



Journal of Nursing

Revista de Enfermagem

UFPE On Line

ISSN: 1981-8963

ORIGINAL ARTICLE

HOSPITALIZATION COSTS BETWEEN AGED USERS OF THE UNIFIED HEALTH SYSTEM

CUSTOS DAS INTERNAÇÕES HOSPITALARES ENTRE IDOSOS USUÁRIOS DO SISTEMA ÚNICO DE SAÚDE

LOS COSTOS DE LA HOSPITALIZACIÓN ENTRE MAYORES USUARIOS DEL SISTEMA ÚNICO DE SALUD

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ABSTRACT

Objective: to characterize the evolution of the cost of hospital admissions by gender and age stratum among the elderly. **Method:** a descriptive study, cross-sectional, which used as source the database of the Hospital Information System of the Unified Health System (SUS) regarding the causes and costs of hospitalization of elderly residents and hospitalized in Pernambuco, from 1998 to 2010. It was used the software Excel 12.0 (Office 2007) for management and of data analysis. The study was approved by the Committee of Ethics in Research, CAAE n. 0075.0.097.000-11. **Results:** occurred 1.209.875 hospitalizations among seniors with a total cost of R\$ 801.759.534,10. Women were mostly hospitalized. However, the cost of assistance among men was slightly higher. **Conclusion:** It was possible to observe an increase in the number and the cost of hospitalizations during the studied period. **Descriptors:** Aged; Aging; Epidemiological Profile; Hospital Costs.

RESUMO

Objetivo: caracterizar a evolução do custo das internações hospitalares por sexo e estrato de idade entre a população idosa. **Método:** estudo descritivo, de corte transversal que utilizou como fonte a base de dados do Sistema de Informações Hospitalares do Sistema Único de Saúde referente às causas e custos das internações hospitalares entre idosos residentes e internados em Pernambuco, no período de 1998 a 2010. Utilizou-se o software Excel 12.0 (Office 2007) para gerenciamento e análise dos dados. A pesquisa foi aprovada pelo Comitê de Ética em Pesquisa, CAAE n. 0075.0.097.000-11. **Resultados:** ocorreram 1.209.875 de internações entre os idosos com custo total de R\$ 801.759.534,10. As mulheres internaram-se mais. Entretanto, o custo da assistência entre os homens foi discretamente maior. **Conclusão:** foi possível observar incremento no número e custo das internações no período estudado. **Descritores:** Idoso; Envelhecimento; Perfil Epidemiológico; Custos Hospitalares.

RESUMEN

Objetivo: caracterizar la evolución del costo de las hospitalizaciones por sexo y estrato de edad entre los ancianos. **Método:** estudio descriptivo, transversal, que utilizó como fuente la base de datos del Sistema de Información Hospitalaria del Sistema Único de Salud (SUS) en relación con las causas y los costos de las hospitalizaciones de los residentes de edad avanzada y hospitalizados en Pernambuco, en el período 1998-2010. Se utilizó el programa Excel 12.0 (Office 2007) para la gestión y análisis de datos. El estudio fue aprobado por el Comité de Ética en Investigación, CAAE n. 0075.0.097.000-11. **Resultados:** hubo 1.209.875 hospitalizaciones entre las personas mayores con un costo total de R\$ 801.759.534,10. Las mujeres fueron las más admitidas. Sin embargo, el costo de la asistencia entre los hombres era ligeramente superior. **Conclusión:** Fue posible observar un aumento en el número y el costo de las hospitalizaciones durante el periodo de estudio. **Descriptores:** Ancianos; Envejecimiento; Perfil epidemiológico; Costos hospitalarios.

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INTRODUCTION

Unlike the developed countries that have made the demographic transition in 100 years, Brazil has doubled the population of people aged 60 and over in 20 years old. Health services did not follow this trend continued even in the face of population aging. The elderly are the population segment that grows more rapidly in the country, demanding ever increasing search for health services with major economic repercussions.¹⁻³

Aging is associated with biological changes that increase the risk of morbidity, disability and death, thus making the group of elderly users a major health system, a situation which can be evidenced by the high proportion of hospitalization and hospital costs of the Unified health System (SUS).^{3,4}

The elderly group presents percentage more episodes of chronic diseases, especially cardiovascular diseases leading to increased spending on health.^{4,5} Data on morbidity are informed by the Hospital Information System of the Unified Health System (SIH/SUS). Despite these limitations are produced data that can be used for the characterization of the population.⁶

SIH / SUS uses hospital admission (AIH) as an instrument for data collection, which is classified into two models: 1 AIH or normal, issued at the beginning of hospitalization and AIH 5 corresponding to long-stay hospital or chronic.

The analysis of spending on medical care in the elderly population in Brazil is still scarce. The monitoring of the health of these people is a fundamental instrument for the formulation of health policies directed to this population segment.^{6,7}

This study aims to characterize the evolution of the cost of hospital admissions by sex and age stratum among the elderly

METHOD

It was conducted a descriptive study, cross-sectional, which used as a source the database side of the Hospital Information System of SUS - SIH / SUS. Was considered old every person aged 60 or older, users of PHS,

resident who has been admitted to hospitals in the state of Pernambuco in the period 1998-2010.

The elderly population was divided into the following age strata: 60 (inclusive) to 65 (exclusive), 65 (inclusive) to 70 (exclusive), 70 (inclusive) to 75 (exclusive), 75 (inclusive) to 80 (exclusive) and 80 and older.

We used the database of SIH - SUS provided by DATASUL through file manager *TabWin*. Analyzed both Commitments Hospitalizations - AIH type 1 (normal) and the AIH type 5 (long stay) which are those used for chronic or outside therapeutic possibility.² The cut was given in 1998 to allow compatibility between the data since that year came into force the 10th edition of the International Classification of Diseases (ICD 10).

We used the software Excel 12.0 (Office 2007) for management and analysis of data. The absolute and relative frequencies were tabulated according to the causes and the values approved hospital admissions for the elderly population by sex, age stratum and year of occurrence. There were prepared tables and figures to analyze the evolution of the costs of hospital admissions, making up comparative analysis with the leading causes of hospitalization by CID10.

The study was approved by the Ethics Committee in Research of the University of Pernambuco - CEP/UPE, CAAE n. 0075.0.097.000-11, Protocol nº 091/11.

RESULTS

The Unified Health System held on an average of 93.067 admissions per year, totaling 1.209.875 hospitalizations in the period of 1998 to 2010. These hospitalizations cost the public treasury R\$ 801.759.534, 10 with an average of R\$ 662,68. Most of these hospitalizations (52%) occurred with females at a cost of R\$ 398.002.419,76, or 49,6%. Males presented a lower percentage of hospitalizations (48%), but the cost of their hospitalization was higher by 0, 7%. The spending of male hospitalizations was R\$ 403,757,144.34 (50,4%) (Figure 1). The costs of hospitalizations increased by 268% in the observation period (Figure 2).

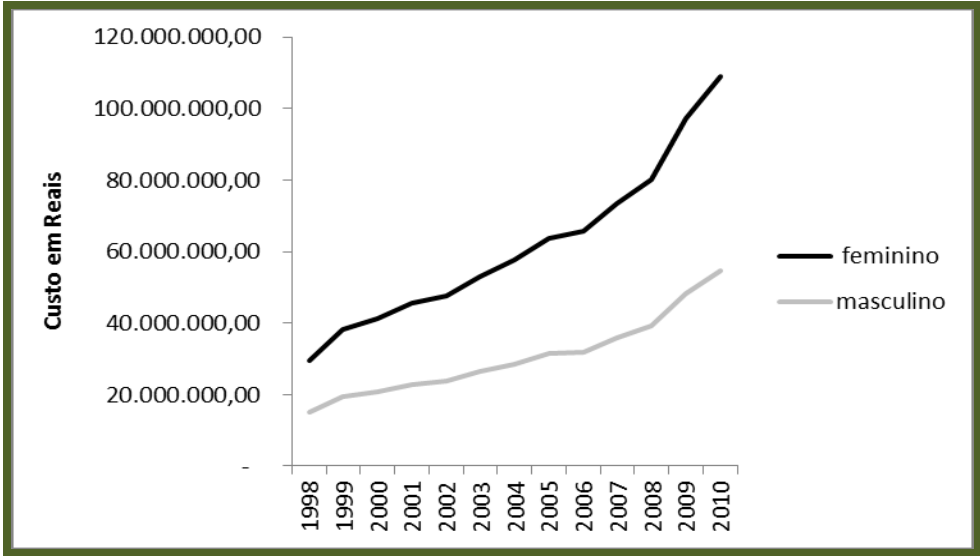


Figure 1. The evolution of the costs of hospitalizations according to the gender. Pernambuco, 1998 to 2010. Source: Ministry of health, SIH/SUS (2011)

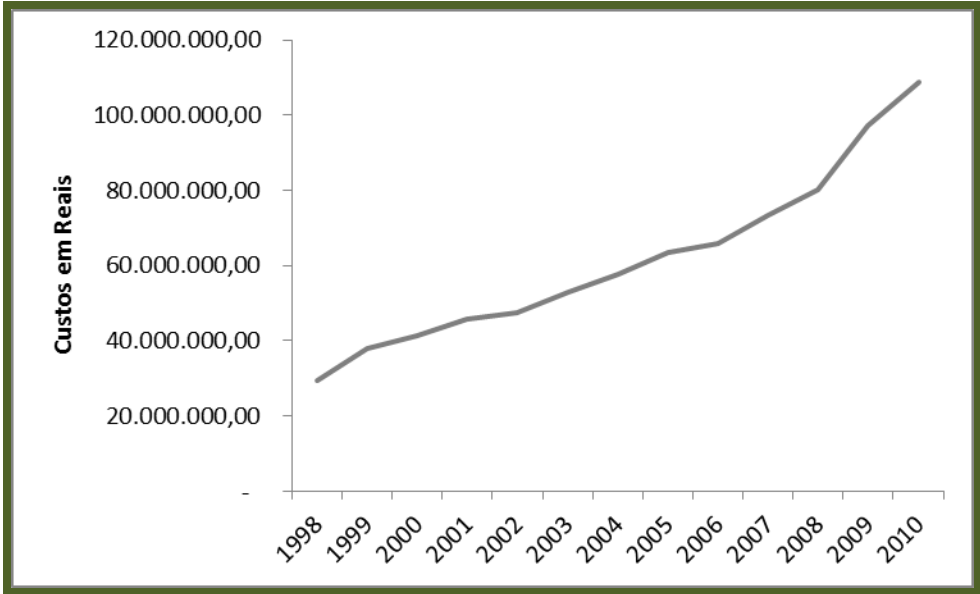


Figure 2. The evolution of the costs of hospitalizations in Pernambuco, 1998 to 2010. Source: Ministry of health, SIH/SUS (2011)

In relation to the strata of age, it was observed that the elderly aged 80 and older had a higher percentage of hospitalizations (22,6%), however, the cost of admissions of

those aged 60-64 years old was higher (23,3%), it was observed that the average cost of AIH was inversely proportional to the strata of age (Table 1 and Figure 3).

Table 1. Proportion of the costs and hospitalizations according to age stratum. Pernambuco, 1998 to 2010

The age stratum	Hospitalization	%	Hospital cost (In Real\$)	%
60 to 64	261.687	21,6	186.544.388,30	23,3
65 to 69	251.983	20,8	175.933.775,64	21,9
70 to 74	229.972	19,0	153.295.843,45	19,1
75 to 79	194.130	16,0	123.145.637,40	15,4
80 or older	272.103	22,6	162.839.889,31	20,3
Total	1.209.875	100	801.759.534,10	100

Source: Ministry of Health, SIH/SUS (2011).

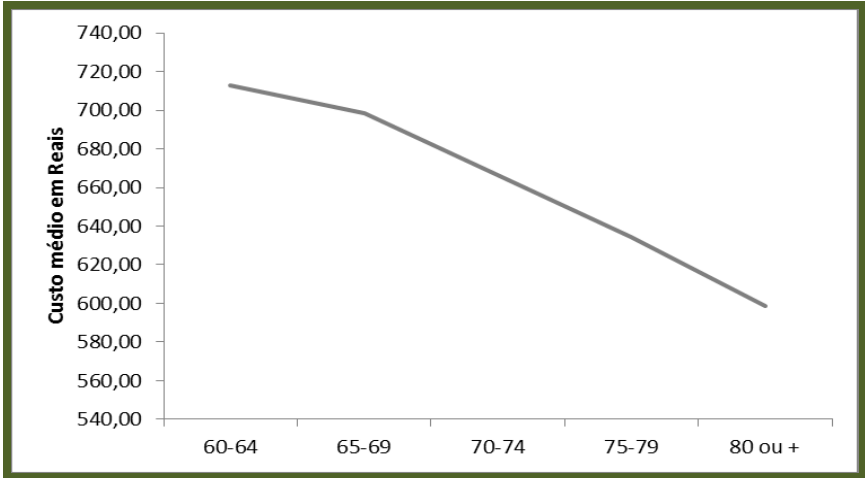


Figure 3. Average cost (in Real) with hospitalizations among elderly according to age stratum. Source: Ministry of Health, SIH/SUS (2011).

The ten most common causes that led to hospitalization among elderly consumed R\$ 714.939.837, 53 or (89,2%) of the resource during the study period (Table 2). Diseases of the circulatory demanded greater cost 33,2%.

Table 2. Proportion of hospitalizations and costs among elderly according to the cause of hospitalization. Pernambuco, 1998 to 2010.

Cause of hospitalization	Frequency	%	Cost (in Real)	%
Diseases of the circulatory system	291.947	26,9	265.912.744,51	37,2
Respiratory apparatus diseases	170.683	15,7	89.851.044,46	12,6
Diseases of the digestive system	127.665	11,8	64.465.721,75	9,0
Some infectious and parasitic diseases	109.798	10,1	50.269.083,88	7,0
Endocrine Metabolic and nutritional diseases	87.087	8,0	27.636.200,30	3,9
Diseases of the genitourinary system	73.662	6,8	32.337.491,53	4,5
Neoplasms (tumors)	64.899	6,0	70.564.872,67	9,9
Mental and behavioural disorders	61.990	5,7	53.061.301,03	7,4
Injury, poisoning and certain other consequences of external causes	55.570	5,1	51.093.831,03	7,1
Symptoms, signs and abnormal findings in clinical and laboratory examinations	43.171	4,0	9.747.546,37	1,4
Total	1.086.472	100	714.939.837,53	100

Ministry of health, SIH/SUS (2011).

DISCUSSION

In 2010 the Brazilian population totaled 190.755.799 inhabitants, or 20.590.597 (10.8%) corresponded to individuals aged 60 or older. In the state of Pernambuco, in the same year, the population represented 8.796.448 inhabitants, or 67.609 of these (11%) were elderly.⁸

Pernambuco had 1.209.875 elderly hospitalized in the period 1998-2010 with an annual average of 93,067 hospitalizations. Nationwide study published in 2004, found that in 2001 were admitted in Northeastern Brazil 547.353 elderly 95.309 and the Northern Region.⁶ Older people seek hospital services in response to the occurrence of diseases and chronic conditions that, at this stage of life appear with greater intensity and severity.¹

During the analyzed period was spent with hospitalizations among the elderly in the state of Pernambuco R\$ 801.759.534, 10 with an average of R\$ 662, 68 per admission. In the same 2004 study, we observed average cost of R\$ 529, 5 and R\$ 417,8and respectively to the national level and the Northeast. ⁶ The lower socioeconomic status of this region presents

an aggravation of the health system: the younger still migrate to other regions of the country in search of jobs, further weakening the network of family support resulting in longer hospital for more elderly.⁹

Based on the data of the Brazilian population survey conducted in 2005, the average cost of hospitalization for people aged 60 or more was R\$ 779,18. The elderly, proportion, tend to have more episodes of illness, generally chronic, leading to an increase in health spending.^{4,6,9}

The 2004 study found that the average cost of hospitalization was longer in the elderly compared to the other age groups. However, there are differences between the average costs per hospitalization among regions of the country. The cost tends to be higher in the Southeast (R\$ 598,5) and South (R\$ 572,2), decreasing to the Midwest (R\$ 484,6), Northeast (R\$ 417,8) and North (R\$ 391,1). It is possible that the difference between the average costs per region occurred due to difficulties in accessing services and / or the density level of technological equipment comprising the hospitals in different regions of the country.⁶

This study found that there is a greater proportion of female hospitalization (52%), possibly due to feminization (57%) of aging. This situation is corroborated by other studies nationally and in Recife-Pernambuco.^{3,9}

The perception about female health and illness can direct more intensive use of health services and interfere in the context of admissions. By gender, men, especially the Northeast, seek less health services, seeking aid later and benefit less preventive activities.^{6,10-1}

The increase in the costs of hospitalization observed during the years analyzed in this study confirms the results found in a study in 2010 that evaluated the profile of hospital admissions in the elderly in the city of Recife-PE. Spending on hospital admissions increase in proportion as the elderly population grows and becomes ill due to chronic and complex diseases as well, in that new and expensive technologies are being tested and incorporated into medical care.¹¹⁻²

In relation to the strata of age, is observed as a line descending to the average cost. The average cost is lower among older subjects, since they are more affected by respiratory diseases which are inexpensive compared to younger people who suffer more from diseases of the circulatory system that require more resources.¹¹⁻³

The 2004 study also revealed that cardiovascular diseases and respiratory consumed about half of the costs of hospitalizations of elderly in 2001. Circulatory diseases, mental and behavioral disorders, respiratory diseases, digestive diseases and cancer are the main causes that demanded hospital costs according to various national and regional studies.^{2,6,10-1}

It is possible that there is failure in the monitoring of these diseases and their risk factors in the primary care level and the provision of care medium density technology, resulting in worsening of morbidity from difficulties in diagnosis and early institution of treatment. This situation raises costs further by using more sophisticated technologies in hospitals.¹⁰

The promotion of health and prevention of diseases and disorders, even after 60 years, are alternatives that offer best value for achieving the reduction of morbidity among the elderly. Active aging should be a booster of healthy living, participative and social security.¹⁰

CONCLUSION

It found an increase in the number of hospitalizations and costs of hospitalization. Women were hospitalized more than men; however, the cost to the male hospital was higher.

Further research is needed, including with other methodological approaches to identify the factors that influence and determine the higher cost of hospitalization for older males for the purpose of preventive and early intervention on the variables that complicate and endear the morbidity between older males.

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Submission: 2012/08/10

Accepted: 2013/07/12

Publishing: 2013/10/01

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J Nurs UFPE on line., Recife, 7(10):6013-8, Oct., 2013