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PREVALENCE OF SYSTEMIC ARTERIAL HYPERTENSION AND DIABETES *MELLITUS* SELF-REPORTED BY ELDERLY

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ABSTRACT

The aim of this study was to describe the prevalence of systemic arterial hypertension and diabetes *mellitus* self-reported by elderly residing in an urban area of a municipality in the northwestern region of the State of Rio Grande do Sul/Brazil. A population-based cross-sectional study, with 424 elderly, with the application of a questionnaire containing socio-economic, demographic and behavioral variables, morbidities, use of medicaments and health services, and functional capacity evaluation. The prevalence of systemic arterial hypertension and diabetes *mellitus* was 67.5% and 20.5% respectively, being that 79.3% of the elderly self-reported both. It was verified that increased pressoric levels and perception of regular or bad health presented statistically significant differences between hypertensive and diabetic patients. The occurrence of arterial hypertension and diabetes *mellitus* among elderly has been kept unchanged, maybe for the lack of effectiveness or insufficiency of health programs intended to this population. This indicates the need to re-evaluate the offer and access to public health services to elderly, and also the incentive of actions for health promotion and aggravation prevention.

INTRODUCTION

The aging process must be understood as a universal phenomenon with biological, psychological, and social repercussions (Schimidt and Silva, 2012). Biologically the organism decreases the functional capacity, occurring the overload of the homeostatic control mechanisms, which start serving as a physiological substrate for diseases. The neuropsychic skills that suffer decline with age are working memory, thought speed, and visuo-spatial skills (Moraes *et al*, 2010; Schimidt and Silva, 2012; Moraes, 2012). In psychological terms there are significant modifications, inasmuch as more than 20% of people aged 60 or more suffer

from some mental or neural disorder, and 6.6% of the incapacities of this age group are attributed to mental and nervous system disorders. These disorders represent in the elderly population 17.4% of the years lived with incapacities. Demence and depression are the most common neuropsychiatric disorders in this age group (OMS, 2016). From the social standpoint a great part of the elderly can be considered to be socially vulnerable, for living in risk situations for lack of personal, economic, familiar, and communitary resources and of access to the public protection policies of the State (Guerrero and Yépez, 2015). The non-transmissible chronic diseases (NTCD) represent the main

cause of morbimortality worldwide, being responsible for around 80% of the deaths in low- or medium-income countries, corresponding to more than 70% of the death causes in Brazil, and for the high demand for health services utilization, due to the continuing need for health promotion actions, aggravation prevention and care for clinic condition (OMS, 2002; Brasil, 2013, Piccini *et al.*, 2012). Among the NTCDs which occur with greater prevalence in the elderly population, the highlight falls on the systemic arterial hypertension (SAH), which hits, on average, 50.7% of the elderly, and diabetes *Mellitus* (DM), with prevalence of around 19% in elderly (Brasil, 2013; Mello *et al.*, 2016). SAH characterizes itself for being a multifactorial clinic condition, with high and sustained levels of arterial pressure above 140 mmHg in the systolic one and 90 mmHg in the diastolic one. Its main intrinsic risk factors are heredity, sex, age, and race; and its extrinsic factors are related to smoking, sedentarism, obesity, stress, dyslipidemia, and diet (Malachias *et al.*, 2016). Although SAH hits any age group, its greatest incidence is in the elderly population, since in a study carried out with data from Vigilância de Fatores de Risco e Proteção para Doenças Crônicas por Inquérito Telefônico (VIGITEL) (Surveillance for Risk Factors and Protection for Chronic Diseases by Telephone Inquiry), in the period from 2006 to 2014, it was verified that in adults from 18 to 29 years old the index was 2.8%, whereas in the age group from 60 to 64 years old, 44.4%; from 65 to 74 years old, 52.7%; and $\geq$ 75 anos, 55% (Malachias *et al.*, 2016). The prevalence is also greater in elderly, having in mind the greater life expectancy of the Brazilian population, female sex, reduced schooling, and ingestion of alcoholic drinks (Malachias *et al.*, 2016). DM is a multiple etyology syndrome, caused by an interaction of genetic and environemental factors, and it caracterizes itself by defects in the insulin action and secretion and in the regulation of the hepatic glucose production. Among the associated environmental factors are sedentarism, fat-rich diets, aging, and female sex (Oliveira and Vencio, 2016).

In Brazil, the progressive increase of prevalence of SAH and DM, between 1998-2008, was from 1.7% to 2.8%, being statistically significant (Freitas and Garcia, 2012). It is highlighted that the concurring diagnosis of both pathologies is frequent, which increases the complexity of the consequences and disablements in the subject's life. Studies make evident that SAH and DM associate themselves with functional disablement in elderly, understood as having limitations for carrying out the activities of daily life, as for example, dressing oneself, feeding oneself, hygienizing oneself, with direct implications for the family, the community, and for the quality of life of the elderly person him- or helself, besides entailing greater expenditures in the health system, since the disablement causes greater vulnlerability and dependence (Guedes *et al*, 2013; Barbosa *et al.*, 2014). In this context, the aim of this study was to describe the prevalence of self-reported systemic arterial hypertension and diabetes *mellitus* in elderly in an urban area of a municipality in the northwestern region of the State of Rio Grande do Sul/Brazil.

MATERIALS AND METHODS

A population-based cross-sectional study was performed with a sample of elderly aged 60 or more, residing in the urban area of the municipality Palmeira das Missões, northwestern region of the State of Rio Grande do Sul. It deals with a fragment of the project "Prevalence of chronic diseases in the elderly population of a municipality of the State of Rio Grande do Sul" which tried to identify the prevalence of cancer, systemic arterial hypertension, diabetes mellitus, depression, and the functional capacity in elderly residing in the urban area of a municipality in the northwest of the State of Rio Grande do Sul/Brasil. To investigate the systemic arterial hypertension one estimated a prevalence of 50.7%, for diabetes *mellitus* 18.0%, both with an error of 0.5 percentage point, obtaining a sample of 385 elderly and 225 elderly respectively. For both one adopted the trust level of 95% and power of 80%, adding 10% for losses, the greatest necessary sample being of 424 elderly. The representative sample of elderly residing in urban areas was localized through a sample process, considering 42 census sectors and the domicilies, utilizing the offical mesh of the Population Census of the year 2010 (Brazil, 2013). The domicilies were selected according to the proportionate distribution of elderly, following a systematic "jump" of 10 domiciles in the sector with a random start, expecting to find between 3 to 16 elderly by sector, depending on the total forseen for each census sector. All elderly residing in the domicilies were eligible for the interviews. The data were collected in the domicilies between April and July of 2016, by five previously trained female interviewers, through the application of a standardized and pre-tested questionnaire, containing sócio-economic, demographic, and behavioral variables, anthropometric data, reported morbidities, utilization of medicaments, utilization of health services, health self-perception, and functional capacity. After the data collection, one proceeded to the coding, typing in the program Excel® and database cleaning. The denouements were obtained through a direct question, with a dichotomic response (yes or no): "Do you have high pressure?" and "Do you have diabetes or high sugar in the blood?".

The other variables considered were: age (60 to 70 / 70 to 80 / 80 or more), sex (male / female), skin color (White / grayish-brown or black), knows how to read and write (no / yes), schooling (0 to 4 / 5 to 8 / 9 or mor), marital situation (married / widow / single or separated), retired or pensioner (no / yes), paid work (no / yes), number of people who live in the domicile (lives alone / with 1 person / with 2 or more people), monthly family income in minimum wages (<2 / 2-4 / 4 or more), uso of tobacco (never smoked / already smoked but stopped / smokes), use of alcoholic drink (no / yes), IMC (not overweight - BMI < 25 / overweight - BMI > 25), pressoric level (normal - AP$\leq$ 130/70mmHg / aumentado - AP $\geq$ 140/90 mmHg), health perception (excelent or very good / good / regular or bad), diagnosis time for SAH and DM in years ($\leq$ 10 / 11 to 20 / > 20), number of medical appointments due to SAH and DM in the last 6 months (0 / 1 / 2 / $\geq$ 3), appointment place in the last three months (basic health unit / hospital / private office), number of appointments with the same doctor (0 / 1 / 2 / $\geq$ 3), the appointment was scheduled (no / yes), waiting time between the scheduling and the appointment day in days (<7 / 7 to 30 / > 30), number of hospital addmissions in the last year due to SAH and DM (0 / 1/ $\geq$ 2), uses medicament for SAH and DM (no / yes), medicaments for SAH (antihypertensives / diuretics), medicaments for DM oral hypoglycemiant / injectable hypoglycemiant / oral hypoglycemiant combined with an injectable one), uses other forms of treatment for SAH and DM (no / yes), other forms of treatment for SAH and DM (diet / tea / physical exercise), attends groups for hypertensive and diabetic people (no / yes) and got a domicilie visit from some health professional (no / yes).

The functional capacity for performing the Daily Life Activities (DLAs) was evaluated by using the Portuguese version of the Barthel Index, which measures the degree of assistance required by a subject in 10 items, namely: feeding oneself, bathing oneself, combing oneself or cutting one's toenails, dressing oneself, controlling the urinary sphincter, controlling the intestinal sphincer, using the toilet, lying on/getting up from a bed or chair, going up a flight of stairs, walking on a flat surface (Mahoney and Barthel, 1965). Each item is given points according to the subject's performance independently, with some help or dependently. These items were summed up, reaching from 0 to 100 points. A total of 0-20 indicates total dependence; 21-60, serious dependence; 61-90, moderate dependence; 91-99, very light dependence, and 100, independence (Azeredo and Matos, 2003). All the analyses were carried out with the Software SPSS (Statistical Package for Social Sciences) 11.0 and included the calculus for proportions and the chi-square tests for linear tendency with the significance level of p<0.05. The present study was financed by the Fundo de Incentivo à Pesquisa (FIPE) (Research Incentive Fund), from Universidade Federal de Santa Maria. The research followed the standard established by the Norms and Guidelines Regulating the Research Involving Human Beings – Resolution from the National Health Council Nº 466/12 and approved by the Ethics and Research Committee from Universidade Federal de Santa Maria, with number 1.479.784 from April 6th, 2016.

RESULTS

424 elderly took part in the study, with predominance of the female sex (65,6%), aged between 60 and 70 years (45.3%), with average age of 72.2 years (dp±8,5), white skin color (68.6%%). Most elderly know how to read and write (88.4%), 14.4% attended school for nine years or more and 50.2% of the elderly reported being married or living with a partner (Table 1). Out of the interviewees, 89.9% were retired or pensioners, and 11.8% mentioned still having a professional activity. Around a fifth of the elderly lives alone (18.4%), and 59.4% of the sample reported a monthly family income from two to four minimum wages (Table 1). Out of the participants, 14.4% of the elderly reported smoking, 62.0% are overweight, 41.3% have an increased pressoric level ≥140/90mmHg, 48.3% of the elderly considered their health to be regular/bad, and 23.8% have some degree of functional dependence (Table 2). The prevalence of SAH and DM was 67.5% and 20.7%, respectively. Most elderly (79.3%) reported a medical diagnosis for both morbidities (Table 2). For the elderly diagnosed with SAH, greater proportions were observed among women, aged between 60 and 70 years, widows, those who have never smoked, overweight, with an increased pressoric level, with regular/bad health perception with statistically significant differences. For DM these diferences were observed only among the elderly with an increased pressoric level, with regular/bad health perception and with some degree of dependence (Table 2).

Table 1. Description of the sample and characterization of the self-reported morbidities (systemic arterial hypertension and diabetes *mellitus*) according to the elderly's socio-economic variables. Rio Grande do Sul/Brazil, 2016

Characteristics	n (%)	SAH		DM	
		n (%)	p-value	n (%)	p-value
Sex			0,003		0,792
Male	146(34,4)	85(58,2)		31(21,2)	
Female	278(65,6)	201(72,3)		56(20,1)	
Skin color			0,407		0,738
White	291(68,6)	200(68,7)		61(21,0)	
Grayish-brown/black	133(31,4)	86(64,7)		26(19,5)	
Age			0,038		0,307
60|-----70	192(45,3)	116(60,4)		42(21,9)	
70|-----80	139(32,8)	105(75,5)		30(21,6)	
80 or more	93(21,9)	65(69,9)		15(16,1)	
Knows how to read and write	**375(88,4)**	**251(66,9)**		**79(21,1)**	
Schooling			0,397		0,730
0 to 4 years	236(55,7)	160(67,8)		46(19,5)	
5 to 8 years	127(30)	90(70,9)		33(26,0)	
9 years or more	61(14,4)	36(59,0)		8(13,1)	
Marital situation			0,001		0,448
Married	213(50,2)	146(68,5)		48(22,5)	
Widow	146(34,4)	110(75,3)		25(17,1)	
Single/separated	65(15,3)	30(46,2)		14(21,5)	
Retired/pensioner	**381(89,9)**	**260(68,2)**		**81(21,3)**	
Paid work	**50(11,8)**	**33(66,0)**		**10(20,0)**	
Nº of people in the domicile			0,831		0,359
Lives alone	78(18,4)	52(66,7)		13(16,7)	
With 1 person	212(50,0)	143(67,5)		44(20,8)	
With 2 or more people	134(31,6)	91 (72,0)		30(22,0)	
Monthly family income			0,839		0,720
<2 minimum wages	114(26,9)	77(67,5)		21(18,4)	
2 an 4 minimum wages	252(59,4)	171(67,9)		55(21,8)	
4 or + minimum wages	58(13,7)	38(65,5)		11(19,0)	
Total	**424(100)**	**286(67,5)**		**87 (20,5)**	

Chi-square test -

*From 1 to 4 elderly did not take part in these questions, due to physical and cognitive debility and/or did not agree with responding.

** Minimum wage in dollars = US$ 289,00.

Table 2. Description of the sample and characterization of the self-reported morbidities (systemic arterial hypertension and diabetes *mellitus*) according to the elderly's behavioral variables, anthropometric data, pressoric level, health perception, and functional capacity. Rio Grande do Sul/Brazil, 2016

Characteristics	n (%)	SAH		DM	
		n (%)	p-value	n (%)	p-value
Use of tobacco			0,001		0,091
Never smoked	215(50,7)	162(75,3)		38(17,7)	
Already smoked	148(34,9)	92(62,2)		39(26,4,)	
Smokes	61(14,4)	32(52,5)		10(16,4)	
BMI		*	0,001	*	0,260
Not overweight	157(37,0)	86(54,8)		28(17,8)	
Overweight	263(62,0)	196(74,5)		59(22,4)	
Pressoric level		*	0,001	*	0,001
Normal	245(57,8)	137(55,9)		36(14,7)	
High	175(41,3)	146(83,4)		49(28,0)	
Health perception			0,001		0,002
Excellent/very good	44(10,4)	20(45,5)		5(11,4)	
Good	174(41,0)	110(63,2)		25(14,4)	
Regular/bad	205(48,3)	155(75,6)		57(27,8)	
Functional capacity			0,346		0,019
Partial dependence	101(23,8)	72(71,3)		29(28,7)	
Independent	323(76,2)	214(66,3)		58(18,0)	
Total	424(100)	286(67,5)		87 (20,5)	

Chi-square test

*From 1 to 4 elderly did not take part in these questions, due to physical and cognitive debility and/or did not agree with responding.

Table 3. Characteristics of the use of health services according to elderly's self-reported morbidities (systemic arterial hypertension and diabetes *mellitus*). Rio Grande do Sul/Brazil, 2016

Characteristics	HAS	DM
	n (%)	n (%)
Time of diagnosis	*	*
10 years or less	162(59,1)	65(79,3)
From 11 t0 20 years	66(24,1)	13(15,9)
More than 20 years	46(16,8)	4(4,9)
N° of medical appointment<6 months	*	
None	95(33,5)	23(26,4)
Once	123(43,3)	32(36,8)
Twice	27(9,5)	18(20,7)
Three times or more	39(13,7)	14(16,1)
Appointment place	*	*
Basic Health Unit	114(60,6)	51(79,7)
Hospital	10(5,3)	2(3,1)
Private office	64(34,0)	11(17,2)
Number of appointments	*	*
None	95(33,5)	-
Once	133(46,8)	39(91,9)
Twice	26(9,2)	12(19,0)
Three times or more	30(10,6)	12(19,0)
The appointment was scheduled	124(62,3)	34(53,1)
Time between scheduling and the appointment	*	*
Less than 7 days	86(72,3)	11(35,5)
From 7 to 30 days	29(24,4)	19(61,3)
More than 30 days	4(3,4)	1(3,2)
Uses medicaments	279(97,6)	81(93,1)
Medicaments used for SAH		
Oral hypertensive	267(95,0)	-
Diuretic	131(46,6)	-
Medicaments used for DM		*
Oral hypoglycemiant	-	61(77,3)
Injectable hypoglycemiant (insulin)	-	11(13,9)
Oral hypoglycemiant combined with an injectable one	-	7(8,9)
Uses other treatments	56(19,6)	27(31,0)
Other forms used	*	
Diet	5(9,3)	7(25,9)
Tea/lemon	48(88,9)	20(74,1)
Physical exercise	1(1,9)	-
N° of hospital admissions in the last two years	*	*
None	217(78,9)	65(77,4)
Once	39(14,2)	12(14,3)
Twice or more	19(6,9)	7(8,3)
Attends groups	11(3,8)	10(11,5)
Got a visit from a health professional in the last 3 months	143(50)	39(44,8)
Total	286(100)	87 (100)

*From 1 to 12 of the elderly did not respond due to cognitive difficulty or did not agree with responding.

Table 4. Pressoric level according to the use of medicaments in elderly. Rio Grande do Sul/Brazil, 2016

	Nivel pressórico no dia da entrevista		
	Normal (≤130/70mmHg)	Elevado (≥140/90mmHg)	Total
	n (%)	n (%)	n (%)
Medicamentos			
Anti-hipertensivo	143(50,9)	138 (49,1)	281 (100)
Diurético	71(50,7)	69(49,3)	140(100)

For most elderly with SAH (59.1%) the diagnosis of the disease is less than 10 years' time, and 16.8% have had this pathology for more than 20 years. When asked about the medical appointments for SAH, 43.3% of them mentioned having sought medical care once in the last six months. The medical appointments were carried out mostly at a basic health unit (60.6%), 62.3% of the appointments were scheduled and the waiting time between the scheduling and the appointment's date was less than 7 days for 72.3% of the appointments scheduled for SAH. Concerning the medicament treatment, 97.6% of the elderly make continuing use of medicaments, and 2.4%, even diagnosed with the pathology, reported not using medication. Among the medications, the antihypertensives (95.0%) were the most used ones by the elderly, and out of these, 46.6% use diuretics. Other forms of tretament for SAH are used by 19.6% of the elderly, in which 88.9% of these make use of teas and lemon. 78.8% of the elderly reported that they have not been admitted to hospital because of SAH in the last two years. 50% of the elderly diagnosed with this pathology received a routine domicile visit by a health professional. Only 3.8% reported taking part in SAH-related health education group. Among the elderly with DM, (79.3%) have had a diagnosis of this pathology for less than 10 years. Out of these, 36.8% have sought the medical professional once in the course of the last six months for an appointment due to DM. The medical appointments were mostly at the basic health unit, 79.7%; 53.1% of them needed to be scheduled; the period between the scheduling and the appointment for 61.3% of the elderly was from 7 to 30 days. As for the use of medicaments, 93.1% of the interviewees reported making use of them. The oral hypoglycemiants are used by 77.3% of the elderly diagnosed with DM, 13.9% make use of insulin and 8.9% use oral hypoglycemiants combined with injectable ones. Other forms of treating DM were mentioned by 31% of the elderly, in which the teas are the most used ones. Concerning hospital admission due to DM, 77.4% of the elderly reported not having been admitted to a hospital in the last two years. A percentage of 11.5% attended health education groups for elderly with DM. At least one health professional paid a domicilie visit to 44.8% of the interviewed elderly who had DM. It is worth highlighting that the waiting time between the scheduling and the occurrence of the medical appointment for around 3% of the elderly is superior to 30 days, regardless of the pathology he or she has. One also identifies that at least 1/5 of the elderly who have SAH and/or diabetes *mellitus* have not been admitted to a hospital in the last two years. Around half of the elderly used to make use of a medicament to reduce the arterial pressure, and even so they had high pressoric values (≥140/90mmHg) (Table 4).

DISCUSSION

The aim of this work was to verify the prevalence of systemic arterial hypertension and diabetes *mellitus* self-reported by elderly residing in an urban area of a municipality in the northwestern region of the State of Rio Grande do Sul/Brazil. This way, one indicated as positive points for carrying out the work the fact that it is a study carried out in a small-sized municipality, primary data collection, and low non-response rate. The prevalence of systemic arterial hypertension and diabetes mellitus among elderly was 67.5% and 20.7%, respectively. SAH-related results of this research are similar to those observed in the study carried out in the State of Mato Grosso/Brazil, which found a prevalence of SAH of 67.4% and, likewise, in the investigation performed in Florianópolis/

Brazil, in which 84.6% of the elderly residing in the community had high arterial pressure (Esperandia, 2013; Zattar *et al.* 2013). A study carried out in the diferent geographical regions of Brazil, between the years 2006 and 2010, shows that the prevalence of SAH was higher than 55% in the elderly population, a percentage higher than the one found in the developed countries (Mendes *et al*, 2014). Thus, one can infer that the prevalences found can be related to the social, economic, and cultural contexts. The elderly's profile was similar to the one described in researches carried out in Brazil and Portugal (Oliveira Neto, *et al.*, 2014; Menezes *et al*, 2014; Zattar *et al.*, 2013). A great part of the elderly was of the female sex, married, retired, although most of them knew how to read and write, they attended the formal education for less than four years. This datum is relevant since the reduced schooling seems to favor the low adhesion or abandonment of the follow-up and treatment of the health conditions. Around one fifth of the elderly lives alone, which can indicate some disadvantage when needing support and help for daily activities. This is so because the presence of a partner or companion and/or descendants, linked to the greater social involvement, are indicators of better functionality, better psychological health and a less expensive resource transfer flow for the elderly person (Rabelo and Neri, 2015). The high prevalence of elderly who have never smoked or who have already smoked is similar to those found in the study carried out by Zattar, *et al.* (2013), 60.0% and 30.7%, respectively. Although the percentage of smokers is slow, the habit of consuming tobacco constitutes a risk fator for chronic diseases.

Another risk fator associated with SAH and DM is excess weight, a reality for 62.0% of the elderly interviewed a proportion higher than the one observed in the study carried out by Lima and Duarte (2013), which identified 56.0% of excess weight. The behavioral habits, although constitue risk factors, are subject to interventions, and there can be actions for prevention, promotion, and re-habilitation of health. A study about the consumption of salt, sugar, and fats by adults points out that healthy nourishment is widely recognized as an important strategy for promotion of health and constitutes a fundamental part of the non-pharmacology therapy for several health aggravations. Thus, the ingestion of little fat (38%), followed by reduced consumption of salt (36%) and sugar (29%) were more prevalent orientations given to this population (Silva *et al.*, 2013). Out of the elderly interviewed, 57.8% had their pressoric levels with values between ≤130/70 mmHg at the time of the gauging. However, what draws the attention is that 41.3% presented high arterial pressure, that is, with levels ≥140/90 mmHg, although they mentioned that they were adherent to the antihypertensive drug treatment. A research carried out to verify the arterial pressure and the socio-economic profile of elderly served in a family health strategy, found a similar result, in which 40.2% of the elderly had high pressure (Oliveira Neto *et al*, 2014). It can be observed that around half of the elderly investigated keep their pressoric level increased (≥140/90mmHg) even making use of antihypertensive medicaments and diuretics. This can be associated with other factors that contribute to the arterial pressure elevation. In this perspective, the World Health Organization preaches that the adhesion to the treatment contemplates aspects related to the person's behavior, that is, if he or she ingests the medicament, if he or she follows the diet, and if he or she makes changes in his or her lifestyle, and if he or she corresponds to the recommendations agreed upon with the health professional (OMS, 2004).

It is worth highlighting that, concerning SAH, factors like reduced knowledge about the disease and motivation to treat a chronic disease; the low socio-economic level; cultural aspects; reduced self-esteem; ineffective relationship with the health team; being served for a long time; difficulties in accessing the health services; cost of medicaments and their undesirable effects interfere with the adhesion to the treatment (Silva *et al.*, 2008). Data from the Brazilian Guidelines for Arterial Hypertension show that SAH is present in elderly aged between 60 and 64 years in a percentage of 44.4%; among those who are in the age group of 65 to 74, 52.7%; and in the subjects aged ≥ 75 the index reaches 55%. Also, there is a relation between the increase in life expectancy of the Brazilian population and the increase of elderly during the last decade, making a direct and linear association between aging and prevalence of SAH (Malachias *et al.*, 2016). Although 76.2% of the elderly interviewed are independent, the perception that they had about their health draws the attention, for 48.3% of them considers it to be regular/bad. These data diverge from another research that found that 51.2% of the elderly had good or very good perception of their health (Zattar *et al.*, 2013). The prevalence of SAH in elderly of the female sex was significantly greater than in those of the male sex. A result similar to the one of other studies (Zattar *et al.*, 2013; Nunes, 2015; Mendes *et al*, 2014; Andrade, 2014). This can be associated with women's behavior, since they seek health services more often than men, which favors the obtention of SAH diagnosis (Borim; Guariento and Almeida, 2011). Consequently, the female subjects often get the hypertension diagnosis after more serious clinic events related to heart diseases, which puts them in a situation of greater risk. A study carried out in Ceará with the aim of verifying the association between the adhesion to the antihypertensive treatment and types of cardiovascular complications present in people with systemic arterial hypertension found greater prevalence of more serious complications, as cerebral vascular accident and acute myocardial infarction, in men, and this can be related to their abrupt incidence and to the fact that this population seeks health services less often. Moreover, men often do not carry out the necessary therapeutic follow-ups, becoming more exposed to the occurrence of cardiovascular events (Lima *et al.*, 2016).

As for the prevalence of DM (20.5%), this datum is higher than the results found in studies carried out in São Paulo and Paraíba, 17.6% and 14.7% respectively (Stopa, 2014; Menezes *et al.*, 2014). Moreover, one verifeid a relation between the variables elderly with DM and SAH, since 79.3% of the diabetic elderly also have hypertension. Concerning behavioral habits, one identified that in this study the use of tobacco did not associate itself with hypertension, as opposed to DM, for which one found prevalence of elderly who have already made use of tobacco. It is worth highlighting that smoking is responsible for 71% of the cases of lung cancer, 42% of the cases of chronic respiratory disease, and almost 10% of the cases of cardiovascular diseases. This is considered to be one of the modifiable risk factors for development of chronbic diseases (Duncan *et al.*, 2012; Schmidt *et al*, 2011). A research shows a strong association of the main NTCDs with highly prevalent risk factors, highlighting smoking, abusive alchohol consumption, excess weight, high cholesterol levels, low fruit and vegetable consumption, and sedentarism (Brasil, 2013). In this study, excess weight and high arterial pressure were expressive in elderly with SAH and DM, being consistent with other studies (Mendes *et al*, 2014; Zattar *et al*, 2013; Andrade

et al., 2014). The nourishment standards adopted in the last decades can be harmful in many ways. Thus, excessive salt consumption increases the risk of hypertension and cardiovascular events, and high ingestion of red and/or processed meat and trans fatty acid is related to cardiovascular diseases and diabetes (Duncan *et al.*, 2012). SAH and DM are among the chronic diseases that constitue a risk factor for development of functional incapacity in elderly. For Barbosa *et al.* (2014), regardless of other variables, diabetes mellitus, cerebral vascular accident and heart diseases are associated with dependence for the basic activities of daily life. On their turn, subjects diagnosed with SAH and/or DM often have some degree of functional dependence (Guedes *et al.*, 2013).

The high prevalence of SAH and DM in the elderly population alerts for the need for health actions intended to early prevention and diagnosis, besides control of the pressoric levels and their co-morbidities, which are fundamental to ensure the quality of life (Nunes *et al.*, 2015; Morais *et al.*, 2015). It was observed, in this study, that the diagnosis knowledge time is up to ten years, both for SAH and DM. It is similar to those of the research carried out in Novo Hamburgo with members of the Hiperdia Program, in which the diagnosis time for SAH was from 9 to 14 years (Souza *et al.*, 2014).

The population aging in developing countries, like Brazil, produces a direct impact on health services, for, with the increase in chronic diseases, the search for health care grows every year. It was observed, in this study, that most elderly have sought medical care at least once in the last six months. Data found in a nation-wide research demonstrate that, in relation to hypertensive and diabetic erlderly, 10.6% of the population studied has not consulted a doctor in the period considered in the last 12 months, being that the prevalence was greater among hypertensive patients, 10.5%, than among diabetic patients, 7.1%. The absence of a medical appointment was negatively associated with the female sex and with age increaseaa (Ferreira *et al*, 2015). The appointments, both for SAH and DM, were scheduled and the waiting time up to the scheduled date for SAH was smaller, as compared to the waiting time for appointments of elderly who had DM. The use of antihypertensive medications has as main objective the reduction of cardiovascular morbimortality. One of the main difficulties faced by elderly is to be able to adhere adequately to the pharmacological treatment. In a recent study with hypertensive elderly in eight ESFs (Family Health Team) in Dourados/MS, it was observed that 31.5% of the elderly interviewed adhered to the treatment. The adhesion was statistically significant only among the elderly aged 71 or more. It is highlighted that, out of the elderly who lived accompanied, 29.0% adhered to the medicaments; and out of those who lived alone, (9.2%) kept themselves under treatment (Aiolfi *et al.*, 2015). In our study the pharmacological treatment abandonment and the discontinuity in following it can be observed in 2.4% of the elderly with SAH and 6.9% of the elderly who had diabetes. Often, denying the disease or even resisting the health professionals' orientations is the way found by the subject not to accept the condition of being a chronic sick person. The acceptance of the treatment is fundamental for handling the different health situations and for developing control and care actions (Bezerra *et al*, 2014). The routinary use of oral hypoglycemiants was the most reported habit in a study carried out through domicilie inquiry in the city of São Paulo (Stopa *et al.*, 2014). A datum similar to this study, in which the use of oral hypoglycemiants was reported by 77.3% of the elderly and 13.9% use insulin for DM

treatment. Besides the pharmacological therapy, the utilization of non-medicament care is indispensable, being that tea and lemon juice are the most used ones by the elderly interviewed, followed by diet care. Although 77.3% of the elderly reported not having been admitted to hospitals in the last two years, the hospital admission of elderly with SAH and DM is often recurring and is associated with the high indices of complications and incapacities that they cause in the subject's life, as well as the economic impact that the hospital admissions represent for public health. In a research with the aim of investigating the tendences of hospital admissions due to diabetes *mellitus* among adults and elderly residing in the State of Ceará/Brazil, in the period of 2001-2012, Santos *et al*, (2014) verified the prevalence of the female sex, 58.4%. It became evident in its results that, as age increased, there were greater hospital admission rates. Although DM is found in all the population, it is predominant among the elderly, and that means greater concerns in this age group, aiming to avoid acute cases associated with this pathology. Even existing the Hiperdia Program, intended to the registration and follow-up of subjects with hypertension and/or diabetes served in the ambulatory network of the Sistema Único de Saúde (Publicly funded health care system), it can be observed that the elderly do not attend groups for hypertensive and/or diabecit patiens. However, around 50% of them have gotten a visit from a health professional in the last three months, many times routine visits by Community Health Agents (CHA).

Conclusion

In the face of the current situation, chronic diseases as diabetes and systemic arterial hypertension constitute a public health problem in Brazil. Studies about these diseases are important, since they can serve as subsidies for strategies and applicability of public policies and in the actions for health promotion and prevention among the elderly population. Moreover, it is worth highlighting that this study refers to a small-sized town, considering that most available data deal with urban centers and, sometimes, orient actions that are not in agreement with the local reality. The identification of risk factors, the treatment and follow-up of NTCDs constitute fundamental elements for providing qualified and resolutive health care. Thus, the prevention and monitoring of the modifiable risk factors become tools in the promotion of actions in the area of health. In the present study, systemic arterial hypertension and diabetes mellitus presented high prevalence in the elderly investigated. When analyzed the prevalence of SAH in elderly, it was identified that sex, marital situation, tobacco consumption, BMI, pressoric level, and health perception associated themselves significantly with hypertension (p<0.05). The same way, the last two variables were observed and associated, also, with DM. It was also observed that most elderly who had DM also had associated DM, and that a great part of them adheres to the pharmacologial treatment, although not presenting changed pressoric levels. This requires attention by health professionals, in the sense of implementing actions that can modify other factors, behavioral and environmental, for example, aiming to reduce the percentage of elderly who keep their pressoric levels high. It was identified that elderly seek health services to solve SAH- and DM-related issues.

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