Self-care and cardiometabolic risk in people with high arterial pressure following primary care

Autocuidado e risco cardiometabólico em pessoas com hipertensão arterial em seguimento na atenção primária

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ABSTRACT

Self-care and cardiometabolic risk in people with arterial hypertension undergoing regular clinical follow-up in primary health care is evaluated. Current exploratory study was conducted among people with hypertension in the interior of the state of São Paulo, Brazil, through the application of the Brazilian versions of the Hypertension Self-Care Scale and the Framingham Cardiometabolic Risk Score. Participants demonstrated satisfactory levels of Confidence (71.3 (14.7)) and unsatisfactory levels for Self-Care Maintenance (59.2 (14.5)) and Management (55.1 (20.3)) domains of the Scale Self-care; and a 34.6% chance of developing acute myocardial infarction in the next 10 years. The youngest individuals had satisfactory levels of confidence in relation to the management of self-care, A higher cardiometabolic risk was reported among people with diabetes and angina. No significant associations were found between the other variables. Individuals have confidence, but demonstrate inadequate Self-Care Management and Maintenance, whilst younger people have better self-care management.

Keywords: Self-care. Nursing. Hypertension. Surveys and questionnaires.

RESUMO

Avaliar o autocuidado e o risco cardiometabólico em pessoas com hipertensão arterial (HA) em seguimento clínico regular na atenção primária à saúde. Estudo analítico e transversal, conduzido entre 86 pessoas com HA no interior do Estado de São Paulo, por meio da aplicação das versões Brasileiras da Escala de Autocuidado de Hipertensão e do escore de risco cardiometabólico de Framingham. Os participantes demonstraram níveis satisfatórios de confiança (71,3(14,7)) e níveis insatisfatórios para Manutenção (59,2(14,5)) e Manejo (55,1(20,3)) do Autocuidado, na Escala de Autocuidado; e 34,6% de chance de desenvolver infarto agudo do miocárdio nos próximos 10 anos. Os indivíduos com menor idade apresentaram níveis de confiança satisfatórios em relação ao manejo do autocuidado; e maior risco cardiometabólico foi observado entre pessoas com diabetes e angina. Os indivíduos possuem Confiança, mas demonstram inadequados Manejo e Manutenção do comportamento de Autocuidado e quanto menor idade melhor manejo do autocuidado.

Palavras-chave: Autocuidado. Enfermagem. Hipertensão. Inquéritos e questionários.

INTRODUCTION

Arterial Hypertension (AH), defined as a multi-factor condition characterized by high pressure rates at ≥140 and/or ≥90 mmHg, is a major risk factor for the development of cardiovascular diseases (CVDs) and encephalic vascular accident (EVA)[1, 2].

Since AH is normally asymptomatic, lack of adhesion to treatment, or rather, non-taking of medicines, is common, and patients do not identify their need and benefits, with the consequent increasing emergence of AH complications[3, 4].

Further, the metabolic syndrome (MS) is currently a sort of pandemic and is characterized by the combination of at least three out of the five metabolic factors in cardiovascular risks: central obesity, undesirable levels of glycemia, triglericids, HDL-cholesterol and arterial pressure (AP), related to modifiable factors frequently reported in behavior related to health care[5].

Self-care, defined as the process in health maintenance by the practice of health promotion and disease management, is still not well known by AH people. According to the theory of self-care in chronic diseases employed as a theorical reference for the development of current analysis, self-care is divided into three domains: maintenance, monitoring and self-care management[6].

In fact, self-care is a relevant tool to prevent diseases derived from the non-treatment of AH, to reduce mortality rates and deficiencies related to non-transmissible chronic diseases (NTCDs), improve life quality and reduce costs in health care[4].

Regarding to the impact of AH and low adhesion rate to treatment, coupled to the importance of self-care for the management of people with NTCDs, it is necessary that Nursing understands the self-care process of people with AH for prevention, education and cure practiced by nurses[7].

Current study evaluates self-care and the cardiometabolic risk in people with AH with regular follow-up in primary care.

METHODOLOGY

Current transversal and analytic study has been conducted with AH people in regular follow-up in Basic Care Units in Campinas, a city in the interior of the state of São Paulo, Brazil. Participants were people with AH with clinical follow-up, and included people with previous AH diagnose who were capable of establishing effective communication, revealing orientation and cognition acceptable for the analysis. In the case of Framingham´s score, only people over 74 years old were included, following score calculation rules. Data of participants over 74 years old were analyzed according

to the other variables. People with a previous history of Coronary Arterial Disease, such as Acute Infarction of the Myocardium (AIM) and Heart Insufficiency were excluded due to high cardiometabolic risks and enhancement of symptoms.

Convenience sample comprised the sequential inclusion of all patients eligible for the study within the preestablished period for data collection, between April and October 2018.

DATA COLLECTION

Data were collected individually by the head researcher, within a private milieu, through interviews, a documental survey and clinical charts of the BHU. Data allowed the confirmation of diagnose and other comorbidities, medicines used and results of previous tests. Participants were recruited when they went spontaneously to the BHU and were included after an explanation on the aims of the research and after their signed free consent.

Sociodemographic tools, clinically validated in previous studies, were employed, such as the Brazilian version of Hypertension Self-care Scale and Framingham´s scale for cardiometabolic risk, to obtain the following data:

- ***Sociodemographic characterization***: name, age, date of birth, sex, ethnicity, schooling level (in years; highest level), marital condition (single, married, widowed, divorced, common law), employment (active, retired + work, compulsory retirement, retirement due to disease, receiver of disease-subsidy, unemployed, housewife), monthly wage (individual and familial, in R$), naturality.

- ***Clinical characterization***: previous history of AH (time of diagnose and AH stage), symptoms (dyspnea, edema, lipothymia, precordialgia, trembling, fatigue, encephaleia). Other data such as associated clinical conditions (DM, dyslipidemia, stenosis or thickening of carotids, peripheric arteriopathy and obesity, evaluated by BMI, life styles (alcohol beverages and smoking) and lesion of the target organ, such as encephalic vascular accident, hypertrophy of the left ventricle, nephropathy (clearance of creatinine and albumin/creatinine ratio) and retinopathy, were retrieved from the participant´s clinical chart. Medicines taken were also listed (number of medicines in use, dose and posology).

- ***Brazilian version of Self-care of Hypertension Inventory:*** Self-care of Hypertension Inventory – SC-HI) was developed by a US research team who developed several scales for the evaluation of self-care in people with chronic diseases. A group of researchers from the Universidade Federal do Rio Grande do Sul, Brazil, translated and culturally adapted SC-HI for the Portuguese language in Brazil[8]. Questionnaire consisted of 23 items which assessed self-care by people with AH within the domains of maintenance (Section A), management of self-care (Section B) and Confidence

(Section C), according to the self-care theory[8], or rather, the middle-range theory of self-care of chronic illness[6].

Answer to the questionnaire are given by Likert-type scale and scores are calculated among previously cited domains. They are calculated by the total of questions of the session subtracted from total session questions and multiplied by the constant. In Section A: total (- 11 x 3.03); Section B: total (- 6 x 5.55); Section C: total (- 6 x 5.55). Within the self-care management domain (Section B), two questions are scored from 0 to 4; if participant responds to an equivalent to 0 in one or two questions, total of 5 or 4 questions in the domains are respectively employed. Self-care is considered adequate in scores equal to or greater than 70[8, 9].

- Framingham´s Cardiometabolic Risk score: Framingham Heart Study[10] is a largely used score in clinical and epidemiological contexts and its application develops practices of primary prevention of coronary diseases[11]. Calculation may be based on age, sex, systolic AP rates, ratio between total cholesterol and fraction of High-Density Lipids (HDL), occurrence of smoking and diabetes. Occurrence of infarction of the myocardium and angina pectoris within 10 years may be established. The simultaneous assessment of these factors may identify patients with high probability and thus modulate efforts for the reduction of CV risks[12]. Serum levels of cholesterol were evaluated by tests collected during the previous six months

from the interview. If more than one result is available, the most recent is employed.

DATA ANALYSIS

Data collected were inserted in an electronic sheet of Microsoft Excel for Windows and transferred to Statistical Package for Social Sciences 24.0 for the following analyses:

- *descriptive*, with the preparation of frequency tables, position (mean, median, minimum and maximum) and dispersion (standard deviation) measurements for sociodemographic and clinical data and for self-care and cardiometabolic risk scores;
- *linear co-relation tests*, calculation of Spearman´s correlation´s coefficient to evaluate the relationship between self-care measurements and cardiometabolic risks and sociodemographic and continuous clinical variables;
- *comparison tests*, comparison of self-care scores and cardiometabolic risk according to sociographical and clinical qualitative variables.

Co-relations close to 0.30 were satisfactory; moderate between 0.30 and 0.50, and strong above 0.50; co-relations below 0.30 were of slight practical value, even if statistically significant[13], at p-value < 5%.

ETHICAL ASPECTS

Current study was approved by the Committee for Ethics in research (2.501.902/2018).

RESULTS

Sample was largely made up of females (65.1%), mean age 65.2 years old; white (43.8%), married (51.1%), with mean schooling years 5.5, unemployed (51.7%), with mean month wage R$2,477.45. (Table 1). Mean diagnose period with self-declared AH amounted to 17.2 years, mostly at stages "very good, good or borderline" of HA (60.7%). The most frequent self-reported symptoms during the previous month comprised fatigue (45.3%), followed by edema (39,5%), encephaleia (32.5%) and palpitation (27.9%). With regard to associated clinical conditions, the most frequent were dyslipidemia (62.3%) and DM (48.8%), followed by complicated from AH, such as retinopathy (6.9%) and nephropathy (3.4%). Research was also made with regard to occurrences in periphery arteriopathy and encephalic vascular accident (EVA) but only two participants had the above conditions.

In the case of habits and life styles, most (56.9%) were non-smokers and did not drink alcoholic beverages (81.4%). Mean BMI reached 29.3 kg/m^2 and participants used an average of five different medicines (Table 2).

Table 1. Clinical characterization of people with systemic arterial hypertension (SAH - n=86) attended at the Basic Health Unit in the interior of the State of São Paulo, Campinas, 2018

Sociodemographic Variables	N	%	Mean(SD)	Median	Variation
Age (yrs)			65.2(12.7)	65	16-90
Sex					
Male	30	34.8			
Female	56	65.1			
Ethnicity					
White	37	43.0			
Black	17	19.7			
Brown	31	36.0			
Native	1	1.1			
Marital situation					
Single	7	8.1			
Married	44	51.1			
Widower	22	25.5			
Divorced	10	11.6			
Common law	3	3.4			
Professional situation					
Active	26	30.5			
Retired	44	51.7			
Housewife	15	17.6			
Monthly family wage (R$)			2477.45(2217.82)	2000.00	2217.82-17000.00
Schooling (yrs)			5.5(4.2)		0-18
Naturality					

Campinas, SP	22	25.5
Other towns in the state of São Paulo	32	37.2

Table 2. Clinical characterization of people with systemic arterial hypertension (SAH - n=86) attended at the Basic Health Unit in the interior of the state of São Paulo, Campinas, 2018

Clinical Variables	*N*	*%*	*Mean(SD)*	*Median*	*Variation*
Period with SAH (yrs)			17.2(12.8)		0-66
Stage of SAH					
Very good/normal/borderline	52	60.7			
Stage 1	24	27.9			
Stage 2	9	10.4			
Symptoms (last month)					
Precordialgia	19	22.9			
Dyspnea	17	19.7			
Palpitation	24	27.9			
Edema	34	39.5			
Lipothymia	16	18.6			
Fatigue	39	45.3			
Cephaleia	28	32.5			
Associated Clinical Conditions					
Dyslipidemia	53	62.3			
Diabetes Mellitus	42	48.8			
Obesity – BMI (kg/m^2)			29.3(4.5)		19.7-39.9
Retinopathy	6	6.9			
Nephropathy	3	3.4			
EVA	2	2.3			
Peripheric Arteriopathy	2	2.3			
Smoking					
Never	49	56.9			
Current	11	12.7			
Previous	26	30.2			
Alcoholic beverages					
Never	70	81.4			
Current	7	8.1			
Previous	9	10.4			
Number of medicines			5(2.5)		1-13

Descriptive analysis of measurements by Hypertension Self-care Scale revealed that only in the Confidence domain (Section C), self-care levels are adequate (71,3). Inadequate levels in self-care of the domains Maintenance (59.2) and Management (55.1) have been detected.

Analysis of cardiometabolic risk estimated by Framingham´s Score suggested that the sampled people had a 34.6% chance of undergoing an acute ischemic coronary event during the following ten years (Table 3).

Table 3. Descriptive analysis of measurements by the Scale of Hypertension and Cardiometabolic Risk Self-care among people with systemic arterial hypertension (HAS - n=86) attended at the Basic Health Unit (UBS) in the interior of the state of São Paulo, Campinas, 2018

Variables	n	Mean(SD)	Variation	Median
Hypertension Self-care Scale				
Maintenance Scale (Section A)	86	59.2(14.5)	27.2-84.8	87.8
Management Scale (Section B)	86	55.1(20.3)	0.0-94.3	94.4
Confidence Scale (Section C)	86	71.3(14.7)	33.3-100.0	66.6
Cardiometabolic risk (%)				
Framingham´s score	72	34.6(15.9)	1- ≥56	33.0

Association analysis by Spearman´s co-relationships between scores of Hypertension Self-care Scales, Framingham´s score and sociodemographic (age, family monthly wage and schooling) and clinical (diagnose period for AH, total number of medicines and BMI) characteristics are given in Table 4. Significant negative co-relationships were detected between age and the domain Management of Self-care Scale (p<0.005), evidencing that the greater the age bracket, the less is self-care management.

Table 4. Spearman´s co-relation coefficients between scores of Hypertension Self-care Scale (EAC-HI), cardiometabolic risk and sociodemographic (age, monthly family wage, schooling level) and clinical (period SAH, amount of medicines and body mass index – BMI) characteristics of people with arterial hypertension (SAH - n=82) attended at the basic health unit (UBS) in the interior of the state of São Paulo, Campinas, 2018

Variables	Framingham´s score r^* $(p^\dagger)$	Age r $(p^\dagger)$	Monthly family wage r $(p^\dagger)$	Schooling level r $(p^\dagger)$	Period SAH r $(p^\dagger)$	Number of medicines r $(p^\dagger)$	Body Mass Index (BMI) r $(p^\dagger)$
EAC-HI – Maintenance	0.01 (0.90)	0.02 (0.84)	-0.06 (0.59)	-0.07 (0.46)	0.19 (0.07)	0.10 (0.34)	-0.00 (0.97)
EAC-HI – Management	-0.07 (0.54)	-0.31 (0.00)	0.06 (0.59)	0.17 (0.10)	0.20 (0.06)	-0.18 (0.08)	-0.09 (0.40)
EAC-HI – Confidence	-0.13 (0.26)	-0.10 (0.35)	0.11 (0.31)	0.00 (0.98)	0.10 (0.33)	-0.11 (0.31)	0.00 (0.98)

r*: Spearman´s co-relation coefficient; $p^\dagger$: p-value <0.05

Comparison tests between scores of Hypertension Self-care Scale and Framingham score were undertaken between people with and without DM and with participants with and without precordialgia (Table 5). Confidence scale was the sole domain with satisfactory self-care score in both groups, with mean of the highest score pertaining to people without DM (73.4). On the other hand, people with

DM have a higher risk in developing an acute coronary occurrence in the following ten years (40.5%), whilst people without DM have only 29.1%. Comparison between participants with and without precordialgia suggests that self-care is satisfactory in the domain Confidence (72.8 for those with precordialgia vs. 70.9 for those allegedly with no symptoms) among whom participants with precordialgia presented a higher risk of developing an ischemic cardiovascular event during the following ten years (43%).

Table 5. Comparison of scores of Hypertension Self-care Scale and Framingham´s score between people with arterial hypertension (AH – n=82), attended at the basic health unit (UBS) of the interior in the state of São Paulo; with and without precordialgia or diabetes mellitus, Campinas, 2018

Diabetes Mellitus		n	Mean (SD)	Variation
Yes	*Framingham´s score (%)*	35	40.5(14.5)	7-56
	EAC-HI – Maintenance	42	59.3(14.1)	27.7-84.8
	EAC-HI – Management	42	53.8(19.4)	13.3-94.4
	EAC-HI – Confidence	42	69.1(15.1)	33.3-100
No	*Framingham´s score (%)*	37	29.1(15.4)	1-56
	EAC-HI – Maintenance	44	59.0(15.1)	27.2-87.8
	EAC-HI – Management	44	56.3(21.2)	0-88.8
	EAC-HI – Confidence	44	73.4(14.0)	44.4-100
Precordialgia		n	Mean(SD)	Variation
Yes	*Framingham´s score (%)*	15	43 (13.0)	7-56
	EAC-HI – Maintenance	19	61.2(15.1)	33.3-84.8
	EAC-HI – Management	19	59.9(18.6)	27.7-94.4
	EAC-HI – Confidence	19	72.8(18.1)	44.4-100
No	*EAC-HI – Confidence*	57	32.5(16.0)	1-56
	EAC-HI – Maintenance	67	58.6(14.4)	27.2-87.8
	EAC-HI – Management	67	53.7(20.6)	0-88.8
	EAC-HI – Confidence	67	70.9(13.7)	33.3-100

DISCUSSION

Current study evaluates self-care and cardiometabolic risk in people with AH during their clinical follow-up in BHUs in Campinas, a city in the interior of a southeastern state in Brazil. The sample comprised women, aged between 60 and 70 years old, with partner. Data corroborate recent studies [1,14,16,17], whilst the predominance of women older than 60 years is possibly linked to AH in most of them[2]. The study also corroborates other research works on schooling levels [16-18] and differ from others with regard to ethnicity and mean month family wage[15,17,18]. It is well-known that social and economic factors, such as low family wages and low schooling levels, contribute towards a low adhesion to AH treatment. This is due to a low understanding of the disease´s gravity, the importance of treatment and difficulties in accessing health services [18], and, therefore, reveals the importance of nurses knowing the conditions of the population that they serve, with special reference to education activities in the health of these populations.

Several studies indicate a less than 10-year diagnose period, with a start in treatment during the period[17] and show that most people have AP at the best, normal or borderline levels[16,17], as in current study. The most common co-morbidities in people with AH are DM and dyslipidemia.[15,17] However, consumption of alcoholic beverages and smoking were low. The above co-morbidities and AH are relevant risk factors for the development of cardiovascular diseases such as IAM, especially when associated,[19] as detected by Framingham´s score. On the other hand, low consumption of alcoholic beverages and smoking collaborate as a possible risk control and may be linked to the fact that elderly people have a high prevalence of diseases and a higher health concern.[20] Data corroborating overweight have also been detected[17,21].

Reports on fatigue, edema, cephalalgia and palpitations are data also detected in other research work and, coupled to predominant co-morbidities, enhance the multifactor profile of NTCDs related to the need for the control of different factors (adhesion to treatment and changes in non-healthy habits) for management, suggesting a low adhesion to treatment and low self-care levels [22].

Self-care assessment by EAC-HI revealed unsatisfactory levels in Health Maintenance with regard to actions to control AP and, consequently, symptoms and complications. Similarly, levels are low with regard to Health Management due to possible alternations, or rather, alterations in AP rates.

However, scores were satisfactorily for Confidence to do activities that promote improvement or control of AP rates. Bilal et al. state that people with AH are willing to do AP maintenance and management,[23] but fail to do so since knowledge and awareness levels are inadequate, mainly associated with low schooling levels and low social levels[23, 24]. It is a well-known fact that self-confidence to act is the most relevant fact so that people undertake self-care behavior [25]. Consequently, the nurse´s role is highly important for educating people with regard to AH´s seriousness and treatment, and to effectively promote health and prevent complications. It also comprises a nursing care plan for the empowerment of individuals [26] to be active participants in their health care.

Comparisons between people with and without diabetes and between those with and without precordialgia reveal that self-care scores are satisfactory merely in the Confidence Domain and show that there is no important difference between management and maintenance of the condition within these groups. However, people without DM and people with and without precordialgia have respectively the highest scores. Consequently, behavioral and emotional factors by people with DM should be taken into account in the planning of health activities since the difficulties they reveal due to lack of knowledge for the control of the disease may affect adhesion

of treatment proposed and general self-care[27].

AH and DM frequently occur in people with chronic diseases. In fact, DM increases threefold the development of cardiovascular disease[28] and thus demonstrates the great challenge for health professionals who have to promote changes in behavior towards a rigorous metabolic control through efficacious and viable programs for the prevention of the population with high risks for such complications[19]. No data have been detected in the literature that corroborate a greater self-confidence among people with precordialgia**.**

Framingham´s score indicates high cardiometabolic risk with a 34.6% chance of developing acute infarction of the myocardium (AIM) for the following ten years. Even though data corroborate research by Berlezi and Schneider[29] and by Pimenta and Caldeira,[21] our sample failed to show significant difference between sexes in spite of the fact that the literature insists that cardiometabolic risk in males is higher than that in females,[29] perhaps due to women present a greater adhesion to a therapeutic regime and access more health services. The above corroborates awareness on conditions and treatments [30] and minimizes risk in developing more complications.

Self-care levels vary according to people´s biopsychosocial conditions. Social factors such as low monthly family wage and low schooling level are strongly associated with low levels of self-care and

adhesion to treatment since they directly affect access to health services, adhesion to treatment and to information on the importance of AH, its complications and the need of treatment, making difficult control of pressure rates [26,30].

Another factor discussed is the relationship between self-care and age. Current study detected a significantly important inverse co-relationship between age and self-care scale with the Management domain. This fact corroborates data in the literature since self-care is greater among young adults and middle-aged ones, possibly due to the fact that elderly people have a greater number of comorbidities when compared to the other groups, leading towards complex treatment, mainly with regard to medicines, and restrictions due to health complications, decreasing adhesion levels to the treatment as a whole[26,30]. It is a known fact that the more self-care is satisfactory, the better are health conditions, with a reduction of symptoms and complications from diseases. There is also a significant improvement in the life quality of these individuals [30].

Current study has its limitations related to the use of self-reports, especially when applied within an interview, such as memory and social desirability. A greater sample and robust tests should be enhanced so that finding would be more general.

CONCLUSION

Results makes us conclude that people with AH attended to in this

particular health unit have the self-confidence to undertake behavior in self-care, even though a greater knowledge on AH is needed to engage themselves in self-care activities.

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