Original Article

Sociodemographic factors and physical activity pattern in people with systemic hypertension

Fatores sociodemográficos e padrão de atividade física em pessoas com hipertensão arterial sistêmica

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ABSTRACT

Objective: to verify the association between sociodemographic factors and physical activity pattern in people with systemic hypertension. **Methods**: a cross-sectional study conducted with 220 hypertensive people. The international physical activity questionnaire was used for data collection and the Statistical Package for the Social Sciences for data treatment. Prevalence ratios and 95% confidence intervals were calculated using a robust Poisson regression model. **Results**: sedentary behavior pattern prevailed in all sections of the instrument. At work, the sedentary behavior pattern was prevalent in males and in participants aged ≥ 60 years. At home, males were 16.0% more sedentary, age ≥ 60 years old had 13.0% more sedentary behavior pattern and black race 43.0% more sedentary behavior pattern. **Conclusion**: an association was observed between the sex, age, and race variables in the home domain; and sex and age in the work dimension.

Descriptors: Socioeconomic Factors; Hypertension; Sedentary Behavior; Nursing; Risk Factors.

RESUMO

Objetivo: verificar a associação entre fatores sociodemográficos e padrão de atividade física em pessoas com hipertensão arterial sistêmica. **Métodos**: estudo transversal, realizado com 220 pessoas hipertensas. Utilizaram-se do questionário internacional de atividade física para coleta de dados e do programa estatístico *Statistical Package for the Social Sciences* para tratamento destes. Calcularam-se razão de prevalência e intervalos de confiança de 95%, com modelo de regressão de Poisson robusto. **Resultados**: predominou o padrão sedentário em todas as seções do instrumento. No trabalho, o padrão sedentário foi prevalente no sexo masculino e nos participantes com idades ≥ 60 anos. Em casa, o sexo masculino foi 16,0 % mais sedentário, idade ≥ 60 anos teve 13,0 % mais padrão sedentário e raça negra 43,0% mais padrão sedentário. **Conclusão**: observou-se associação entre as variáveis sexo, idade e raça, no indicador casa; e sexo e idade, na dimensão trabalho.

Descritores: Fatores Socioeconômicos; Hipertensão; Comportamento Sedentário; Enfermagem; Fatores de Risco.

Introduction

Systemic hypertension, in addition to a multi-causal condition, is a prevalent condition among cardiovascular diseases and responsible for high worldwide morbidity and mortality rates. The prevalence of the disease is increasing in populations, even in countries with higher income, levels of awareness, treatment and control of the disease. It is estimated an increase of 15 to 20% in the prevalence of this event in the year 2025, which represents 1.5 billion people[1-3].

In this scenario of epidemiological prediction, sociodemographic factors stand out, such as social marginalization, poor health conditions, socioeconomic, cultural, and environmental vulnerability, with disadvantages considering preventive and disease control possibilities. They can hinder the adoption of lifestyle changes[4].

Physical activity is relevant in controlling blood pressure levels, considering that physical inactivity (absence of physical activity or physical activity less than 150 minutes per week) is a risk factor for obesity and systemic hypertension[2]. It is present in 23.0% of adult individuals, being higher in the youngest, burdening health care worldwide[5]. In Brazil, an analysis of the trend in the mortality rate of hypertensive diseases by states and regions showed higher rates in places with higher index of physical inactivity and poverty[6].

Evidence points to an association between unfavorable socioeconomic conditions and uncontrolled/worsening systemic hypertension, but there is a gap about whether and how such factors interfere in physical activity pattern. It is emphasized that the active physical activity pattern constitutes a recommendation of the guidelines for supporting treatment of systemic hypertension.

Sedentariness is one of the cardiovascular risk factors of a modifiable nature that can lead to uncontrolled systemic hypertension and serious complications, including death. Therefore, it is necessary to deepen the knowledge about physical activity pattern in the sociodemographic context of subgroups of hypertensive patients undergoing drug treatment. In this sense, this study aimed to verify the association between sociodemographic factors and physical activity pattern in people with systemic hypertension.

Methods

This is a cross-sectional study carried out in a health center in the city of Salvador, state of Bahia, Brazil, between 2016 and 2017. The study population consisted of people of both sexes, with medical diagnosis of systemic hypertension.

Individuals were included for having a medical diagnosis of systemic hypertension, age ≥ 18 years old and attending the health center for consultations and medication dispensing, through nominal prescription, during data collection. Individuals were excluded for having motor deficits and/or neurological complications and being pregnant, due to the vigorous and moderate activities contained in the instrument used and for requiring follow-up by specialists. The population comprised of 220 hypertensive patients of the matrix project on the impact of social determinants on health and control of cardiovascular risk factors.

For sample calculation, the prevalence of systemic hypertension in ≥ 18 years old (25.7%) was used. Calculation was based on the results of the surveillance program for risk and protective factors for chronic diseases by telephone survey in 2014[7].

The data collection instrument was organized in two parts. Part 1 was on social determinants of health, with closed and semi-structured issues such as sex, age in years, self-reported race/color, monthly family income, marital status and education. Part 2 was the International Physical Activity Questionnaire (IPAQ), version in Portuguese, recommended by the World Health Organization to assess physical activity

in adults from 15 to 69 years old. This questionnaire contains questions related to the frequency, duration and intensity of physical activity developed at work, commuting, domestic activities and free time[8]. For a more succinct presentation in tables, the instrument sections were named, in the Results, as work, transportation, home, and time spent sitting.

Study participants were selected at random while waiting for an appointment in the follow-up program for patients with arterial hypertension and/or diabetes mellitus and/or drug dispensing at the pharmacy. The people who arrived at the service were approached by one of the two properly trained scientific initiation fellows and/or the researcher responsible for the matrix project who collected the data.

Participants were asked to report whether they had a medical diagnosis of systemic hypertension at least six months ago. After confirmation on the service registration card, an invitation was made to participate in the research, and then they were given explanations about the research objective. In case of acquiescence, patients were referred to a private room, made available by the center management. After reading, clarifying and signing the Informed Consent Form, the interview started and lasted, on average, 30 minutes. At the end, participants were acknowledged for their contribution to the investigation.

The individuals were classified as very active, active, irregularly active and sedentary, according to the score obtained. Those classified as irregularly active or sedentary were considered at risk. In the time spent sitting, individuals who sat ≥ 180 minutes/day were classified as sedentary[9].

Data were coded and analyzed using the statistical software Statistical Package for the Social Sciences, version 21.0. Descriptive analyzes were carried out to characterize the study population, presented in tables, with absolute (n) and relative (%) frequencies. In the bivariate analysis, Pearson's chi-square or Fisher's exact tests were applied for categorical variables.

Prevalence Ratio (PR) and 95% confidence intervals (CI) were calculated. The level of statistical significance adopted was 5%.

Robust Poisson regression was used, in which independent contribution of each variable to probability of a sedentary behavior pattern was estimated. The initial selection of variables was guided by clinical criteria and in nursing literature, with a p-value <0.20, being considered to remain initially in the model.

The School of Nursing of *Universage Federal da Bahia* assessed and approved this study, according to Opinion 2,273,310/2017 and Certificate of Presentation for Ethical Consideration (*Certificado de Apresentação para Apreciação Ética*) 43800915.0.0000.5531.

Results

Among the 220 participants, there was a predominance of females (78.6%), age ≥ 60 years old (57.1%), average age of 59.4 ± 11.3 years, ranging between 24 and 85 years, race/self-declared black color (91.4%), education level from high school (58.6%), monthly family income below one minimum wage (85.5%) and with partner (77.7%).

When using the IPAQ criteria to classify the level of physical activity of hypertensive patients, it was observed that the sedentary behavior pattern predominated in all dimensions assessed by the instrument, reaching 100% the sedentary behavior pattern at leisure in all independent variables.

An association was observed between sociodemographic variables (sex, age and sedentary behavior pattern) at work and at home. The sedentary behavior pattern was associated with the variables age and race/color. There was also an association between time spent sitting and sedentary behavior pattern in the marital situation. There was no association between other sociodemographic variables and the other dimensions of the instrument (Table 1).

Table 1 – Physical activity level in hypertensive people due to sociodemographic characteristics. Salvador, BA, Brazil, 2016-2017

Sociodemographic variables	Work		Transportation		Home		Time spent sitting	
	Sedentary	Active	Sedentary	Active	Sedentary	Active	Sedentary	Active
	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)
Sex								
Female	159 (91.9)	14 (8.1)	170 (98.3)	3 (1.7)	144 (83.2)	29 (16.8)	148 (85.5)	25 (14.5)
Male	47 (100.0)	-	46 (97.9)	1 (2.1)	45 (95.7)	2 (4.3)	38 (80.9)	9 (19.1)
p-value*	0.044		0.858		0.029		0.429	
Age (years)								
≥ 60	116 (97.5)	3 (2.5)	117 (98.3)	2 (1.7)	109 (91.6)	10 (8.4)	100 (84.0)	19 (16)
< 60	90 (89.1)	11 (10.9)	99 (98)	2 (2.0)	80 (79.2)	21 (20.8)	86 (85.1)	15 (14.9)
p-value	0.011		0.869		0.008		0.820	
Race								
Black	189 (94)	12 (6)	197 (98)	4 (2.0)	177 (88.1)	24 (11.9)	171 (85.1)	30 (14.9)
Other than black	17(89.5)	2 (10.5)	19(100)	-	12 (63.2)	7 (36.8)	15 (78.9)	4 (21.9)
p-value	0.438		0.536		0.003		0.481	
Education								
Up to complete elementary school	86 (94.5)	5 (5.5)	91 (100)	-	81 (89.0)	10 (11.0)	77 (84.6)	14 (15.4)
> incomplete high school	120 (93.0)	9 (7.0)	125 (96.9)	4 (3.1)	108 (83.7)	21 (16.3)	109 (84.5)	20 (15.5)
p-value	0.658		0.091		0.267		0.981	
Income (minimum wage)								
≤ 1	176 (93.6)	12 (6.4)	184 (97.9)	4 (2.1)	163 (86.7)	25 (13.3)	161 (85.6)	27 (14.4)
> 1	30 (93.8)	2 (6.3)	32 (100)	-	26 (81.3)	6 (18.8)	25 (78.1)	7 (21.9)
p-value	0.977		0.406		0.413		0.277	
Marital status (partner)								
With	160 (93.6)	11 (6.4)	167 (97.7)	4 (2.3)	145 (84.8)	26 (15.2)	149 (87.1)	22 (12.9)
Without	46 (93.9)	3 (6.1)	49 (100)	-	44 (89.8)	5 (10.2)	37 (75.5)	12 (24.5)
p-value	0.938		0.281		0.375		0.047	

*Pearson's chi-square/Fischer's exact test; minimum wage during collection - R$ 937.00 (*reais* is the currency of Brazil, which corresponds to about 188 US dollars)

When verifying the association between sociodemographic characteristics and sedentary behavior pattern in hypertensive patients, it was evident, in the work dimension, that the sedentary behavior pattern was more frequent in males, with a prevalence of 9.0% more than in females (PR: 0.91; p <0.05; 95% CI: 0.84-0.99). Still in this domain, it was found that participants aged ≥60 years had 9.0% more in the sedentary behavior pattern over younger participants (p=0.026).

In the home domain, males were 16.0% more sedentary (p=0.009). Elderly participants (aged ≥ 60 years old) obtained 13.0% more sedentary behavior pattern, when compared to younger ones (PR 1.13; 95% CI: 1.01-1.26, p=0.041). Black race was another variable that presented 43.0% more sedentary behavior pattern over non-blacks (PR 1.43; p=0.002, 95% CI: 1.14-1.79).

The sedentary behavior pattern, in the time spent sitting dimension, was associated with marital status. Having a partner presented 17.0% higher sedentary behavior pattern than those without a partner (p=0.034) (Table 2).

Table 2 – Association between sociodemographic characteristics and sedentary behavior pattern of hypertensive patients assisted at a health center. Salvador, BA, Brazil, 2016-2017

Sociodemographic variables	Work		Home		Time spent sitting	
	n(%)	*PR (CI)	n(%)	PR (CI)	n(%)	PR (CI)
Sex						
Female	159(91.9)	0.91 (0.84 -0.99)	144(83.2)	0.84 (0.73 - 0.96)	148(85.5)	1.09 (0.93-1.25)
Male	47 (100.0)		45(95.7)		38 (80.9)	
p-value	0.049		0.009		0.303	
Age (years)						
< 60	116(97.5)	1.09 (1.01 -1.17)	109 (91.6)	1.13 (1.01 - 1.26)	100 (84.0)	1 (0.90-1.13)
≥ 60	90 (89.1)		80 (79.2)		86 (85.1)	
p-value	0.026		0.041		0.974	
Race/cor						
Black	189(94.0)	1.06 (0.93 -1.20)	177 (88.1)	1.43 (1.14 - 1.79)	171 (85.1)	1.07 (0.86-1.32)
Other than black	17 (89.5)		12(63.2)		15 (78.9)	
p-value	0.383		0.002		0.534	
Marital status (partner)						
With	160(93.6)	0.99 (0.91 -1.08)	145(84.8)	0.93 (0.82-1.06)	149 (87.1)	1.17 (1.01 - 1.36)
Without	46 (93.9)		44 (89.8)		37 (75.5)	
p-value	0.860		0.312		0.034	

*PR: prevalence ratio; CI: 95% confidence interval/Poisson regression

Discussion

The limits of this study were the cross-sectional design, which does not allow establishing causal relationships between sedentary behavior pattern, sociodemographic variables and homogeneity of the sample in relation to black race, as the research was carried out in a health service in a popular neighborhood, the birthplace of culture Afro-descendant in the municipality. Other restrictions were the size not calculated and the sample selection for convenience.

Despite this, the study portrayed social and demographic factors associated with the sedentary behavior pattern in hypertensive patients, historically, in conditions of social and economic vulnerability.

The results reflect the need for case-control studies and clinical trials to elucidate the cause-effect relationship between the variables studied. They aim to change behavioral habits, with repercussions on the level of physical activity for active and adequate disease control, reducing cardiovascular morbidity and mortality.

The study identified that sedentary physical activity pattern predominated in work, home, transportation, leisure, and time spent sitting dimensions. There was an association between the work dimension and sex and age; the home dimension with sex, age and race/color; and the dimension time spent sitting with marital status. This situation was similar to other investigations on the subject, with high prevalence of sedentary behavior pattern (77 and 55.8%)[10-11].

When considering that the participants were diagnosed and undergoing hypertension, regular physical activity should be part of their routine. Practicing physical activity promotes health and well-being, but the sedentary behavior pattern was prevalent in the group, constituting a major and current public health problem[5,11].

People who do not practice physical activity are twice as likely to develop cardiovascular diseases, when compared to those who follow the cardiovascular prevention guideline recommendations, of 30 mi-

nutes of physical activity, five days a week, totaling 150 minutes a week. Thus, hypertensive individuals, with a sedentary lifestyle, are more likely to have complications, especially in the presence of other associated risk factors, such as unfavorable social aspects[12-13].

The results are concerning, as they portray a predominance of the sedentary behavior pattern in public health network users, a population predominantly composed of people with low income and education. Since all research participants were hypertensive on medication, non-adherence to the active physical activity pattern worsens the uncontrolled disease and may increase cardiovascular complications.

Regular physical activity is an important tool in maintaining blood pressure levels and integrates the treatment of systemic hypertension. A research that characterized hypertensive people as to the condition and adherence to treatment after hospitalization showed that, in addition to an important mortality rate (32.0%), multiplicity of factors, such as sedentary lifestyle, adequate disease control was compromised[14].

The results showed women who were more active at home than men, reaffirming cultural sex issues in domestic work. Thus, males had 16.0% more frequency of sedentary behavior pattern than females.

Follow-up and national monitoring program aimed at maintaining unsatisfactory physical activity conditions and worsening the population's healthy living habits, regardless of sex. They showed a higher percentage of physical activity among women, but the practice of physical activity was low between sexes, supporting the influence of social differences in the context of illness[15].

In relation to age, another study revealed a high prevalence of elderly people with high and uncontrolled blood pressure and only half of the individuals reached pressure control goals, higher among women[16]. A similar research found that participants less adherent to treatment reported more complications associated with hypertension[17].

The predominance of elderly and women in this study portrays scientific evidence similar to the existing ones on the prevalence of systemic hypertension in these groups. Such results can be explained by the biological process of aging of vascular structures in elderly individuals and the drop in estrogen in menopause in women. Increased life expectancy of elderly individuals and the greater frequency of women in health care services stand out[13,18].

There was an association between age ≥ 60 years old and a sedentary behavior pattern at home and at work. However, a study that identified modifiable cardiovascular risk factors in patients with systemic hypertension observed that the sedentary behavior pattern was prevalent among younger people, with work occupation, and in individuals with more children[19].

In modern times, with changes in lifestyle, changes are seen in the profile of elderly individuals. Many are retired or opt for more comfortable and effortless work. There is greater autonomy in carrying out household chores and more time available to practice physical activities. However, despite expecting that the active pattern would prevail, this study pointed out a more sedentary behavior pattern in this group, at home and at work.

The influence of income and education on the adoption of a healthy lifestyle should be highlighted, including regular practice of physical activity, even though in the study these variables were not associated with the sedentary behavior pattern in the IPAQ sections.

Low education level, lack of financial resources for qualification and entry into the job market expose individuals to informal jobs that usually have a large physical workload, such a condition would favor the individual to be active in the work dimension[20]. However, in the research, no such association was observed.

The sedentary behavior pattern, in the dimension of time spent sitting, showed a statistical association with marital status. Marriage or common-law marriage is an aspect that can influence the development of systemic hypertension. It is common to re-

duce physical activity in these individuals, especially in women who, after having a partner, commonly opt for more activities at home, staying longer and reducing energy expenditure. Another study showed that living with a spouse was a condition associated with the accumulation of domestic duties and obligations, configuring one of the risk factors for illness[20].

Race was predominantly black, the variable was associated with the sedentary behavior pattern in the home dimension. Furthermore, it presented 43.0% more sedentary behavior pattern than non-blacks. However, despite having a high number of black participants, this result shows concern regarding the almost total proportion of sedentary behavior pattern among them.

Health care in Brazil and in the world has invested in the formulation, implementation and implementation of health promotion, protection and recovery policies. Among the health priorities, the incentive to practice physical activity and healthy habits stands out[6]. However, changing attitudes towards healthier lifestyles is a challenge faced by patients and health professionals, but necessary to control systemic hypertension and to reduce cardiovascular morbidity and mortality.

Conclusion

Sedentariness predominated in the International Physical Activity Questionnaire domains, work, home, transportation and time spent sitting. There was a statistically significant association between sex, age and race with the home dimension; of sex and age, in the work dimension; and marital status with the dimension time spent sitting.

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Collaborations

Silva CTO contributed to the writing of the article and relevant critical review of the intellectual content. Oliveira CCRB and Oliveira LB collaborated with a relevant critical review of intellectual content. Sampaio ES assisted in the final approval of the version to be published. Pires CGS participated in the design of the project, analysis and interpretation of data.

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