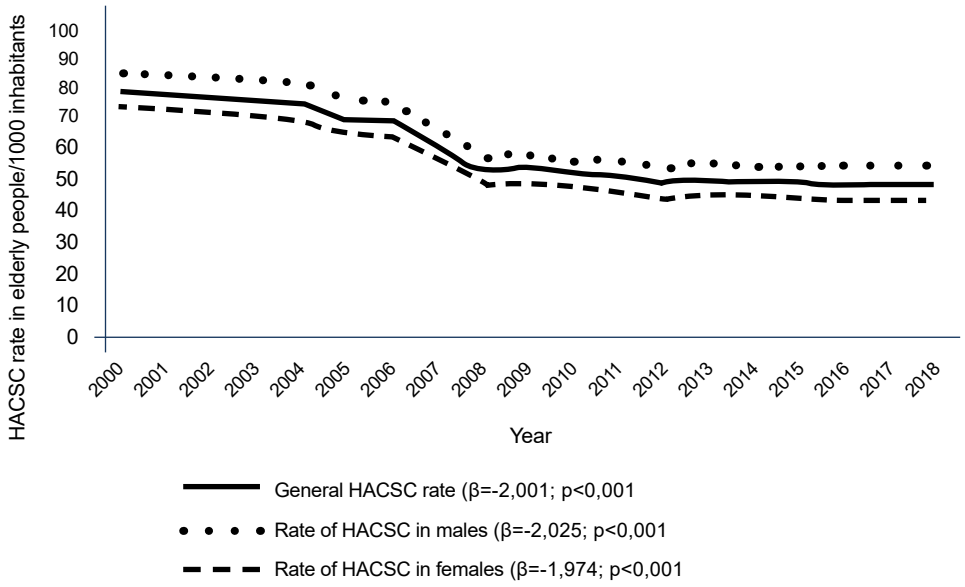
The gross and specific coefficients of hospitalizations are for 1000 inhabitants over 60 years old, according to sex, age group, and region for each year of the period studied. To identify the changes in the structure of the HACSC causes over the decade and compare it with the general causes of hospitalizations in the elderly, the proportion of hospitalizations according to causes by chapter and subchapter of the International Classification of Diseases (ICD-10) was estimated, and their weight in total hospitalizations, for the years 2000, 2008 and 2018.

The analysis of temporal trends was performed using the simple linear regression method ($y=\beta0+\beta1*x1$), where y corresponds to the scale of values of the temporal series; x to the time scale; β0 to the intersection between the straight line and the vertical axis, and β1 to the slope of the straight line, for the gross and specific coefficients; and a significance level of 5% and CI 95% was considered. Therefore, trends were classified as increasing (positive regression coefficient β1 and $p\leq0.05$), decreasing (negative regression coefficient and $p\leq 0.05$), and stationary ($p>0.05$). From the test, the correlation between the rate of HACSC and indicators of access to Primary Health Care services (number of consultations per 1,000 inhabitants and ESF coverage) was obtained through Pearson's Correlation Coefficient ($p < 0,05$).

Thus, the study is based on Resolutions 466/2012 and 512/2016 of the National Health Council, which incorporate bioethical references from the perspective of the individual and collectivities. The research was carried out from public domain data that do not present information regarding individual identification, in addition to the low risk of violation of ethical principles. Therefore, there was no need for submission to the Research Ethics Committee.

RESULTS

The present study observed a descending trend in the rates of hospitalizations for ACSC in the elderly in Brazil from 2000 to 2018 ($\beta = -2.001$; $p<0.001$), ranging from 79.96 hospitalizations per thousand inhabitants in 2000 to 49.71 in 2018. The same behavior was observed for both sexes, which varied from: 86.09 hospitalizations per thousand inhabitants in 2000 to 55.98 in 2018 in males ($\beta=-2.025$; $p<0.001$); and from 74.95 to 44.69 hospitalizations per thousand inhabitants, in the same period, in females ($\beta=-1.974$; $p<0.001$) (Figure 1).



HACSC: Hospitalizations for Ambulatory Care Sensitive Conditions; β: Average annual variation per 1000 inhabitants; p<0.05

Figure 1 - Temporal trend of hospitalization of the elderly for Ambulatory Care Sensitive Conditions, in Brazil, general and according to sex, from 2000 to 2018.

Between 2000 and 2018, there was an increase in the absolute number of elderly hospitalizations in Brazil. In 2018, in this age group, there were 898,510 more elderly hospitalizations than in 2000, corresponding to an increase of 42%. However, concerning HACSC, there is a reduction of 10.65% in the period evaluated. In 2000, there were 1,162,371 HACSC, and in 2018 1,038,593, corresponding, respectively, to 54.33% and 34.19% of all hospitalizations of the elderly in Brazil in the period. Inferences from the descriptive analysis of the frequency of variables.

When analyzing the age group, using the linear regression method, a behavior of reduction in the rates of HACSC was observed in all age groups in the studied period (p<0.001). A relationship of increase in the average rate of reduction of HACSC with increasing age is observed, with a bigger annual average variation in the range of 75 to 79 years (β=-3.024; p<0.001), and the higher hospitalization rates the higher the age (Table I).

In the temporal analysis of HACSC, according to Brazilian regions, a decreasing trend was observed in hospitalization rates in all regions, with the most expressive reductions in the South and Midwest, with rates varying from 117.99 hospitalizations per thousand inhabitants in 2000 to 71.61 in 2018 in the South and 112.75 in 2000 to 56.22 in 2018 in the Midwest (β = -2.87 and -4.182, respectively) (Table I).

Table I - Temporal trend of hospitalization of the elderly for Ambulatory Care Sensitive Conditions, in Brazil, according to age group and region in Brazil, from 2000 to 2018.

Variables	Average rate	Correlation	Average annual variation (β)	(CI 95%)	p-value	Interpretation
Age Group						
60 to 64 years	34.31	0.936	-1.376	(-1.642 to -1.110)	<0.001	Reduction
65 to 69 years	47.92	0.934	-1.811	(-2.165 to -1.457)	<0.001	Reduction
70 to 74 years	63.23	0.952	-2.467	(-2.871 to -2.062)	<0.001	Reduction
75 to 79 years	86.02	0.924	-3.024	(-3.665 to -2.383)	<0.001	Reduction
≥ 80 years	119.37	0.829	-2.892	(-3.890 to -1.894)	<0.001	Reduction
Country Region						
North	65.39	0.896	-1.234	(-1.546 to -0.921)	<0.001	Reduction
North East	58.80	0.953	-1.949	(-2.265 to -1,632)	<0.001	Reduction
Southeast	50.53	0.901	-1.587	(-1.978 to -1.196)	<0.001	Reduction
South	85.01	0.903	-2.87	(-3.568 to -2.172)	<0.001	Reduction
Midwest	83.27	0.936	-4.182	(-4.989 to -3.374)	<0.001	Reduction

Average Rate: average rates for the period, per 1000 inhabitants; VMA(β): Average Annual Variation calculated by Linear Regression; 95%CI: Confidence Interval of 95% of the Average Annual Variation; *p*<0,05

Table II shows the principal causes of HACSC for the years 2000, 2008, and 2018, which are concentrated in three chapters of the ICD-10: diseases of the circulatory system; respiratory tract diseases; and endocrine, metabolic, and nutritional diseases, which correspond to more than 80% of HACSCs in the three years studied.

From a descriptive analysis of the frequency of variables in the structure by causes, it was observed that it remained similar in the period from 2000 to 2018; however, with a 61.50% decrease in hospitalizations for heart failure in the elderly, no longer being the main cause of HACSC in 2018. During this time, there was still a 27.29% increase in hospitalizations for pneumonia, representing 25.09% of HACSC, and becoming the principal cause of HACSC in the elderly in 2018. There was an increase in hospitalizations for angina, pneumonia, and anemia among all hospitalizations by the elderly. When the weight of causes in the total number of HACSC was evaluated, an increase in cerebrovascular diseases, diabetes mellitus, and nutritional deficiencies was also observed (Table II).

Table II - Proportion of the main causes of hospitalizations of the elderly for Ambulatory Care Sensitive Conditions and weight in the total number of hospitalizations, in Brazil, in the years 2000, 2008, and 2018.

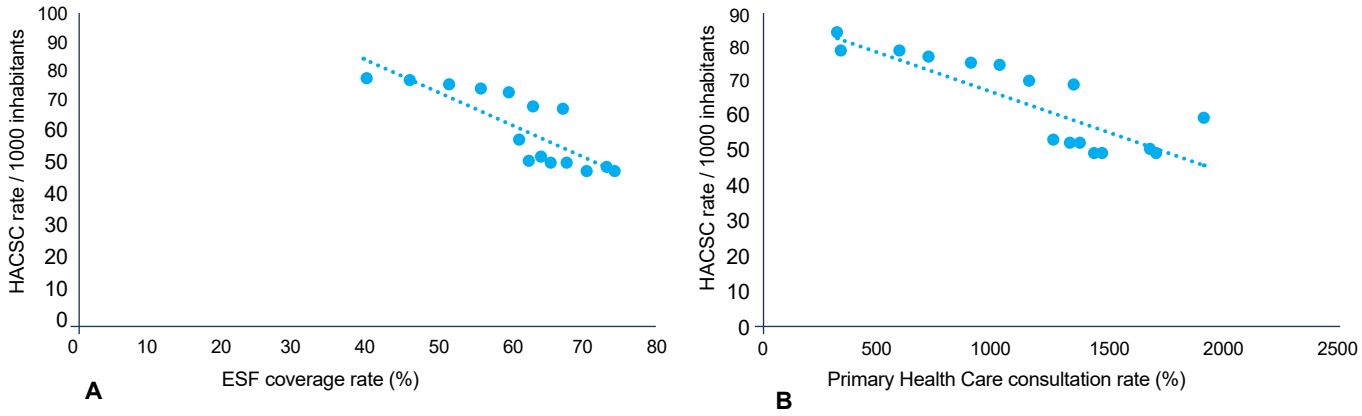
Chapter and cause of the ICD-10	The proportion of hospitalization of the elderly due to ACSC (%)			Weight of each cause in the total of hospitalizations for ACSC (%)		
	2000	2008	2018	2000	2008	2018
IX. Circulatory system	25.21	20.14	14.42	46.40	41.75	42.18
Cardiac insufficiency	12.53	8.58	4.83	23.06	16.66	14.13
Cerebrovascular diseases	6.33	4.71	5.02	11.65	10.24	14.68
Angina	2.67	3.38	3.13	4.91	7.35	9.15
Hypertension	3.66	3.45	1.42	6,.4	7.50	4.15
X. Respiratory system	17.64	13.62	11.52	32.47	29.62	33.69
Chronic obstructive pulmonary diseases	8.57	4.62	2.60	15.77	10.04	7.60
Pneumonia	6.74	7.55	8.58	12.40	16.42	25.09
Asthma	2.31	1.43	0.33	4.25	3.11	0.96
IV. Endocrine, nutritional and metabolic	5.09	5.53	4.42	9.37	12.03	12.93
Diabetes mellitus	2.89	3.14	2.32	5.32	6.83	6.78
Nutritional deficiencies	1.50	1.51	0.98	2.76	3.28	2.86
Anemia	0.70	0.87	1.11	1.29	1.89	3.25
Other ACSC	6.38	6.67	3.81	11.74	14.51	11.14
Total ACSC	54.33	45.98	34.19	100	100	100
Total number of ACSC	1.162.371	1.092.784	1.038.593			

ACSC: Ambulatory Care Sensitive Conditions; ICD: International Classification of Diseases. The proportion of hospitalizations of the elderly for ACSC: percentage of ACSC when compared to the total number of hospitalizations of the elderly; Weight of each cause in the total of HACSC: percentage of each cause when compared to the total of HACSC.

Regarding the coverage of the ESF, there was a trend of increasing coverage for the elderly in Brazil from 2000 to 2015 (β=2.131; p<0.001), varying in the study period from 39 90%, in 2000, to 82.88%, in 2015. The same behavior was observed for the average number of consultations performed by the ESF (β=72.658; p<0.001), changing from 344.40 consultations per thousand inhabitants to 1456.14, between 2000 and 2015, respectively.

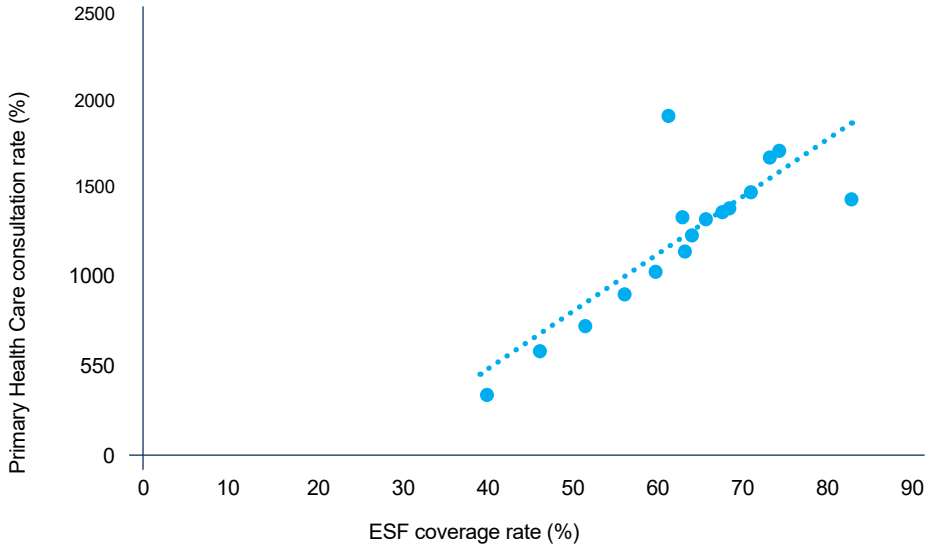
Figure 2 shows a statistically significant inverse correlation of strong magnitude between the coverage of the ESF in the elderly and the number of consultations performed with the general rate of HACSC in the elderly, in the period from 2000 to 2015, that is, the number of HACSC is lower the greater the coverage of the ESF (r= -0.831; p<0.001) and the number of consultations performed by the elderly in primary care (r= -0.814; p<0.001).

Thus, when correlating the rate of consultations in primary health care with the coverage rate, a significant, positive, and strong correlation (r=0.829; p<0.001) is observed between the rates in the studied period (Pearson's Correlation) (Figure 3).



ESF: Family Health Strategy (Estrategia Saude da Familia – ESF); ACSC: Ambulatory Care Sensitive Conditions

Figure 2 - Correlation between the coverage rates of the Family Health Strategy (Estrategia Saude da Familia – ESF) (A) (r=-0.831; p<0.001) and consultations in Primary Health Care (B) (r=-0.814; p<0.001) with the rate of hospitalizations for Ambulatory Care Sensitive Conditions, in Brazil, between 2000-2015.



F: Family Health Strategy (Estrategia Saude da Familia – ESF)

Figure 3 - Correlation between the rate of consultations in Primary Health Care (PHC) and the coverage rate of the Family Health Strategy (Estrategia Saude da Familia – ESF), in Brazil, from 2000 to 2015 (r = 0.829; p<0.001)

DISCUSSION

In the present study, there was a descending trend in the general hospitalization for ambulatory care sensitive conditions rates in the elderly in Brazil from 2000 to 2018. The same behavior was observed for both sexes and in all age groups and regions of the country. The principal causes of hospitalization were: diseases of the circulatory system, respiratory system diseases, and endocrine, metabolic, and nutritional diseases. During the period analyzed, heart failure reduced significantly, and pneumonia became the principal cause of hospitalization. There was also an increasing trend in the average number of consultations and in the coverage of the ESF in the elderly who had a strong and negative correlation with the rates of HACSC.

However, in all age groups, there are similar results in national and international surveys. In Brazil, for example, between 1998 and 2009, there was an average annual reduction of 3.7% in HACSC rates[21]. In a study carried out in Paraguay, a reduction in HACSC rates was demonstrated as the coverage of primary care was expanded, with

an increase in hospitalizations for infectious diseases, in contrast to chronic diseases[22]. In the same sense, there was a reduction in hospitalizations related to primary care in Medicare beneficiaries, as well as in the United States, despite the increase in observation rates in hospitals for the same causes, especially for chronic diseases[23]. On the other hand, a study carried out in England between 2001 and 2011 showed a 40% increase in HACSC[24].

Thus, the descending trend in HACSC rates can be explained by the strong correlation observed between the ESF coverage indicators and hospitalizations for ACSC, besides the inverse relationship between these and the efficiency and access to primary care[4,11]. Greater access to primary health care makes it possible to carry out health promotion activities that impact self-perception of quality of life, self-esteem, reduction of anxiety, and the adoption of healthy lifestyle habits that help to prevent future complications related to chronic disease[25].

In the present study, an increasing trend in the average number of consultations performed and ESF coverage was observed, varying from 39.90% in 2000 to 82.88% in 2015, under national studies[26]. By identifying high-risk patients and directing them to early intervention, primary care increases the efficiency of the health system and reduces hospitalizations for ambulatory care sensitive conditions, which would be unnecessary[11].

Studies carried out, specifically in the elderly, corroborate the results found for the age groups, demonstrating a decrease in HACSC rates[1,8]. However, a survey carried out in the city of Caxias do Sul observed a slight increase for men aged 80 years and over [14]. In the present study, the decrease in HACSC rates was more expressive in older individuals, mainly over 75 years of age, but there was also a higher increase in hospitalizations in this population, as demonstrated in Santa Catarina, between the years 2008 and 2015, with the highest rates in the population aged 80 and over[27].

With age progression, in addition to the physiological changes typical of aging, the greater the cognitive and functional decline that affects the population, in addition to more comorbidities, use of polypharmacy, poor medication adherence, and complications for the duration of the disease[28], which may explain the highest number of hospitalizations in the older age groups. The highest average annual variation, found in individuals over 70 years old, can translate into greater care and more health actions in this population, compared to the younger elderly. Thus, comprehensive and longitudinal care for all ages impacts health promotion and prevention of diseases and complications that would lead to late hospitalization[4,11].

Concerning the regions of the country, the highest rates in the South and the lowest in the Southeast, identified in the present study, are following the literature [1,29]. On the other hand, in a study carried out between 2003 and 2012, there was an increase in the North region[1]. This discrepancy between regions can be explained by socioeconomic and epidemiological differences and by the access and resolution of health services[21]. The lowest values observed in the Southeast may be related to the private health services use, which are often not associated with the SUS, with 37.2% of the elderly in the state of São Paulo linked to supplementary health care systems[15]. The highest rates in the South region may be related to accentuated aging, lower mortality rates, better health indicators, and greater access to health services; causing greater longevity, favoring hospitalizations[1,30].

In line with the findings of the present study, diseases of the respiratory and circulatory systems are identified as the HACSC causes in the elderly in international studies[31,32]. A decrease in HACSC due to chronic diseases was observed in Finland between 1996 and 2013, despite stabilization due to acute diseases and an increase in conditions preventable by immunization[33]. In Paraguay, between 2000 and 2017, pneumonia was the principal HACSC cause, besides acute diarrhea[21], in agreement with the Brazilian results[8,34]

Regarding the causes, as in other studies[22,24], it is possible to observe, in the results presented, an increase in hospitalizations for infectious and acute diseases, in contrast to chronic non-communicable diseases, such as heart failure[22,24]. It may be related to more care and higher quality in primary care for the elderly with pre-existing comorbidities and the secondary prevention of their complications. For acute and infectious diseases, the socioeconomic environment plays an important role due to fewer material resources, lack of training for early and effective diagnosis[22], and medical care, focused on treatment rather than prevention[35]

The increase in the number of consultations and the coverage of the ESF, identified in the study under discussion, reflects the advance in the primary care service in Brazil, which led to an improvement in the rates of hospitalizations for ACSC and morbidity in the elderly. In this way, HACSC is a relevant tool for public health management since it can help lead resources, discern areas that need more intervention, and improve the population's quality of life.

Among the limitations of this study, we highlight the search for chapters of the ICD-10, referring to the list of HACSC, in the DATASUS database, using, in some cases, similar or corresponding names. Another limitation concerns the use of hospitalization data from DATASUS, which could, in theory, have underestimated the number of ACSCs due to underreporting. However, the public domain databases, used in the study, constitute a reliable source for the planning and organization of public health services and policies in the country.

CONCLUSION

There is a temporal trend of reduction in the general rates of hospitalizations for ACSC in the elderly in Brazil. The same behavior is observed for both sexes in all age groups and regions of the country. The drop-in hospitalization rates due to conditions sensitive to primary care are related to the increase in coverage and the number of consultations carried out in primary health care.

CONFLICTS OF INTEREST

No conflicts were declared.

CONTRIBUTIONS

Julia Juttel Knabben and **Giovanna Grunewald Vietta** contributed to the elaboration and design of the study, the acquisition, analysis, and interpretation of data, and the writing and/or revision of the manuscript. **Márcia Regina Kretzer** contributed to the elaboration and design of the study and the writing and/or revision of the manuscript. **Gabriel Coelho Barros**, **Elayne Crestani Pereira** and **Franciele Cascaes da Silva** contributed to the writing and/or revision of the manuscript. All authors have approved the final version of the manuscript and are responsible for its content.

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