DOI: 10.1590/1413-81232018237.21602016

Use of health services and medicines by hypertensive and diabetic patients in the municipality of Rio de Janeiro, Brazil

Paula da Silva Freitas [1]
Samara Ramalho Matta [1]
Luiz Villarinho Pereira Mendes [2]
Vera Lucia Luiza [2]
Monica Rodrigues Campos [3]

Abstract *This study aimed to describe and analyze factors associated with emergency care and hospitalization of hypertensive and diabetic patients in the municipality of Rio de Janeiro, especially those related to the use of medicines. This is across-sectional study using secondary database from a household survey that approached hypertensive and diabetic patients. The outcome variables were: 1) seek for emergency careasa resultof complications related to hypertension and diabetes in the 12months preceding the interviews; 2) hospitalizationin the same period andfor the same reasons. Uni and bivariate analysis between exposure variables and each of the outcomes were performed using chi-square test at a significance level of 10%, which originated multivariate logistic regression analysis. Negative self-evaluation of health status was associated with both outcomes in the multivariate analysis. Having stopped taking the medications was associated with hospitalization and having missed a medical appointment in the last six months was associated with search for emergency care.*

Key words *Primary Health Care, Use of medicines, Hypertension, Diabetes, Emergency medical services*

[1] Instituto Federal de Educação, Ciência e Tecnologia do Rio de Janeiro. R. Professor Carlos Wenceslau 343, Realengo. 21715-000 Rio de Janeiro RJ Brasil. paulinhasfreitas@gmail.com
[2] Departamento de Política de Medicamentos e Assistência Farmacêutica, Escola Nacional de Saúde Pública Sergio Arouca (ENSP), Fiocruz. Rio de Janeiro RJ Brasil.
[3] Departamento de Ciências Sociais, ENSP, Fiocruz. Rio de Janeiro RJ Brasil.

Introduction

Brazil has undergone a process of epidemiological transition, with Chronic Noncommunicable Diseases (CNCD) becoming the main cause of morbidity and mortality and leading to a significant economic impact, although in coexistence with infectious diseases of major magnitude[1].

Arterial Hypertension (AH) and Diabetes Mellitus (DM), both CNCDs, are included in this context. The self-reported prevalence of these diseases was, respectively, 21.4% and 6.2% of the Brazilian population over 18 years of age in 2013[2]. The complications resulting from the lack of control of these diseases generate negative impacts both on the quality of life of the affected individuals and on the health system. Such complications were responsible, in 2012 alone, for 228,323 hospitalizations in the Unified Health System (SUS), at the cost of approximately 114 million reais[3]. This is not to mention hospitalizations in private hospitals and numerous other services performed in emergency services, currently not computed by the available information systems.

Among the factors that may contribute to the lack of control of AH and DM are those related to inappropriate use of medicines. For reasons such as the need for treatment for long periods and therapeutic regimens that include polypharmacy and high prevalence in the more advanced age groups, the carriers of these diseases have greater difficulty to adhere to the drug therapy[4], in addition to being at risk of adverse drug events[5].

Adherence to AH and DM treatment includes both continuous maintenance by individuals of the prescribed drug treatment and lifestyle change (LSC), from conscious obedience to guided behaviors regarding diet and physical activity. Low adherence to treatment is one of the main causes of reduction of clinical benefit and control of AH and DM, leading to health and psychosocial complications and reduction of quality of life[6,7]. Such complications may culminate with the worsening of the situation, leading to the search for emergency services and hospitalizations[8,9].

A systematic review [10]found that different aspects of four major domains (characteristics of the health system, access, characteristics of the practices and care organization) were associated with avoidable hospitalizations in patients with chronic conditions. A study that investigated factors associated with hospitalizations among diabetic patients in the SUS[11] found that in 28% of the cases the patients reported that it was impossible to schedule a consultation at the primary health care unit, about one quarter had not attended any consultation in the last 12 months in the PHC units, and 18% reported failure in medication use. Luiza et al.[12] indicate that access to medicines may have repercussions on the use thereof, which will ultimately be expressed both in the use of health services (hospitalizations, outpatient or emergency care), and in the health outcomes per se.

In order to contribute to reduce the rate of abandonment of chronic treatments and reduce the overload on health units in the city of Rio de Janeiro, the program Medicine at Home (RECASA in Portuguese) was implemented in January 2002 in Rio de Janeiro and expanded gradually, starting to function in 100% of the units participating in the Hypertension and Diabetes Mellitus Programs in October 2004.

With RECASA, patients started receiving anti-AH and anti-DM drugs at a registered address. The main inclusion criterion of the program was the confirmation by a physician that the patient was in the control phase of the disease, with defined drugs and stable doses, but it is not known whether these criteria were strictly followed. RECASA was interrupted in 2008 due to operational problems in the delivery of medicines, and is still not working.

Primary Health Care (PHC) has been considered the best strategy for coping with most CNCDs[13]. Through its attributes, it becomes possible to employ technologies considered more effective, capable of interfering not only in healing and rehabilitation, but also in the determinants and conditioning factors of individual and collective health, aiming at the comprehensiveness of care[14].

In this sense, PHC has gained a central role in the health system around the world, having in Brazil the role of coordinator of the health care network.

Several efforts have been made in the last decades in the search for indicators to measure the effectiveness of primary care. In the 1990s, the concept of "Primary Care-Sensitive Conditions - PCSC" was developed to denote the set of health problems for which the effective action of PHC would reduce the risk of hospitalizations and is therefore a direct indicator of the effectiveness of this level of health care. Alfradique et al.[15] have adapted the use of PCSC to the Brazilian reality and identified that in 2006, the number of hospitalizations due to PHC-sensitive conditions in

Ciência & Saúde Coletiva, 23(7):2383-2392, 2018

the SUS as a result of AH and DM was 146,426 and 120,878 respectively, representing 1.5% and 1, 2% of all admissions in the country, excluding childbirth. These data may be due to problems in access and resolution of PHC of the country.

Given the importance of access and use of medications in the evolution of patients with diabetes and hypertension, either postponing or preventing hard outcomes or injuries of target organs, it is important to investigate this association.

The objective of this article is to describe and analyze the factors associated with the search for emergency care and hospitalization by patients with AH and DM, especially those related to the use of medications, taking as a cut hypertensive and diabetic patients attended at primary health care units of the municipality of Rio de Janeiro in the year 2009.

Method

This is a cross-sectional study of a secondary database, from a population survey carried out in the context of the research "The Medicine at Home Program (RECASA) as a model of public provision of medicines - Analysis of implantation in the city of Rio de Janeiro", conducted from January to February 2010 by the Nucleus of Pharmaceutical Assistance/ENSP/Fiocruz in partnership with the Municipal Secretary of Health and Civil Defense of the municipality of Rio de Janeiro (SMSDC/RJ). This study had two objects of analysis: 1) Basic Health Unit (BHU) level, in which interviews were made with managers and health professionals, direct observation and consultation of documents; 2) Household level, in which interviews were carried out directly with AH/DM patients enrolled in the RECASA program, in addition to direct observation of medicines used and stored at home for the studied diseases. In this article, we used data from the household level.

The source study sample was based on the enrollment in the RECASA program, in which the target population was 139,222 patients distributed in 87 BHUs. We used proportional sampling and, considering the multiplicity of outcomes of interest, we have established a conservative prevalence of 50%, considering a 95% confidence interval, a maximum variance of 0.25 and a sampling error of 4%, resulting in out of 598 users. Throughout the field process, replacements were required. To do so, a reserve bank based on the sample was created, following the parameters mentioned above. The final sample resulted in 547 households, with one person per household being interviewed, representing a loss of 8.5% in relation to the sample plan. The applied questionnaire contained mostly closed questions, distributed in 5 blocks (general data, data on health conditions, use of health services, experience with the RECASA program, patient's treatment), with some aspects collected through observation (verification of medicines and medical prescription at home). The source study method is presented in more detail by Mendes et al.[16].

In the present study, outcome variables were: 1) search for emergency care because of complications related to AH/DM in the 12 months prior to the interview, as referred by the patients; 2) Admission referred to in the 12 months prior to the interview for the same reason.

The exposure variables, measured in a self-reported interview, included the following aspects: sociodemographic (age; sex; marital status; living alone; ethnicity; occupation and economy class)[17], health conditions (disease, time of diagnosis of AH/DM - in cases in which the interviewees had both diseases, we adopted the oldest diagnosis: self-evaluation of health status (very good or good, fair or poor/very poor); degree of difficulty to perform work tasks or household chores (none, mild, fair, high, extreme)); aspects related to the use of health services (regular attendance at scheduled consultations; scheduling the next consultations; degree of satisfaction with the pharmacy service; indication of physical exercise and indication of diet by a BHU physician) and aspects related to the use of medicines (we measured the reference to problems related to adherence to the drug treatment expressed by the questions - "usually fails to take medications", "usually having medicines left over", being considered non-adherent those patients who answered always or almost always); not practicing self-medication - "all medicines used for AH/DM are prescribed by prescribers", "usually asks for information on medicines only for health professionals"); problems in medicine care at home (proportion of households with "expired drugs/damaged packaging", measured by direct observation at home); "time without change of medical prescription; time of drug treatment".

Regarding the statistical treatment of the data, a descriptive and bivariate univariate analysis was performed between the exposure variables and each of the outcomes using a chi-square test (χ^2) at the level of significance of 90%, using the

program Statistical Package for the Social Sciences (SPSS®) V 20.0.

The variables that showed statistically significant associations at the 90% level in the bivariate analysis gave rise to logistic regression models for each of the outcomes separately. The method used was the stepwise backward at the significance level of 10%, with an entry probability of 0.20 and an exit probability of 0.10. Their respective proportions of total logistic model classification (PCT - Overall), adjusted odds ratios (ADOR) and respective confidence intervals of 95% were presented.

The source project was approved by the Committee of Ethics in Research of the Escola Nacional de Saúde Pública Sérgio Arouca(CEP/ENSP). The authors do not identify any conflict of interest.

Results

There was a prevalence of elderly people, with a mean age of 62.7 years (ranging from 24 to 95 years), female predominance (68%) and slightly more than half of the interviewees were married, followed by widows/widowers. Approximately 90% of individuals did not live alone, that is, they had some type of family support and 64.9% described themselves as belonging to some non-white ethnicity. One-third of the sample studied did not work, among whom the majority were retirees or dedicated themselves to household care. Approximately 90% of the individuals belonged to economic classes C, D or E (Table 1).

About 96% had hypertension, 20.8% diabetes and 17.2% had both diseases. Of the set of interviewees, 87.4% knew the diagnosis and 86.4% had been using drugs for these diseases for more than 5 years. Approximately 73% had not had the content of their prescription for AH and DM changed for more than 1 year (Table 1).

Sixty-seven percent self-rated their health status as fair, poor, and very poor; however, when this same question was asked considering the comparison with people of the same age, this percentage fell to 58.2%. Approximately 14% reported experiencing a high degree of difficulty when performing work tasks or household chores. Nineteen percent reported having missed a scheduled consultation at the BHU in the last 6 months and 38.2% had not scheduled the date of the next consultation. About seventy-nine percent said they were satisfied or very satisfied with the service performed at the BHU pharmacy. Regarding the solutions offered for treatment, 65% and 56%, respectively, reported the physicians, in addition to prescribing medications, used to recommend diet and exercise (Table 1).

About 22% of patients reported they used to stop taking their medications and 23.2% reported that they had left over medication; in addition, 38% of patients reported asking for information about medications for others who are not health professionals. Almost all said that all medications used for AH/DM were prescribed by authorized prescribers. Direct observation of these medications showed that about half of the patients had expired medications or had damaged packaging at home (Table 1).

One hundred and thirteen individuals (20.7%) reported having sought emergency services and 33 (6.0%) had been hospitalized for complications of hypertension and diabetes in the previous year.

These were significantly associated with the use of emergency service by AH and DM carriers, both in bivariate analysis and in logistic regression: fair, poor or very poor health status; difficulty in carrying out routine activities; medicine prescription changed in the last year; and having missed a scheduled consultation in the six previous months (Table 2 and Table 3). Evaluation of the health status as fair, poor or very poor in relation to people of the same age was associated with the search for emergency care only in the bivariate analysis.

These were significantly associated with hospitalization in the logistic regression: female sex, non-white ethnicity, diabetes, evaluation of health status as fair, poor or very poor, having set the date of the next consultation, having stopped taking medications, having medication left over and having not requested information about medicines only from health professionals.

In the multivariate analysis, through the logistic regression, for the outcome "admission", the factor associated with greater magnitude was "self-assessment of the health status in relation to other people of the same age as fair, poor or very poor," presenting adjusted OR of 5.3; whereas for the outcome "seeking emergency care" the factor was " high or extreme degree of difficulty in performing work tasks/household chores", with adjusted OR of 2.4.

Table 1. Sociodemographic data, health status and use of health services by users of the Medicine at Home program. Municipality of Rio de Janeiro. 2010.

Indicator/variable	N	Result
Sociodemographic profile		
Age (mean)	547	62.7 years
Female sex	372	68.0%
Ethnicity		
White	190	35.1%
Brown	224	41.3%
Blacks	96	17.7%
Others	32	5.9%
Marital status		
Married	287	52.5%
Single	89	16.3%
Widowed	126	23.0%
Others	45	8.2%
Living alone	55	10.1%
Occupation		
Working (formal or informal market)	164	30.0%
Retired	235	43.0%
Taking care of the house or family	134	24.5%
Others	14	2.5%
Economic class		
A	1	0.2%
B	55	10.0%
C	362	66.2%
D/E	119	21.8%
Health conditions		
Hypertension	526	96.2%
Diabetes	114	20.8%
Knowledge of the diagnosis for more than 5 years	477	87.4%
Self-assessment of health status		
Very good or good	179	33.0%
Fair	329	60.6%
Poor or very poor	35	6.4%
Self-assessment of health status in relation to other people at your age		
Very good or good	219	41.9%
Fair	267	51.1%
Poor or very poor	37	7.1%
Degree of difficulty in performing work/household tasks		
None, mild or fair	471	86.3%
High/extreme	75	13.7%
Aspects related to the use of health services		
You have missed a scheduled consultation at the BHU in the last 6 months	105	19.2%
You have scheduled the date of the next consultation at the BHU	324	61.8%
Satisfied or very satisfied with the pharmacy service	429	78.6%
Indication of exercises by the physician	353	64.5%
Indication of diet by the physician	305	55.8%
Aspects related to the use of medicines		
You usually stop taking your medicines	123	22.5%
DM and AA drugs are usually left over	127	23.2%
Expired drugs/damaged packaging at home	263	48.1%
All medications used for AH/DM were prescribed by prescribers	527	96.3%
You usually ask for information about medicines only for health professionals	339	62.0%
More than 1 year without change in the prescription of medicines for hypertension and/or diabetes	362	73.4%
Having used medications for hypertension or diabetes for more than 5 years	471	86.4%

Table 2. Association between the search for emergency care/hospitalization and different exposure variables in the bivariate analysis among users of the Medicine at Home program. Municipality of Rio de Janeiro. 2010.

Indicator/variable	Category	Total	Have you sought for emergency care?		Have you been hospitalized?	
			%	P value (#)	%	P value(#)
Sociodemographic data						
Sex	Male **	175	19.4%	0.626	2.9%	**0.032***
	Female	372	21.2%		7.5%	
Ethnicity	Non-whites**	352	21.9%	0.343	8.0%	**0.013***
	Whites	190	18.4%		2.6%	
Health conditions						
Diabetes	No **	433	20.1%	0.524	4.8%	**0.024***
	Yes	114	22.8%		10.5%	
Self-assessment of health status	Good/very good **	179	11.7%	<	2.8%	**0.025***
	Fair, poor and very poor	364	25.3%	**0.001***	7.7%	
Self-assessment of health status in relation to other persons of the same age	Good/very good **	219	16.0%	**0.013***	2.7%	**0.004***
	Fair, poor and very poor	304	25.0%		8.9%	
Degree of difficulty in performing work/ household tasks	None, mild or fair **	471	18.0%	< **0.001***	5.3%	**0.070***
	High and extreme	75	37.3%		10.7%	
Time during which the medical prescription for AH/DM is unchanged	> 1 year **	362	18.8%	**0.037***	5.8%	0.899
	£1 year	131	27.5%		6.1%	
Aspects related to the use of health services						
Have you missed a consultation scheduled at the BHU in the last 6 months?	No **	442	18.3%	**0.006***	5.0%	**0.033***
	Yes	105	30.5%		10.5%	
Have you scheduled the date of the next consultation at the BHU?	Yes**	324	21.6%	0.474	7.4%	**0.066***
	No	200	19.0%		3.5%	
Aspects related to the use of medicines						
Do you usually fail in taking your medicines?	No **	424	19.3%	0.157	4.7%	**0.016***
	Yes	123	25.2%		10.6%	
Are the DM and HA drugs usually left over?	No**	419	20.5%	0.858	4.5%	**0.007***
	Yes	127	21.3%		11.0%	
Do you usually ask for information about medicines only for health professionals?	Yes **	339	21.8%	0.388	4.7%	**0.100***
	No	208	18.8%		8.2%	

(*) statistically significant values - $p < 0.1$. (**) reference category. (#) The test performed was the c^2.

Discussion

The sociodemographic profile found in this study is close to that identified by other studies carried out with patients with chronic diseases in Brazil regarding age distribution, with a higher concentration of elderly people[18,19], women[19-21], married people[19] or living together with a family member, belonging to economic classes C, D and E, and not included in the formal or informal labor market[21]. Likewise, the majority of the population with AH and DM in Brazil makes continuous use of medication[22].

Hospitalization due to AH/DM complications was higher among women. These are more attentive to the symptoms, seek a better knowledge of the diseases, express better what they feel and seek more frequently the outpatient health services[23]. Likewise, the literature reports higher rates of hospitalization due to preventable causes among women compared to men[24]. Probably, by seeking more health services, women are ear-

Table 3. Logistic regression between outcome (search for emergency/hospitalization) and exposure variables for users of the Medicine at Home program. Municipality of Rio de Janeiro. 2010.

Indicator/variable	Adjusted OR (95% CI)	P_value
Search for emergency care due to AH/DM-related complications in the 12 months prior to the interview (PTC**:73.7 %)		
Self-assessment of health status as fair, poor or very poor	2.27 (1.28-4.00)	**0.005***
High/extreme degree of difficulty in carrying out work/household tasks	2.41 (1.37-4.26)	**0.002***
Medical prescription for AH/DM unchanged for less than 1 year	1.52 (0.93-2.98)	0.092
Having missed a scheduled consultation at the BHU in the last 6 months	1.80(1.05-3.09)	**0.033***
Hospitalization due to AH/DM-related complications in the 12 months prior to the interview (PTC**: 94.5%)		
Female sex	2.82 (1.01-7.88)	**0.048***
Non-white ethnicity	4.35 (1.39-14.9)	**0.012***
Having diabetes	2.25 (0.96-5.28)	0.061
Self-assessed health status compared to other people at the same age as fair, poor or very poor	5.26 (1.79-14.29)	**0.002***
Having missed a consultation scheduled at the BHU in the last 6 months	2.42 (0.99-5.95)	0.052
Having scheduled the date of the next consultation at the BHU	2.63 (1.02-6.67)	**0.045***
Usually fails to take medicines	2.38 (1.01-5.56)	**0.048***
DM and AH drugs are usually left over	2.27 (0.95-5.56)	0.067
Usually not asking for information about medicines only for health professionals	2.08 (0.94-4.76)	0.072

(*) statistically significant values: $p < 0.05$. (**) PTC: proportion of total classification of the logistic model – Overall. (#) The p-value refers to the adjusted OR = OR_{ad}.

lier diagnosed and referred for hospitalization, although this may result in iatrogenic effect because they are also more subject to avoidable hospitalizations.

Negative self-evaluation of health status and the difficulty in performing work tasks or household chores were statistically significant both with hospitalization and with the search for emergency services. Studies indicate that the way the individual perceives the illness or feels the disease adequately represents their health status and influences the search for care services[25-27]. These data reinforce the importance of medical anamnesis and patient listening.

In the present study, the data were obtained in a cross-sectional survey. Thus, the experience of hospitalization and use of emergency services had occurred in the last 12 months, while the perception of health status was related to the moment of the interview. Our findings suggest that the patients in a more advanced stage of the disease and, therefore, with a worse perception of the health status, did not have, for the most part, such a situation reduced by the experience of hospitalization or emergency care.

Individuals whose medical prescription was unchanged for less than 1 year at the time of the survey also showed a greater search for emergency services, with a statistically significant difference in relation to those with a stable prescription for more than one year. The instability of the therapeutic approach suggests a lack of control of the symptoms related to AH/DM, which may have influenced the search for emergency services. Thus, the variability between prescriptions of hypertensive and diabetic patients may be an easily traceable trait event of disease severity.

The proportion of hospitalization among the individuals with DM was higher, and this difference was statistically significant ($p = 0.024$). Although in the present study we did not explore the reasons for admissions in the interviews, according to Suzuki et al.[28] the highest rate of hospitalization for diabetic patients arises from ineffective glycemic control, associated with the patient and family unpreparedness in relation to the disease. This lack of control contributes to the development of incapacitating complications such as ulcer in the lower limbs, diabetic foot, amputations, diabetic retinopathy, blindness and chronic renal failure leading to prolonged and recurrent hospitalizations, resulting in high bed occupancy[29].

In our study, the mean age was 62.7 years, characterizing an elderly population, thus more susceptible to injuries due to falls, a fact that may

have contributed to the greater proportion of hospitalization of DM patients. Yau et al.[30] have identified that older adults with diabetes have a higher risk of hospitalization for fall-related injuries than the elderly without diabetes.

Compared to hypertension, the treatment of diabetes may be more complex due to aspects such as the great variety of complications resulting from the disease, the use of insulin with the consequent need to handle the glucometer and its inputs and the emotional imbalance[31].

Having missed a scheduled consultation at the BHU in the 6 months prior to the interview was statistically significant both with hospitalization and with the search for emergency services. Systematic review[32] pointed out that the greater continuity of care as well as the number of consultations in primary care is associated with the lower risk of hospitalization due to PCSC, reinforcing the potential effectiveness of this level of care, a finding corroborated by a national study[33]. However, Oliveira[34] found that 57% of individuals with AH and DM who received emergency care in a Brazilian municipality reported receiving follow-up at a basic health unit as well as a visit from the Community Health Worker and the Family Health Strategy Programs. Thus, it is important to stress that the potential effectiveness of care received in primary health care is certainly linked to different factors for its guarantee. Among these, the organization and the accessibility to the services influence the continuity of the care received. Therefore, they may be related to the proportion of hospitalizations due to the primary care- sensitive cause. In a review,van Loenen et al.[35] have found that having care accessibility in the primary care system on a regular and continuous basis seems to be more important to reduce avoidable hospitalizations than how these primary care services are organized. This study also points out that the availability of primary care medical supplies and long-term relationships between physicians and patients reduce hospitalizations for chronic primary care- sensitive conditions.

There was a greater chance of hospitalization among those who reported having scheduled the next medical consultation at the BHU. It is quite plausible that the previous experience of hospitalization, probably caused by a poor evolution of the disease, increases the awareness about it and about the importance of regular care.

The consultation on the use of medicines to unqualified persons and the lower adherence to the drug treatment were associated with the greater hospitalization due to complications of AH and DM.

Problems in adherence to drug therapy are pointed out by several studies as one of the main causes for the lack of control and aggravation of CNCDs[36]. A significant proportion of outpatients have suffered adverse drug events, with several being treatable or preventable. Thus, adequate attention to problems with the use of medicines can prevent both the use of emergency services and hospitalizations[36,37]. In fact, a systematic review showed that the median prevalence of hospital admissions related to these events is 4.3%, of which 59% are preventable[38].

Regarding the limitations, we can mention that this was a cross-sectional study, which has as one of its weaknesses the impossibility of establishing relations of causality. There were questions related to previous experiences and others to situations present at the time of the interview. The reference to previous experiences brings the problem of memory bias. However, we consider that hospitalization and emergency care use in a 12-month period are experiences that are striking enough to be remembered. Our study only addresses patients enrolled in a specific primary care program in the city of Rio de Janeiro at the time, and there was no comparison group. The initial intention of the study was to evaluate the RECASA program. However, the long period of interruption of the program, which turned out to be permanent, made it impossible to verify its specific effects.

Final thoughts

Both questions about the patient's relationship with health professionals and about the rational use of medications were shown to be associated with the search for emergency services/hospitalization by individuals with AH and DM among those enrolled in a basic health care program in Rio de Janeiro.

Therefore, there is the need for actions by both health service professionals and government institutions to prioritize health prevention activities and to address the various care needs of chronic patients and their families, reinforcing the attributes of primary health care. The changes in prescriptions are easily traceable events, so that they show good potential to be used as sentinel indicators of patient evolution, and can subsidize multiprofessional interventions. Likewise, the data of this study point to the need to greater

investment in the promotion of rational use of medicines and in the strengthening of primary health care.

Collaborations

PS Freitas, LVP Mendes and MR Campos participated in the conception and design, writing, analysis of data and revision of article. VL Luiza participated in the writing, analysis of data and revision of article. SR Matta participated in the writing and revision of article. LVP Mendes and SR Matta participated in the orientation of academic work.

Acknowledgements

The authors thank to the Department of Drug Policy and Pharmaceutical Assistance (NAF/ENSP/Fiocruz) for the granting the data, to the Municipal Health Secretariat of Rio de Janeiro for the partnership in the source project and to all staff involved in the realization of the source project.

The source project was funded by the Research Support Foundation of the State of Rio de Janeiro – FAPERJ.

References

1. Malta D, Bernal R, Oliveira M. Tendências dos fatores de risco de doenças crônicas não transmissíveis, segundo a posse de planos de saúde, Brasil, 2008 a 2013. *Cien Saude Colet* 2015; 20(4):1005-1016.
2. Instituto Brasileiro de Geografia e Estatística (IBGE). *Pesquisa Nacional de Saúde 2013 - Percepção do estado de saúde, estilos de vida e doenças crônicas*. Rio de Janeiro: IBGE; 2014.
3. Brasil. Ministério da Saúde (MS). *HIPERDIA - Sistema de Cadastramento e Acompanhamento de Hipertensos e Diabéticos* [Internet]. 2013. [cited 2016 Jul 12]. Available from: http://www2.datasus.gov.br/DATASUS/index.php?area=040304
4. World Health Organization (WHO). *Adherence to long-term therapies: evidence for action*. Geneva: WHO Press; 2003.
5. Broeiro P, Maio L, Ramos V. Polifarmarcoterapia: estratégias de racionalização. *Rev Port Clin Geral* 2008; 24(5):625-631.
6. Barbosa RGB, Lima NKC. Índices de adesão ao tratamento anti-hipertensivo no Brasil e mundo. *Rev Bras Hipertens* 2006; 13(1):35-38.
7. Espinosa García J, Martell Claros N, Llerena Ruiz A, Fernández Bergés Gurrea D. Pharmacological compliance in the treatment of arterial hypertension. A review of studies published between 1975 and 2011. *Semergen* 2012; 38(5):292-300.
8. Feitosa-Filho GS, Lopes RD, Poppi NT, Guimarães HP. Emergências hipertensivas. *Rev Bras Ter Intensiva* 2008; 20(3):305-312.
9. Oliveira DM, Schoeller SD, de Almeida Hammerschmidt KS, de Oliveira Vargas MA, Girondi JBR. Conhecimento da equipe de enfermagem nas complicações do diabetes mellitus em emergência. *Act Paul Enferm* 2014; 27(6):520-525.
10. van Loenen T, van den Berg MJ, Westert GP, Faber MJ. Organizational aspects of primary care related to avoidable hospitalization: a systematic review. *Fam Pract* 2014; 31(5):502-516.
11. Artilheiro MMVSA, Franco SC, Schulz VC, Coelho CC. Quem são e como são tratados os pacientes que internam por diabetes mellitus no SUS? *Saúde Em Debate* [Internet]. 2014 [cited 2016 Jul 12]; 38(101). Available from: http://www.gnresearch.org/doi/10.5935/0103-1104.20140019

12. Luiza VL, Chaves LA, Silva RM, Emmerick ICM, Chaves GC, Fonseca de Araújo SC, Moraes EL, Oxman AD. *Pharmaceutical policies: effects of cap and co-payment on rational use of medicines*. In: Cochrane Database of Systematic Reviews [Internet]. John Wiley & Sons, Ltd; 2015 [cited 2015 May 12]. Available from: http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD007017.pub2/abstract
13. Brasil. Ministério da Saúde (MS). *Plano de ações estratégicas para enfrentamento das Doenças Crônicas Não Transmissíveis (DCNT) no Brasil 2011-2022*. Brasília: MS; 2011.
14. Brasil. Ministério da Saúde (MS). *Diretrizes e recomendações para o cuidado integral de doenças crônicas não transmissíveis: promoção da saúde, vigilância, prevenção e assistência*. Brasília: MS; 2008.
15. Alfradique ME, Bonolo PF, Dourado I, Lima-Costa MF, Macinko J, Mendonça CS, Oliveira VB, Sampaio LFR, Simoni C, Turci MA. Internações por condições sensíveis à atenção primária: a construção da lista brasileira como ferramenta para medir o desempenho do sistema de saúde (Projeto ICSAP – Brasil). *Cad Saude Publica* 2009; 25(6):1337-1349.
16. Mendes LVP, Luiza VL, Campos MR. Uso racional de medicamentos entre indivíduos com diabetes mellitus e hipertensão arterial no município do Rio de Janeiro, Brasil. *Cien Saude Colet* 2014; 19(6):1673-1684.
17. Associação Brasileira de Estudos de Pesquisa (ABEP). *Critério de Classificação Econômica Brasil*. São Paulo: ABEP; 2008.
18. Borges J, Moreira T, Rodrigues M, Oliveira A, Silva D, Santiago L. Hipertensos com complicações cadastrados no HIPERDIA de Fortaleza, Ceará: implicações para a assistência de enfermagem. *Rev Pesqui Cuid É Fundam Online* 2013; 5(4):556-565.
19. Pereira VOM, Acurcio FA, Guerra-Júnior AA, Silva GD, Cherchiglia ML. Perfil de utilização de medicamentos por indivíduos com hipertensão arterial e diabetes mellitus em municípios da Rede Farmácia de Minas Use of medicines by individuals with hypertension. *Cad Saude Publica* 2012; 28(8):1546-1558.
20. Paiva D, Bersusa AAS, Escuder MML. Avaliação da assistência ao paciente com diabetes e/ou hipertensão pelo Programa Saúde da Família do Município de Francisco Morato, São Paulo, Brasil. *Cad Saude Publica* 2006; 22(2):377-385.
21. Cesarino CB, Cipullo JP, Martin JFV, Ciorlia LA, Godoy MRP, Cordeiro JA, Rodrigues IC. Prevalência e fatores sociodemográficos em hipertensos de São José do Rio Preto-SP. *Arq Bras Cardiol* 2008; 91(1):31-35.
22. Costa KS, Tavares NUL, Mengue SS, Pereira MA, Malta DC, Silva Júnior JB. Obtenção de medicamentos para hipertensão e diabetes no Programa Farmácia Popular do Brasil: resultados da Pesquisa Nacional de Saúde, 2013. *Epidemiol e Serviços Saúde* 2016; 25(1):33-44.
23. Barros M, Francisco P, Zanchetta L. Tendências das desigualdades sociais e demográficas na prevalência de doenças crônicas no Brasil, PNAD: 2003-2008. *Cien Saude Colet* 2011; 16(9):3755-3768.
24. Dias-da-Costa JS, Borba LG, Pinho MN, Chatkin M. Qualidade da atenção básica mediante internações evitáveis no Sul do Brasil Quality of primary care as measured by preventable hospitalizations in the South of Brazil. *Cad Saude Publica* 2008; 24(7):1699-1707.
25. Linck CL, Bielemann VLM, Sousa AS, Lange C. Paciente crônico frente ao adoecer e a aderência ao tratamento. *Acta Paul Enferm* 2008; 21(2):317-322.
26. Reis MG, Glashan RQ. Adultos hipertensos hospitalizados: Percepção de gravidade da doença e de qualidade de vida. *Rev Latino-am Enfermagem* 2001; 9(3):51-57.
27. Miranzi SSC, Ferreira FS, Iwamoto HH, Pereira GA, Miranzi MAS. Qualidade de vida de individuos com diabetes mellitus e hipertensão acompanhados por uma equipe de saúde da família. *Texto Contexto Enferm* 2008; 17(4):672-679.
28. Suzuki VF, Carmona EV, Lima MHM. Planejamento da alta hospitalar do paciente diabético: construção de uma proposta. *Rev Esc Enferm USP* 2011; 45(2):527-532.
29. Ochoa-Vigo K, Torquato MTCG, Silvério IAS, Queiroz FA, De-La-Torre-Ugarte-Guanilo MC, Pace AE. Caracterização de pessoas com diabetes em unidades de atenção primária e secundária em relação a fatores desencadeantes do pé diabético. *Acta Paul Enferm* 2006; 19(3):296-303.
30. Yau RK, Strotmeyer ES, Resnick HE, Sellmeyer DE, Feingold KR, Cauley JA, Vittinghoff E, De Rekeneire N, Harris TB, Nevitt MC, Cummings SR, Shorr RI, Schwartz AV. Diabetes and Risk of Hospitalized Fall Injury Among Older Adults. *Diabetes Care* 2013; 36(12):3985-3991.
31. Torres RM, Fernandes JD, Cruz EA. Adesão do portador de diabetes ao tratamento: Revisão Bibliografica. *Rev baiana enferm* 2007; 21(2/3):61-70.
32. Nedel FB, Facchini LA, Martín M, Navarro A. Características da atenção básica associadas ao risco de internar por condições sensíveis à atenção primária: revisão sistemática da literatura. *Epidemiol Serv Saúde* 2010; 19(1):61-75.
33. Elias E, Magajewski F. A Atenção Primária à Saúde no sul de Santa Catarina: uma análise das internações por condições sensíveis à atenção ambulatorial, no período de 1999 a 2004. *Rev Bras Epidemiol* 2008; 11(4):633-647.
34. Oliveira SG. *Caracterização dos pacientes hipertensos e diabéticos atendidos em serviço de urgência e emergência no município de Dourados - MS* [dissertação]. Campo Grande: Fiocruz; 2010.
35. van Loenen T, van den Berg MJ, Westert GP, Faber MJ. Organizational aspects of primary care related to avoidable hospitalization: a systematic review. *Fam Pract* 2014; 31(5):502-516.
36. Santos S, Vasconcelos D. Hospitalização por hipertensão arterial essencial em caráter de urgência no Brasil, 2008-1012. *Rev Ciênc Méd Biol* 2013; 12(n. esp.):465-471.
37. Santos F, Lima W, Santos A. Hospitalização por diabetes em adultos e idosos no Ceará, 2001-2012. *Epidemiol Serv Saúde* 2014; 23(4):655-663.
38. Winterstein AG, Sauer BC, Hepler CD, Poole C. Preventable drug-related hospital admissions. *Ann Pharmacother* 2002; 36(7-8):1238-48.

Article submitted 04/12/2015
Approved 16/08/2016
Final version submitted 18/08/2016