REUFPI
Revista de Enfermagem da UFPI
ISSN 2238-7234

ORIGINAL

Hospitalizations of older adults due to chronic conditions sensitive to primary care in a Ceará region

Internações de idosos por condições crônicas sensíveis à atenção primária numa região do Ceará

Hospitalizaciones de personas mayores por Condiciones Sensibles de la Atención Primaria en una región de Ceará

Samir Gabriel Vasconcelos Azevedo[1]
https://orcid.org/0000-0003-1005-5980

Andréa Carvalho Araújo Moreira[2]
https://orcid.org/0000-0001-9855-1449

Nathália Reis de Carvalho[3]
https://orcid.org/0000-0003-2559-7272

Thereza Maria Magalhães Moreira[1]
https://orcid.org/0000-0003-1424-0649

Jamylle Lucas Diniz[4]
https://orcid.org/0000-0002-5697-8599

Maria Adelane Monteiro da Silva[2]
https://orcid.org/0000-0001-7579-2645

[1]Universidade Estadual do Ceará. Fortaleza, Ceará, Brasil. [3]Escola Nacional de Saúde Pública (ENSP/Fiocruz). Rio de Janeiro, Rio de Janeiro, Brasil. [4]Universidade Federal do Ceará. Fortaleza, Ceará, Brasil.

ABSTRACT

Objective: to analyze the time evolution of chronic HPCSCs in older adults and its correlation with the FHS coverage and socioeconomic indicators of a health region. **Method:** a descriptive and ecological study, whose unit of analysis were the municipalities of the 11th Health Region of Ceará during the 2012-2017 period. The data were extracted from the Hospital Information System, e-Gestor Information System and Atlas of Human Development in Brazil, and analyzed in the *STATA* software. **Results:** a total of 7,245 HPCSCs were recorded, of which 4,650 (64.18%) belonged to the chronic condition groups. The highest frequency of hospitalizations was among male older adults, with 2,578 (55.4%), and aged from 70 to 74 years old, with 1,873 (35.87%). The most prevalent causes were the following: Heart Failure with 1,666 (35.83%), Cerebrovascular Diseases with 1,048 (22.54%), and Angina with 754 (16.22%). There was a tendency towards a reduction of chronic HPCSCs and expansion of the FHS coverage with a strong inverse correlation (r = -0.80, *p-value* = 0.0301), as well as with the Gini index (R = 0.80, *p* = 0.0291). The other socioeconomic indicators showed no correlation with the HPCSC rates. **Conclusion:** the expansion of the FHS coverage was strongly correlated with a reduction in the rates of chronic HPCSCs in older adults. Thus, it is appropriate to urge professionals and managers to develop strategies in the territory that favor effective care.

Descriptors: Primary Health Care. Aged. Hospitalization. Chronic Disease. Social Conditions.

RESUMO

Objetivo: analisar a evolução temporal das ICSAP crônicas em idosos e sua correlação com a cobertura da ESF e indicadores socioeconômicos de uma região de saúde. **Método:** estudo ecológico descritivo, cuja unidade de análise foram os municípios da 11ª Região de Saúde do Ceará no período de 2012 a 2017. Os dados foram extraídos do Sistema de Informação Hospitalar, Sistema de Informação e-Gestor e Atlas de Desenvolvimento Humano no Brasil e analisados no *software STATA*. **Resultados:** registradas 7.245 ICSAP, 4.650 (64,18%) pertencem aos grupos de condições crônicas. A maior frequência de internações foi entre os idosos do sexo masculino 2.578 (55,4%) e com idade de 70 a 74 anos com 1.873 (35,87%). As causas mais prevalentes foram: Insuficiência Cardíaca com 1.666 (35,83%), Doenças Cerebrovasculares com 1.048 (22,54%) e Angina com 754 (16,22%). Houve tendência de redução das ICSAP crônicas e expansão da cobertura da ESF com forte correlação inversa (r= -0,80, *p-valor* =0,0301) e com o índice de Gini (R = 0,80, *p* = 0,0291). Os demais indicadores socioeconômicos não apresentaram correlação com as taxas de ICSAP. **Conclusão:** a expansão da cobertura da ESF esteve fortemente correlacionada à redução das taxas de ICSAP crônicas em idosos. Assim, é oportuno exortar profissionais e gestores para desenvolver estratégias no território que favoreça um cuidado efetivo.

Descritores: Atenção primária à Saúde. Idoso. Hospitalização. Doença crônica. Condições sociais.

RESUMÉN

Objetivo: analizar la evolución temporal de la HCSAP crónica en adultos mayores y su correlación con la cobertura de la ESF y los indicadores socioeconómicos de una región sanitaria. **Método:** estudio ecológico descriptivo, realizado en los municipios de la XI Región Sanitaria de Ceará, entre 2012 a 2017. Datos extraídos del Sistema de Información Hospitalar, Sistema de Información e-Gestor y Atlas de Desenvolvimento Humano no Brasil, analizados por el *Software STATA*. **Resultados:** registrados 7.245 HCSAP, 4.650 (64,18%) en grupos de enfermedades crónicas. La mayor frecuencia de hospitalizaciones se registró en hombres (2.578; 55,4%), de 70 a 74 años (1.873; 35,87%). Las causas más prevalentes fueron: Insuficiencia Cardíaca (1.666; 35,83%); Enfermedades Cerebrovasculares (1.048; 22,54%) y Angina (754; 16,22%). Hubo una tendencia a reducir el HCSAP crónico y la expansión de la cobertura ESF con una fuerte correlación inversa (r = -0,80, valor de *p*=0,0301) y con el índice de Gini (R = 0,80, *p*=0,0291). Otros indicadores socioeconómicos no se correlacionaron con las tasas de HCSAP. **Conclusión:** la expansión de la ESF se correlacionó fuertemente con la reducción de las tasas crónicas de HCSAP en personas mayores. Así, es oportuno estimular profesionales y gestores a desarrollar estrategias que favorezcan una atención eficaz.

Descriptores: Atención Primaria a la Salud. Anciano. Hospitalización. Enfermedad Crónica. Condiciones Sociales.

INTRODUCTION

The indicator of Hospitalizations due to Primary Care Sensitive Conditions (HPCSCs) is widely used in several countries to verify the performance of Primary Health Care (PHC). Two studies[1-2] contribute a well-established relationship between decreased rates of HPCSCs in older adults and improved access and resoluteness of the first-level health care services.

The socioeconomic profile can also exert an influence on the HPCSC rates. According to Amorim *et al.*[3], the social determinants of health can be considered as external influencers of the HPCSC rates, especially those related to education, income, and housing conditions. Therefore, the resolutive capacity of the first level of care and the socioeconomic profile directly impact on the quality of life of the aged population and on the maintenance of their functional capacity, affecting their health, disease, and need or not for hospitalizations.

Older adults have a seven times higher risk of hospitalizations due to these conditions compared to the general population[4], which reflects the relevance of analyzing and monitoring this indicator in this population. In addition, the Brazilian Northeast region is marked by social characteristics that make its population vulnerable[5-6], although it is a pioneer in the development of programs to access the basic health network, which makes it relevant to explore the correlation between the Family Health Strategy (FHS) coverage, the socioeconomic indicators, and the HPCSC rates in this region.

The objective of this study is to analyze the time evolution of chronic HPCSCs in older adults and its correlation with the Family Health Strategy (FHS) coverage and socioeconomic indicators in a health region of Ceará.

METHOD

This is a descriptive and ecological study, in which the time cutout comprised the period from 2012 to 2017 and the units of analysis were the 24 municipalities that make up the 11th Health Region of Ceará, which recorded chronic HPCSCs in older adults aged from 60 to 74 years old in the network convened to the Unified Health System (*Sistema Único de Saúde*, SUS), through notification of the responsible institution, which fed the database of the Hospital Information System (*Sistema de Informação Hospitalar*, SIH/SUS).

The groups of causes in this research were selected from the Brazilian list of HPCSCs[7], the groups of chronic conditions being considered, namely: Asthma (group 7), Lung Diseases (group 8), Hypertension (group 9), Angina (group 10), Heart Failure (group 11), Cerebrovascular Diseases (group 12), and Diabetes Mellitus (group 13).

Data collection occurred between April and June 2018, having Hospital Information System (SIH) from the Ministry of Health, available at the SUS Informatics Department (DATASUS), as the source of the data on hospitalizations. This data were compiled using the *Tab* software for *Windows – TabWin*, which assisted in the fast tabulation of files in "*dbf*" format.

The data regarding the history of FHS coverage were extracted from the e-Gestor Information System, via public reports stratified by year and municipality of interest. For this extraction, it was necessary to choose the "period per unit" option, which allowed for the selection of a specific time interval.

The socioeconomic indicators were obtained from the Atlas of Human Development in Brazil (Atlas Brasil). As they are calculated only for census years (1991, 2000, and 2010), the linear interpolation technique was applied between 2000 and 2010, as well as linear extrapolation from 2010 to 2017. Subsequently, the period of interest (2012-2017) was selected. By using this technique, the annual estimated values for each indicator selected were estimated: Municipal Human Development Index (MHDI), Gini index, illiteracy rate in people over 15 years old, percentage of the population in households with a bathroom and running water, percentage of individuals vulnerable to poverty, and proportion of extremely poor population.

To find the number of aged residents in the age group of the study in the municipalities, a search was performed in the DATASUS for the data of the last 22 years (1990-2012) and a projection of this population until 2017 was made in the *Excel* program with the formula "=PROJ(YEAR,X;Y)" where "year" referred to the years of interest of the projection, "x" is the population, and "y" is the interval of the years already collected.

The rate of chronic HPCSCs in older adults was calculated for each municipality by the ratio of the total number of chronic HPCSCs in the resident aged population aged from 60 and 74 years old in the year of interest, multiplying the final value by 1,000.

Likewise, the rate of chronic HPCSCs in older adults by cause group was calculated through the ratio between the total number of chronic HPCSCs for each cause group on the Brazilian list of sensitive conditions and the resident aged population aged 60-74 years old, considering the year and municipality of interest, multiplying the result by 1,000.

The numerical variables were subjected to the *Shapiro-Wilk* (SW) normality test in the *STATA 13.0* software, which verified nonparametric distribution of the data for all the variables tested, opting to use the median. The statistical test used was *Spearman*'s coefficient. In this study, coefficients above ±0.75 were considered satisfactory.

For the analysis of the hospitalization trends, a graph was generated in the *Microsoft Excel* program, version 2016, in which the trend line (dotted line), the straight line equation, and the R-squared value (R^2), available in the program, were inserted.

The research used secondary data sources in the public domain, with no requirement for submission to and appreciation by any Committee of Ethics in Research with Human Beings.

RESULTS

A total of seven 7,245 HPCSCs were recorded in aged individuals up to 74 years old, with 4,650 (64.18%) belonging to the chronic conditions groups. Chronic HPCSCs were more frequent in aged males, with 2,578 (55.44%), and in the 70-74-year-old age group, with 1,673 (35.98%). The three prevalent groups of causes were Heart Failure with 1,666 hospitalizations (35.83%), Cerebrovascular Diseases with 1,048 (22.54%), and Angina with 754 (16.22%). The years that recorded the highest and lowest number of these hospitalizations were 2012 with 920 (19.78%) and 2017 with 675 (14.52%), respectively, indicating a reduction in this indicator during the observation period. Sobral (83.74%) obtained the highest number of hospitalizations, followed by Mucambo (3.56%) and Santana do Acaraú (3.20%). Seven municipalities of the health region did not record any HPCSC rate in the period.

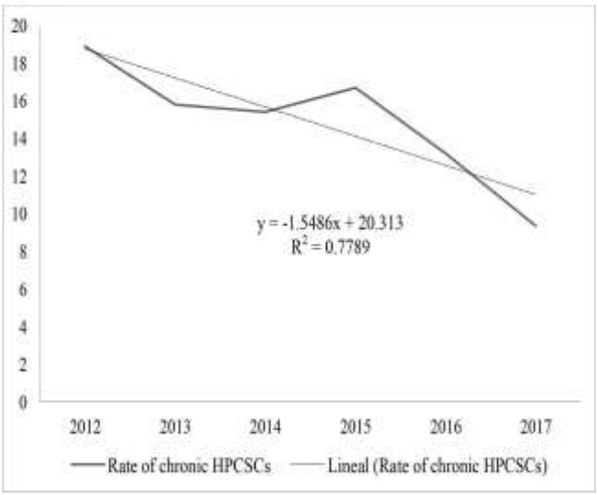
Table 1 – Profile of the hospitalizations of older adults due to chronic conditions sensitive to Primary Health Care in the 2012-2017 period, in the 11th Health Region of Ceará. Sobral, Ceará, Brazil, 2019.

11th Health Region	Chronic HPCSCs in older adults							
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**Total**	**%**
Gender								
Male	489	386	400	488	421	394	2,578	55.44
Female	431	382	365	357	256	281	2,072	44.56
Total	920	768	765	845	677	675	4,650	100
Age group (in years old)								
60-64	271	225	205	238	214	194	1,347	28.96
65-69	307	254	246	301	243	279	1,630	35.05
70-74	342	289	314	306	220	202	1,673	35.99
Total	920	768	765	845	677	675	4,650	100
City*								
Cariré	0	2	9	1	2	3	17	0.36
Catunda	2	10	6	3	0	5	26	0.55
Coreaú	1	4	1	0	2	4	12	0.25
Frecheirinha	6	7	1	2	0	1	17	0.36
Groaíras	1	2	0	1	1	2	7	0.15
Hidrolândia	9	13	14	6	5	4	51	1.09
Ipu	27	26	23	23	9	15	123	2.64
Irauçuba	7	6	0	0	1	6	20	0.43
Massapê	16	0	8	10	6	5	45	0.96
Meruoca	4	3	1	2	1	2	13	0.27
Moraújo	2	1	0	1	0	2	6	0.12
Mucambo	45	38	33	21	16	13	166	3.56
Reriutaba	9	6	4	3	0	3	25	0.53
Santana do Acaraú	67	32	14	12	12	12	149	3.20
Santa Quitéria	9	8	9	4	2	7	39	0.83
Sobral	701	595	638	753	617	590	3,894	83.74
Varjota	14	15	4	3	3	1	40	0.86
Total	920	768	765	845	677	675	4,650	100
Chronic conditions								
Asthma	60	104	65	36	9	17	291	6.25
Pulmonary diseases	139	110	83	54	35	22	443	9.52
Hypertension	20	12	10	6	5	4	57	1.22
Angina	154	2	52	216	158	172	754	16.21
Cardiac insufficiency	338	355	342	263	194	174	1,666	35.82
Cerebrovascular diseases	100	109	154	215	240	230	1,048	22.53
Diabetes Mellitus	109	76	59	55	36	56	391	8.40
Total	920	768	765	845	677	675	4,650	100

Source: Hospital Information System (SIH)/DATASUS. *The cities of Alcântaras, Forquilha, Graça, Pacujá, Pires Ferreira, Senador Sá and Uruoca were removed from the table because their data were null in the years researched.

Graph 1 represents the behavior of the sensitive hospitalizations over the years, showing a tendency of reduction in the number of these hospitalizations in the 11th HR of Ceará (Graph 1).

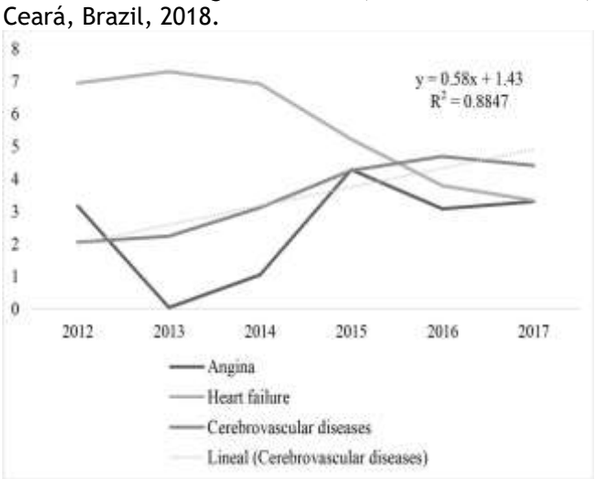
Graph 1 – Trend of chronic HPCSCs in the 11th Health Region of Ceará, 2012-2017. Sobral, Ceará, Brazil, 2018.



Source: Created by the authors.

Despite the downward trend in these chronic HPCSCs, a rise in cerebrovascular diseases was noticed to the detriment of the others, with a linear regression line angle coefficient of +0.58. Another observation was regarding the time evolution of the hospitalizations due to angina, which showed great oscillation in the studied period (Graph 2).

Graph 2 – Rate for the groups of chronic causes in older adults, in a set of 1,000 aged individuals from the 11th Health Region of Ceará, 2012-2017. Sobral, Ceará, Brazil, 2018.

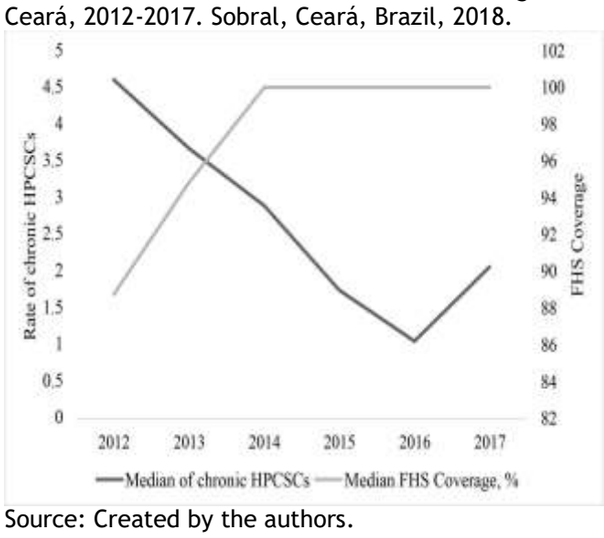


Source: Created by the authors.

Regarding FHS coverage in the 11th Health Region of Ceará, it was found that 94.51% of the population was covered by FHS teams in the period observed, with five (20.8%) of the 24 cities that make up this health region presenting 100% FHS coverage, two (Catunda and Mucambo) having 80%, and the others, above 90%.

By juxtaposing the median of FHS coverage and chronic HPCSC rates (Graph 3), it was verified that there was an increase in coverage and a reduction in chronic HPCSCs, denoting an inverse relationship between them.

Graph 3 – Comparison of the population covered by the Family Health Strategy and the rates of chronic HPCSCs in older adults of the 11th Health Region of Ceará, 2012-2017. Sobral, Ceará, Brazil, 2018.



Source: Created by the authors.

The correlation between the study variables by means of the Spearman's coefficient showed a significant correlation between FHS coverage and the rate of chronic HPCSCs (r = 0.80, *p-value* = 0.0301) and with the Gini index (R = 0.80, *p* = 0.0291). The other socioeconomic indicators presented no association with the HPCSC rates.

DISCUSSION

The higher prevalence of chronic HPCSCs in aged males can be explained by behavioral attitudes related to lifestyle and health care patterns, as men expose themselves to greater risks throughout life, seek less prevention and health promotion services, and have a smaller support network for daily care compared to women[8].

One of the most consistently observed associations with the occurrence of hospitalizations is age, with higher occurrence in older age groups[9]. This study evidenced that older adults aged 70-74 years old presented a higher rate of hospitalization due to chronic conditions, being prevalent in the heart failure and cerebrovascular disease groups.

Regarding the relative share of chronic conditions in the rates of HPCSCs in the older adults surveyed, heart failure presented the highest contribution (35.83%). This is the cardiovascular disease that causes the most hospitalizations in Brazil, affecting men more frequently and, among the main causes of heart failure in the Northeast region are myocardial ischemia, idiopathic dilated cardiomyopathy, and arterial hypertension[10].

Unlike heart failure, hypertension was the condition with the lowest relative share among chronic HPCSCs. Due to inherent characteristics of the natural history of the disease, it is less prone to hospitalizations. Even so, data from this study pointed out that this condition was more prevalent among women, which, according to the study[11], can be associated with income inequality between the genders.

Another factor that may have exerted an influence on the low relative share of hypertension compared to other chronic conditions was the implementation of the "Hiperdia Program" in 2012. Besides being a prevention program, it provided new strategies for the control of the modifiable risk factors, such as smoking, alcohol abuse, sedentary lifestyle, and inadequate diet[12].

A Brazilian study[13] that analyzed the trend of HPCSC rates in Santa Catarina evidenced that the three groups with more expressive rates were the following: cerebrovascular diseases, heart failure and Chronic Obstructive Pulmonary Disease (COPD), that is, all were chronic disease groups, which corroborates with this study.

The estimation of care coverage is a relevant indicator in the evaluation of PHC and primary care teams in Brazil[14], and it influences indicators that are sensitive to improving access to primary health care services, such as HPCSCs. Corroborating the findings of this study, in which a strong inverse association was evidenced between FHS expansion and chronic HPCSC rates, a study by Busby *et al.*[15] showed that improved continuity of primary care was more strongly associated with lower emergency admission rates for chronic conditions.

The study by Pimenta *et al.*[16], which evaluated the period from 1998 to 2015, found a correlation between increased FHS coverage and reduced rates of hospitalization due to cardiovascular conditions and asthma. The coverage in the years researched, in the analyzed region, was always above 85%, which shows that the FHS teams are advancing in the sense of promoting access to health care in the territories and enabling older adults to have greater access to basic health care services. This expansion of the FHS may have contributed to sensitive chronic conditions in general being less and less present in hospital contexts.

However, despite the downward trend in the chronic HPCSC rates in older adults, this study identified, in 2017, an expressive increase in these hospitalizations when compared to the other years of the period studied, even in the face of the progressive consolidation of the FHS in the municipalities analyzed. Possible explanations for this phenomenon can be related to economic issues that Brazil has experienced in the last few years.

Therefore, the increase in the number of people who lost their health plans and started to use only the SUS, called SUS-dependents, added to the reduction in funding in the health sector, may have contributed to the increase in the rates of HPCSCs in older adults during 2017, both by the direct increase in the demand for hospitalizations in public beds, and by the per capita dilution of resources, compromising the quality of primary services. Associated with this is the active population aging and the relative increase in chronic conditions, which are more costly.

Another important point to highlight was the relative rise in cerebrovascular diseases, which has care longitudinality as a protective factor[17]. The various factors that interfere with the work processes of the health team within PHC are limiting the effectiveness of the care provided to older adults. Examples include the geographical characteristics of the territory, violence in the territory, assisting a population beyond what is recommended, excess demand and productivity, adherence to the treatment of diverse conditions, multiple demands exhibited, dysfunctional family dynamics of the older adults and also the establishment of connections with the aged individuals[18]. All this makes it a great challenge for the FHS professionals to promote comprehensive, longitudinal and multidimensional care to older adults.

Cerebrovascular conditions impact on the lives of the older adults and, according to Lopes *et al.*[19], the rates of hospitalizations due to these conditions have reduced nationally, contrary to the data found in the 11th Health Region of Ceará. Thus, it becomes imperative to invest in prevention and management strategies, to qualify the professionals, and to develop intersectoral policies to control these health conditions.

Northeastern states have the worst socioeconomic indicators in the country[20]. Older adults with higher schooling levels and greater wealth power have lower prevalence of undiagnosed diseases[21]. HPCSC rates in aged individuals are sensitive to the indicators related to income. Social inequalities exert a negative influence on the access to goods and services, including health. The low-income population receives fewer preventive services, suffers greater delays in their care, and tends to seek assistance already in acute crises[22], which promotes impairments in their health status and reduces the resolutive capacity of the FHS, which does not act in a timely manner. Thus, people with lower schooling levels and limited access to information are less likely to adopt self-management behaviors, as they have limited understanding of their health condition and of attitudes that would promote good control throughout the course of the disease[23].

In this study, only the Gini index was significantly correlated to the variation in the HPCSC rates. This is probably due to the fact that income and social inequalities exert greater impact on people's daily lives than the other socioeconomic indicators analyzed. Income in old age is a factor that can have favorable or unfavorable repercussions on the quality of life of these individuals. Low-income seniors who require specific health care may have difficulty maintaining their health status because more financial resources are needed to ensure a healthy diet, access to medications, and alternative treatments.

In this perspective, it is believed that the other indicators such as MHDI, illiteracy rate in people over 15 years of age, percentage of the population in households with a bathroom and running water, percentage of individuals vulnerable to poverty, and proportion of extremely poor population may not have presented a significant correlation due to the initiatives of assistance programs at regional or national level, in addition to the initiatives of health education actions strongly directed to the older adults within PHC.

The model proposed by the FHS directly contributes to the improvement of health indicators because, in addition to cure, rehabilitation and prevention, the FHS acts in health promotion and health education[24], expanding the critical sense and awareness of self-care management. However, the economic and political agenda imposed on Brazil in recent years have weakened the counter-hegemonic health reform movement, compromising the overall quality of the health services[25]. The economic measures and political decisions, including the Proposal for Constitutional Amendment (*Proposta de Emenda Constitucional*, PEC) 241 and the review of the National Primary Care Policy (*Política Nacional de Atenção Básica*, PNAB), move towards ensuring the effective implementation of the PCH attributes and the achievement of a Universal, Comprehensive and Equal public health system, with broad social participation.

In this sense, to worsen the dismantling process of the SUS, the new review of the PNAB in 2017, with emphasis on the biomedical and medicalizing model, changes the number of Community Health Agents (CHAs), which will be according to the population base, as per the current legislation, creating vulnerability in the populations.[26]

Thus, monitoring the effectiveness of PHC brings to light consequences of the set of political decisions that involve social sectors, including health. By evaluating the quality of primary services, the HPCSC indicator allows for the expansion of the FHS not to override its qualification. In the informational set generated by the analysis of this indicator, it is possible to make evidence-based decisions, efficient resource management, rationalization of technologies, and, consequently, improvement of the epidemiological profile of the population, especially the most vulnerable populations, such as older adults.

The following are to be noted as the study limitations: the significant heterogeneity of the analysis units with different health care profiles, considering the significant discrepancy of the technological contribution of each municipality, especially when compared to Sobral, a reference of medium- and high-complexity services in the health micro- and macro-region. This limitation did not allow for a comparative analysis of the hospitalization rates across the analysis units, which guided the evaluation of the HPCSC indicator for the 11th Health Region.

Small municipalities have problems feeding the SIH database, which led to the exclusion of seven municipalities that did not present data on the hospitalizations of interest in the DATASUS system, making it impossible to obtain a reliable number of hospitalizations in the region, underestimating the HPCSC rate, and compromising the analysis of the indicator.

However, this study contributes to the Nursing practice as it provides subsidies for nurses who assume positions in assistance, coordination or management of public policies to expand their ability to analyze the health problems of the older adults, susceptible to preventability, enabling the planning of programs and actions that can ensure timely and resolute care for aged individuals in PHC, following the guidelines of intersectoral articulation and interprofessionalism in the face of social vulnerabilities involved in the process of illness and hospitalization of the older adult.

CONCLUSION

The expansion of FHS coverage was strongly correlated to the reduction in the rates of chronic HPCSCs in older adults. Thus, it is appropriate to urge professionals and managers to develop strategies that contribute to the consolidation of the public policies that strengthen PHC in the Brazilian territory, especially in the municipalities of the Northeast region, favoring effective health care mainly focused on the most vulnerable populations.

In addition, the correlation analysis performed in this study does not allow inferring causality. Therefore, individual-level longitudinal studies are recommended to analyze the risk of hospitalization due to sensitive chronic conditions in this population, as well as its relationship with access and quality of care.

REFERENCES

1. Pinto LF, Giovanella L. Do Programa à Estratégia Saúde da Família: expansão do acesso e redução das internações por condições sensíveis à atenção básica (ICSAB). Ciênc. Saúde Colet. 2018;23(6):1903-13. Available from: DOI: 10.1590/1413-81232018236.05592018

2. Santos LPR, Castro ALB, Dutra VGP, Guimarães RM. Internações por condições sensíveis à atenção primária à saúde, 2008-2015: uma análise do impacto da expansão da ESF na cidade do Rio de Janeiro. Cad. saúde coletiva. 2018;26(2):178-83. Available from: DOI: 10.1590/1414-462X201800020230

3. Amorim DNP, Chiarello MD, Vianna LG, Moraes CF, Vilaça KEC. Interactions through conditions sensitive to primary attention of elderly persons in Brazil, 2003 to 2012. Rev. enferm. UFPE on line. 2017;11(2): 576-83. Available from: DOI: 10.5205/reuol.10263-91568-1-RV.1102201712

4. Previato GF, Nogueira IS, Acorsi CRL, Baldissera VDA, Mathias TAF. Diminuição de internações por condições sensíveis à atenção primária em idosos no estado do Paraná. Espaç. saúde (Online). 2017;18(2):15-24. Available from: DOI 10.5433/15177130-2017v18n2p15

5. Filho DBF. Desigualdade de renda e vulnerabilidade social em Pernambuco: uma análise exploratória. Ci. &Tróp. Recife. 2019;43(1):45-57, 2019. Available from: DOI: 10.33148/CeTropico-v.43,n.1(2019)_1829

6. Costa MA, Santos MPG, Marguti B, Pirani N, Pinto CVS, Curi RLC, Ribeiro CC, Albuquerque CG. Vulnerabilidade social no Brasil: Conceitos, métodos e primeiros resultados para municípios e regiões metropolitanas brasileiras. Texto para Discussão 1ed. Brasília: Rio de Janeiro, 2018, 84 págs.

7. Lista Brasileira de Internações por Condições Sensíveis à Atenção Primária. Portaria nº 221, de 17 de abril de 2008 (2008). Diário Oficial da União, Brasília, DF, 2008 [cited 2019 out 14]. Available from:

http://bvsms.saude.gov.br/bvs/saudelegis/sas/2008/prt0221_17_04_2008.html

8. Santos KMR, Oliveira LPBA, Fernandes FCGM, Santos EGO, Barbosa IR. Hospitalizations due to primary care sensitive conditions in a population of older adults in the state of Rio Grande do Norte from 2008 to 2016. Rev. Bras. Geriatr. Gerontol. 2019;22(4):e180204. Available from: DOI: https://doi.org/10.1590/1981-22562019022.180204

9. Rodrigues MM, Alvarez AM, Rauch KC. Tendência das internações e da mortalidade de idosos por condições sensíveis à atenção primária. Rev. bras. epidemiol. 2019; 22:e190010. Available from: DOI: https://doi.org/10.1590/1980-549720190010.

10. Albuquerque DC, Neto JDS, Bacal F, Rohde LEP, Pereira SB, Berwanger O, Almeida DR. I Registro brasileiro de insuficiência cardíaca: Aspectos clínicos, qualidade assistencial e desfechos hospitalares. Arq Bras Cardiol. 2015; 104(6):433-42. Available from: DOI: 10.5935/abc.20150031

11. Lucumi DI, Schulz AJ, Roux AVD, Kaylor AG. Income inequality and high blood pressure in Colombia: a multilevel analysis. Cad. saúde pública (Online). 2017;33(11):1-13. Available from: DOI: 10.1590/0102-311X00172316

12. Maranhão STDP, Ramos APC, Silva LGS, Silva, MMF. Hiperdia: grandes demandas e desafios para o enfermeiro. Saúde coletiva (Barueri). 2021; 11(60): 4736-41. Available from: DOI: https://doi.org/10.36489/saudecoletiva.2021v11i60p4736-4747

13. Rorigues MM, Alvarez AM, Rauch KC. Trends in hospitalization and mortality for ambulatory care sensitive conditions among older adults. Rev. bras epidemiol. 2019;22:1-11. Available from: DOI: 10.1590/1980-549720190010

14. Ribeiro AF, Barbosa GFA, Alves TM, França IF, Lima AM, Sales MSM, et al. O impacto da estratégia saúde da família sobre os indicadores da atenção básica no Brasil. Rev. Eletr. acervo saúde. 2020;12(11):1-9. Available from: DOI: https://doi.org/10.25248/reas.e4730.2020

15. Busby J, Purdy S, Hollinworth W. How do population, general practice and hospital factors influence ambulatory care sensitive admissions: a cross sectional study. BMC Fam Pract. 2017;18(67):1-9. Available from: DOI 10.1186/s12875-017-0638-9

16. Pimenta LS, Dutra VGP, Castro ALB, Guimarães RM. Analysis of conditions sensitive to primary care in a successful experience of primary healthcare expansion in Brazil, 1998-2015. Public health. 2018;162:32-40. Available from: https://doi.org/10.1016/j.puhe.2018.05.011

17. Xavier AJ, Reis SS, Paulo EM, D'orsi E. Tempo de adesão à Estratégia de Saúde da Família protege idosos de eventos cardiovasculares e cerebrovasculares em Florianópolis, 2003 a 2007. Ciênc. Saúde Colet. 2008 [cited 2020 jan 10];13(5):1543-1551. Available from: https://www.scielosp.org/pdf/csc/2008.v13n5/1543-1551/pt

18. Shenker M, Costa DH. Avanços e desafios da atenção à saúde da população idosa com doenças crônicas na atenção Primária à Saúde. Ciênc. Saúde Colet. 2019;24(4):1369-80. Available from: DOI: 10.1590/1413-81232018244.01222019

19. Lopes JM, Sanchis JB, Medeiros JLA, Dantas FG. Hospitalization for ischemic stroke in Brazil: an ecological study on the possible impact of Hiperdia. Rev. bras. epidemiol. 2016;19(1):122-34. Available from: DOI: 10.1590/1980-5497201600010011

20. Teixeira KH. Uma análise da estrutura espacial dos indicadores socioeconômicos do nordeste brasileiro (2000-2010). EURE/Santiago. 2018 [cited 2020 feb 15];44(131):101-24. Available from: http://www.eure.cl/index.php/eure/article/view/1923/1058

21. Arokiasamy P, Uttamacharya, Kowal P, Capistrant BD, Gildner TE, Thiele E, et al. Chronic Noncommunicable Diseases in 6 Low-and Middle-Income Countries: Findings From Wave 1 of the World Health Organization's Study on Global Ageing and Adult Health (SAGE). Am. j. epidemiol. 2017;185(6):414-28. Available from: DOI: https://doi.org/10.1093/aje/kww125

22. Huang Y, Meyer P, Jin L. Neighborhood socioeconomic characteristics, healthcare spatial access, and emergency department visits for ambulatory care sensitive conditions for elderly. Prev Med Rep. 2018;12:101-5. Available from: DOI: https://doi.org/10.1016/j.pmedr.2018.08.015

23. Dimitrová K, Costa C, Santana P, Perelman J. Evolution and financial cost of socioeconomic inequalities in ambulatory care sensitive conditions: an ecological study for Portugal, 2000-2014. Int. j. equity health. 2017;16(1):2-11. Available from: DOI 10.1186/s12939-017-0642-7

24. Farias JM, Minghelli LC, Soratto J. Promoção da saúde: discursos e concepções na atenção primária à saúde. Cad. saúde colet. 2020;28(3): 381-9. Available from: DOI: https://doi.org/10.1590/1414-462x202028030351.

25. Machado CV, Lima LD, Baptista TWF. Políticas de saúde no Brasil em tempos contraditórios: caminhos e tropeços na construção de um sistema universal. Cad. Saúde Pública (online). 2017;33(Suppl 2):143-61. Available from: DOI: 10.1590/0102-311X00129616

26. Pinheiro FTS, Tavares NBF, Aaraújo AF, Silva JPX. Reflexões sobre o sistema único de saúde: da gênese à crise contemporânea. Sanare (Sobral, Online). 2018 [cited 2020 jan 20];17(2):82-90. Available from: https://sanare.emnuvens.com.br/sanare/article/view/1265/673

Financing sources: No

Conflicts of interest: No

Date of submission: 2020/06/06

Accepted: 2021/02/26

Publication: 2021/06/29

How to cite this article:

Azevedo SGV, Moreira ACA, Carvalho NR, Moreira TMM, Diniz JL, Silva MAM. Hospitalizations of older adults due to chronic conditions sensitive to primary care in a Ceará region. Rev Enferm UFPI [Internet] 2021 [cited: dia mês abreviado ano]; 10:e883. Doi: 10.26694/reufpi.v10i1.883

Corresponding author:

Samir Gabriel Vasconcelos Azevedo
Email: samirueva@gmail.com