THE IMPACT OF HEALTH BELIEFS ON THE CONTROL OF ARTERIAL HYPERTENSION IN THE ELDERLY

O IMPACTO DAS CRENÇAS EM SAÚDE SOBRE O CONTROLE DA HIPERTENSÃO ARTERIAL EM IDOSOS

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ABSTRACT

Objective: To assess the impact of health beliefs on blood pressure control in hypertensive elderly patients in a municipality with a high human development index (HDI), considering sex and social class. Methodology: The study was carried out at the Basic Health Units of the municipality of São Caetano do Sul. Sociodemographic information was collected through a questionnaire. BP was measured to identify controlled and uncontrolled hypertensive patients. A health belief scale with judgments on the perceived barriers and benefits related to each of the thirteen health behaviors corresponding to hypertension prevention and control measures was used. A descriptive analysis was conducted and a prevalence ratio calculated, considering significance for p ≤0.05. Results: We observed treatment adherence in the majority of patients, who were aware of the benefits of controlling the risk factors for hypertension. Conclusion: We concluded that the data were similar between men and women, and that social class had an inverse impact on compliance with drug treatment.

Keywords: Hypertension; Health of the Elderly; Aged.

RESUMO

Objetivo: Avaliar o impacto das crenças em saúde no controle da pressão arterial de idosos hipertensos em um município com elevado índice de desenvolvimento humano (IDHM), considerando sexo e classe social. Metodologia: O estudo foi realizado nas Unidades Básicas de Saúde do município de São Caetano do Sul. Foram coletadas informações sociodemográficas por meio de questionário. Aferiu-se a PA para a identificação dos pacientes hipertensos controlados e não controlados. Utilizou-se escala de crenças em saúde com sentenças sobre crenças de barreiras e benefícios relacionados a cada um dos treze comportamentos de saúde referentes às medidas de prevenção e controle da hipertensão arterial. Realizou-se análise descritiva e razão de prevalência, considerando significância para p ≤ 0,05. Resultados: Observamos que a maioria dos pacientes aderiu ao tratamento, tendo noção dos benefícios de controlar os fatores de risco de hipertensão. Conclusão: Concluímos que os dados foram semelhantes entre homens e mulheres e a classe social impactou inversamente na adesão ao tratamento medicamentoso.

Descritores: *Hipertensão; Saúde do Idoso; Idoso.*

INTRODUCTION

Cardiovascular diseases were the main cause of death globally between 2000 and 2012, according to the World Health Organization (WHO).[1] In 2000, approximately one billion people had high blood pressure, and this number is expected to increase to 1.56 billion globally in 2025.[2] In Brazil, cardiovascular diseases are still the leading cause of death,[4] although the mortality associated with them has decreased.[3]

High systemic blood pressure (HSP) is acknowledged as the main risk factor for cerebrovascular diseases, coronary artery diseases, chronic renal failure, and peripheral artery disease.[5] This multiplicity of consequences places HSP as the origin of cardiovascular diseases, and therefore characterizes it as one of the main causes of decreased quality of life and life expectancy.

An HSP prevalence of 24.1% (95% Confidence Interval (CI): 23.4–24.8) has been reported for the adult population of the Brazilian state capitals and Federal District.[6] HSP prevalence increases with age, with an incidence of 80% in people older than 60 years, and is similar between men and women, although it is higher in men up to 50 years of age and women older than 50 years of age. HSP is more frequent in non-white individuals[7] with lower educational levels (24.2%; 95% CI: 22.2–26.3) and residing in urban areas (21%).[8]

HSP is controlled by adopting measures such as adherence to a daily medication schedule, changes in lifestyle habits,

and regular consultations of health care services. Non-pharmacological measures such as weight loss, decreased salt intake, giving up smoking and alcohol intake, and regular physical activity contribute to blood pressure control.[9] Drug therapy is also a part of the treatment. However, only some patients with HSP use medication correctly and adhere to therapeutic measures.[7]

Adherence to antihypertensive drug therapy has been reported to vary between 22.5% and 88.5%.[10] Factors such as a lack of knowledge, a low socio-economic level, an absence of symptoms, forgetfulness, a complex medication regiment, and the chronic nature of hypertension strongly contributed to poor adherence to treatment.[10]

The WHO has recognized low adherence to medical treatment as a public health problem[1]. The consequences of non-adherence include increased symptoms, failure to achieve therapeutic goals, unnecessary treatment adjustments, patient dissatisfaction, medical frustration, higher morbidity, death, and increased public health costs.

The municipality of São Caetano do Sul is located in the state of São Paulo. It has a population of 149,263 inhabitants distributed in a total area of 15.3 km².[6] It has the highest Municipal Human Development Index (MHDI) according to the Brazil - United Nations Development Program[11] and currently has the 4th highest Industry Federation of the State of Rio de Janeiro (FIRJAN) index of municipal development nationwide, and the 3rd highest FIRJAN index statewide [11]. It has the 8th highest gross domestic product (GDP) per capita in the state of São Paulo.

The increase in the percentage of elderly people in São Caetano do Sul from 11.61% to 13.89% between 2000 and 2010,[6] together with the municipality's excellent quality of life indicators and income per capita, justify an inquiry into the health beliefs involved in the control of hypertension in the elderly of São Caetano do Sul. This knowledge can be used to help develop innovative projects or strategies to promote patients' motivation for treatment; help professionals plan, execute, and evaluate the assistance provided; and guarantee effective health policies to control hypertension in its different levels of complexity.

The aim of the present study was to evaluate the impact of health beliefs on blood pressure control in elderly patients with HSP in a municipality with a high MHDI considering sex and social class.

MATERIALS AND METHODS

Study sample

This project was an observational cross-sectional study. The target population consisted of elderly males and females between 60 and 79 years of age, diagnosed with HSP, that are Basic Health Unit (UBS) users in the municipality of São do Caetano do Sul. The present study was approved by the Ethics Committee of the Municipal University of São Caetano do Sul (CAAE 45145415.6.0000.5510, decision CEP 1.130.977 of 29/06/2015) and the Ethics Committee of the Municipal Foundation of São Caetano do Sul (FUMUSA) (CAAE 45145415.6.3001.5635, decision CEP 1.294.793 of 24/10/2015).

The participants were invited to participate in the study on the day of their scheduled healthcare visit and were interviewed immediately after the appointment. Patients with debilitating degenerative chronic diseases, neurological sequelae of mental diseases, or limited autonomy and decision-making power at the time of the study were excluded from this study. Patients with secondary hypertension (indicated in the patient report), or who bought at least one antihypertensive drug during the thirty days before the interview were also excluded to avoid a possible interference with the cost of the medication precluding adherence to the study medication schedule.

Data collection tools

1. Socio-demographic data: Information regarding age, sex, color, and marital status were obtained using a structured questionnaire. Social class was classified according to the Brazilian Classification Criteria guidelines.[6]
2. Clinical data: Blood pressure (BP) was measured preferentially on the right arm after three-to-five minutes of rest, with the patient seated with the arm at the heart level, using a digital sphygmomanometer (Omron Hem-7200). Three BP measurements were taken at 2-minute intervals, and the final BP estimate was calculated on the basis of the average of the three measurements [9] and drug treatment adherence.
3. Drug treatment adherence: Medication adherence was measured using the Morisky Medication Adherence Scale (MMAS-8)[12] validated for hypertensive patients, which includes eight questions with dichotomous answers (yes/no). Scores were calculated by adding the correct answers and classified as high adherence (eight points), moderate adherence (6 to < 8 points), and low adherence (< 6 points). For data presentation, only two classes were used: adherence (MMAS-8 = 8 points) and non-adherence (MMAS-8 < 8 points).
4. Evaluation of health beliefs: A scale was used consisting of statements regarding beliefs about the barriers and benefits of thirteen health behaviors for the prevention and control of hypertension[13], involving nutrition, physical exercise, concerns, leisure and entertainment, rest and quietness, the importance of monitoring BP, attendance to medical appointments, smoking, drinking alcohol, and weight control. The scale used the Likert format, with five response options: CD (completely disagree = 1), D (disagree = 2), U (undecided = 3), A (agree = 4), and CA (completely agree = 5).

Data analysis

Data analysis was performed using absolute and percentage values, with the *Statistical Package for the Social Sciences* software (v23.0; SPSS Inc., Chicago, IL, USA).

The percentage of beliefs about the barriers and benefits of thirteen measures for the prevention and control of hypertension were analyzed by calculating the barrier and benefit arithmetic average for each measure. The difference between the barrier and benefit arithmetic average was then calculated and classified into three categories: Beliefs about benefits (difference between averages < 0); Beliefs about barriers (difference between averages > 0); and Undecided (difference between averages = 0).

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Beliefs about benefits were correlated with the socio-demographic data using the Pearson correlation coefficient or the chi-squared test.

RESULTS

Of the 110 elderly patients with HSP, 63.6% adhered to the drug treatment and 36.4% did not. Of the patients that did not adhere to the drug treatment, 78.2% had controlled BP levels and 11.8% did not. Women (65.4%) and white people (74.6%) constituted the highest demographics among the elderly patients with HSP. Slightly more than half the elderly patients with HSP (51.3%) belonged to classes B2 and C. A total of 58.1% used 1 to 4 drugs/day, and 34.5% used 5 to 9 drugs/day (Table 1).

The associations between socio-demographic factors and health beliefs about the benefits of the thirteen measures for the control of hypertension are presented in Tables 2–6. Men and women had similar perceptions regarding the greater or lesser benefits of the thirteen health behaviors for the control of hypertension.

The perception of nutritional benefits for the control of hypertension was similar among the elderly (Table 2). Although no significant differences were observed, salt and sugar restriction were perceived as more beneficial for control of hypertension. However, a fewer number of elderly patients believed that fat restriction was also important for hypertension control.

The interviewees believed that controlling stress levels may be beneficial to lowering BP. Although no statistically significant differences were found, a trend between "avoiding concerns" and social class and between "having leisure time" and age group was observed (Table 3). Most interviewees considered medical supervision to be important in controlling BP. A statistically significant difference was observed between "taking medication" and social class (Table 4).

Perceptions about the importance of physical activity and maintaining an ideal weight to control BP are shown in Table 5. A statistically significant difference was only found between "exercising" and ethnicity. No statistically significant differences were observed for the remaining variables.

The elderly acknowledged the benefits of avoiding alcohol and tobacco in controlling BP, although no statistically significant differences were observed (Table 6).

DISCUSSION

In the present study, 110 elderly users of the UBS of São Caetano do Sul were evaluated. Of these, 63.6% adhered to the antihypertensive medication treatment, and 78.2% had controlled BP levels. However, only 50.9% of the elderly with controlled BP had adhered to the treatment schedule. Both the adherence values and the levels of BP control observed in the present study were higher than those in other studies.[10,14,15]

No statistically significant associations were observed among the studied demographic and socioeconomic variables and adherence to the hypertensive treatment. However, other studies found relationships among adherence to medication schedules and race, marital status, occupation, level of education, income, age, and family support.[10]

Silva et al.,[16] reported that women exhibited better BP control than men, although they have lower incomes, higher body mass indices, fewer social supports, and a higher percentage of common mental disorders. Some studies

Table 1. Distribution of the elderly population in terms of sociodemographic factors, levels of blood pressure control, and number of medications depending on adherence to antihypertensive treatment. São Caetano do Sul, São Paulo, 2016. (n = 110).

Variables	Adherence				p-value
	Yes		No		
	N	(%)	N	(%)	
Sex					
Men	24	21.8	14	12.7	0.940
Women	46	41.8	26	23.6	
Ethnicity					
White	54	49.1	28	25.5	0.413
Black	16	14.5	12	10.9	
Age group (years)					
60 - 64	23	20.9	10	9.1	0.293
65 – 69	10	9.1	9	8.2	
70 – 74	18	16.4	4	3.6	
75 - 79	19	17.3	17	15.5	
Social class					
A	2	1.8	1	0.9	0.660
B1	4	3.6	2	1.8	
B2	22	18.5	11	10.0	
C1	19	17.3	12	10.9	
C2	17	15.5	10	9.1	
D - E	6	5.5	4	3.6	
Number of medications					
1 – 4	33	34.5	20	23.6	0.680
5 – 9	26	24.5	10	10.0	
10 – 14	4	3.6	1	0.9	
> 15	1	0.9	2	1.8	
Blood pressure					
Controlled	56	50.9	30	27.3	0.344
Not controlled	14	12.7	10	9.1	

Table 2. Relationships between sociodemographic factors and beliefs regarding diet benefits. São Caetano do Sul, São Paulo, 2016.

Variables	Diet								
	Salt			Fat			Sugar		
	N	(%)	p-value	N	(%)	Valor de p	N	(%)	p-value
Sex									
Men	33	3.0	0.579	11	10.0	0.148	31	28.2	0.402
Women	57	51.8		31	28.2		63	57.3	
Ethnicity									
White	66	60.0	0.700	31	28.2	0.889	70	63.6	0.964
Black	24	21.8		11	10.0		24	21.8	
Age group									
60 - 64	24	21.8	0.625	8	7.2	0.254	27	24.5	0.866
65 – 69	16	14.5		9	8.2		16	14.5	
70 – 74	20	18.2		10	9.1		19	17.2	
75 - 79	30	27.3		15	13.6		32	29.1	
Social class									
A	3	2.7	0.449	1	0.96	0.928	3	2.7	0.514
B1	4	3.6		3	2.7		5	4.5	
B2	29	26.4		13	11.8		27	24.5	
C1	25	22.7		11	10.0		25	22.7	
C2	19	17.3		9	8.2		26	23.6	
D - E	10	9.1		5	4.5		8	7.3	

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Table 3. Relationships between sociodemographic factors and beliefs regarding stress-related benefits. São Caetano do Sul, São Paulo, 2016.

Variable	Stress								
	Avoiding concerns			Having leisure time			Rest		
	N	(%)	Valor de p	N	(%)	Valor de p	N	(%)	Valor de p
Sex									
Men	15	13.6	0.217	33	30.0	0.443	21	19.0	0.540
Women	41	37.2		63	57.3		47	42.7	
Ethnicity									
White	40	36.4	0.526	72	65.4	0.938	48	43.6	0.460
Black	16	14.5		24	21.8		20	18.2	
Age group									
60 - 64	17	15.4	0.638	30	27.3	0.080	20	18.8	0.558
65 – 69	8	7.2		13	11.8		12	10.9	
70 – 74	9	8.2		19	17.3		12	10.9	
75 - 79	22	20.0		34	30.9		24	21.8	
Social class									
A	2	1.8	0.085	2	2.7	0.972	3	2.7	0.138
B1	2	1.8		6	3.6		5	4.5	
B2	15	13.6		29	26.3		24	21.8	
C1	13	11.8		27	24.5		15	13.6	
C2	18	16.4		24	21.8		17	15.4	
D - E	6	5.4		8	7.3		4	3.6	

Table 5. Relationships between sociodemographic factors and beliefs about the benefits of maintaining an ideal weight and exercising. São Caetano do Sul, São Paulo, 2016.

Variable	Ideal weight and exercise					
	Maintaining the ideal weight			Exercising		
	N	(%)	Valor de p	N	(%)	Valor de p
Sex						
Men	36	32.7	0.274	30	27.3	0.882
Women	71	64.5		55	50.0	
Ethnicity						
White	81	73.6	0.159	65	59.1	0.029*
Black	26	23.6		20	18.2	
Age group						
60 - 64	32	29.1	0.780	25	22.7	0.669
65 – 69	18	16.4		14	12.7	
70 – 74	22	20.0		15	13.6	
75 - 79	35	31.8		31	28.2	
Classe social						
A	3	2.7	0.718	3	2.7	0.085
B1	6	5.5		5	4.5	
B2	31	28.2		26	23.6	
C1	31	28.2		22	20.0	
C2	26	23.6		23	20.9	
D - E	10	9.1		6	5.4	

Table 4. Relationships between sociodemographic factors and beliefs about medical control benefits. São Caetano do Sul, São Paulo, 2016.

Variables	Medical control								
	Measuring blood pressure			Consulting a doctor			Taking medication		
	N	(%)	p-value	N	(%)	p-value	N	(%)	p-value
Sex									
Men	36	32.7	0.508	36	32.7	0.718	37	33.6	0.250
Women	70	63.6		66	60.0		65	59.1	
Ethnicity									
White	79	71.8	0.983	75	68.2	0.651	77	70.0	0.121
Black	27	24.5		27	24.5		25	22.7	
Age group (years)									
60 - 64	38	34.5	0.709	33	30.0	0.078	30	27.3	0.
65 – 69	18	16.3		15	13.6		16	14.5	
70 – 74	22	20.0		21	19.21		22	20.0	
75 - 79	34	30.9		33	30.0		34	30.9	
Social class									
A	3	2.7	0.687	3	2.7	0.189	3	2.7	0.02*
B1	6	5.4		6	5.4		4	3.6	
B2	31	28.2		29	26.4		30	27.3	
C1	30	27.3		30	27.3		30	27.0	
C2	27	24.5		25	22.7		26	23.6	
D - E	9	8.2		9	8.2		9	0.9	

* p≤0,05.

Table 6. Relationships among sociodemographic factors and beliefs about benefits regarding alcohol intake and smoking. São Caetano do Sul, São Paulo, 2016.

Variable	Alcohol and smoking					
	Avoiding alcohol			Not smoking or quitting smoking		
	N	(%)	Valor de p	N	(%)	Valor de p
Sex						
Men	36	32.7	0.307	37	33.6	1.0
Women	68	61.8		70	63.6	
Ethnicity						
White	77	70.0	0.805	81	73.6	0.780
Black	27	24.5		26	23.6	
Age group						
60 - 64	31	28.2	0.553	32	29.1	0.746
65 – 69	17	15.4		18	16.4	
70 – 74	22	20.0		22	20.0	
75 - 79	34	30.9		35	31.8	
Social class						
A	3	2.7	0.598	3	2.7	0.159
B1	5	4.5		6	5.5	
B2	31	28.2		31	28.2	
C1	28	25.5		30	27.3	
C2	27	24.5		27	24.5	
D - E	10	9.1		10	9.1	

have found a higher prevalence of hypertension in women, which also reflects the fact that women are more apt to seek out health services, both in Brazil and abroad.[7] Regarding social class, more than half the interviewees belonged to class B2 and C, and no association was observed between social class and adherence to the antihypertensive treatment schedule. In most studies, a reduction in hypertension was observed in individuals with higher levels of education and better social factors and work conditions. On the other hand, a lower economic status is associated with a higher prevalence of HSP and exposure to hypertensive risk factors.[14] Higher education levels may increase the elderly's understanding of their health status and drug treatment, which may contribute to treatment adherence.[12]

We observed that the large number of drugs used by the patients increased the complexity of the therapeutic regimens and decreased treatment adherence.[17] According to the National Household Sample Survey (PNAD), men use less medication than women. In addition, the indication for hypertensive treatment with medication is high, which should be considered positive, as the patient's perception of hypertension is that it is asymptomatic.[17]

Non-adherence to the medication schedule has been identified as the main cause of uncontrolled BP, resulting in an increased risk of cardiovascular diseases.[9]

The results of the present study show that hypertensive elderly patients know the benefits of decreasing salt and sugar intake, decreasing stress, and exercising regularly to control BP. In a similar study, most patients adhered to a diet with salt, fat, and sugar restrictions, underwent periodic BP measurements at medical appointments, avoided alcohol, and took medication correctly. Weight control and behaviors related to stress relief and physical activity had lower adherence.[13]

In that study, the authors observed a significant association between exercising regularly and ethnicity, and a negative relationship between the overall adherence to medication schedules and social class, confirming previous results.[17,18] In the present study, a statistically significant relationship between the habit of taking medication and social class was identified.

Sociodemographic, behavioral, and clinical factors did not affect treatment adherence, and non-attendance of appointments was low in São Caetano do Sul. The fact that São Caetano has the best MHDI index did not guarantee high levels of adherence to the antihypertensive treatment. However, the observed variation in treatment adherence may be attributed to the different tools used to evaluate adherence in different studies.

The present study provides further evidence that health beliefs can affect treatment adherence and are a strong predictor of appropriate health-seeking behavior. Although the perception of the benefits of adopting measures for the prevention and control of HSP does not imply adherence to and effectiveness in seeking out treatment, it is important to equip the patient to understand the treatment and its positive results upon adequate compliance.[19,20]

CONCLUSION

We concluded that most of the studied population had adhered to their medication schedules and were aware of the benefits of controlling the risk factors of hypertension. The results were similar for men and women, and social class had a negative impact on drug treatment adherence.

CONFLICTS OF INTEREST

The author declares that he has no conflicts of interest in this work.

REFERENCES

1. WORLD HEALTH ORGANIZATION. Health statistics and information. Geneva, 2014. Disponível em: < http://www.who.int/health info/global_burden_disease/estimates/en/index1. html >. Acesso em: 07 de julho 2016.

2. Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J. Global burden of hypertension: analysis of world wide data. Lancet.2005; 365(9455): 217-23.

3. Luz, FE, Santos BRM, Sabino W. Estudo comparativo de mortalidade por doenças cardiovasculares em São Caetano do Sul (SP) no período de 1980 a 2010. Ciência & Saúde Coletiva. 2017;22(1): 161-8.

4. Malta DC, Stopa SR, Andrade SSCA, Szwarcwal CL, Silva Junior JB,Reis AAC. Cuidado em saúde em adultos com hipertensão arterial autorreferida no Brasil segundo dados da Pesquisa Nacional de Saúde, 2013. Rev Bras Epidemiol.2013; 18(Supl 2):109-22.

5. Rapsomaniki E, Timmis A, George A, Pujades-Rodriguez M, Daenaxas S, White IR, et al. Blood pressure and incidence of twlve cardiovascular diseases: lifetime risks, healthy life-years lost, and age-specific associations in 1.25 million people. Lancet.2014; 383(9932): 1899-911.

6. IBGE - Instituto Brasileiro de Geografia e Estatística. 2010. Disponível em: < http://www.ibge.com.br/cidadesat/xtras/perfil. php?codmun=354880&search=sao-paulo|sao-caetano-do-sul >. Acesso em: 02 de março 2016.

7. Mendes TAB, Goldbaum M, Segri NJ, Barros MBA, César CLG, Carandina L. Factors associated with the prevalence of hypertension and control practices among elderly residents of São Paulo city, Brazil. Cad Saúde Pública, 2013; 29(11): 2275-86.

8. Moreira JPL, Moraes JR, Luiz RR. Prevalence of self-reported systemic arterial hypertension in urban and rural environments in Brazil: a poulation-based study. Cad Saúde Pública. 2013; 29(1): 62-72.

9. VI DIRETRIZES BRASILEIRAS DE HIPERTENSÃO. Arquivos Brasileiros de Cardiologia. 2010; 95: I-III.

10. Girotto E, Andrade SM, Cabrera MAS, Matsuo T. Adesão ao tratamento farmacológico e não farmacológico e fatores associados na atenção primária da hipertensão arterial. Ciência & Saúde Coletiva. 2013; 18:1763-72.

11. (PNUD). Programa das Nações Unidas para o Desenvolvimento. Atlas do Desenvolvimento Humano no Brasil. 2013. Acesso em: 02 de março 2016.

12. Oliveira BLCA, Thomaz EBAF, Silva RA. The association between skin color/race and health indicators in elderly Brazilians: a study based on the Brazilian National Household Sample Survey (2008). Cad Saúde Pública. 2014; 30: 1438-52.

13. Dela-Coleta MF. Crenças sobre comportamentos de saúde e adesão à prevenção e ao controle de doenças cardiovasculares. Mudanças - Psicologia da Saúde. 2010;18(1): 69-78.

14. Chor D, Pinho Ribeiro AL, Sá Carvalho M, Duncan BB, Andrade Lotufo P, Araújo Nobre, A, et al. Prevalence, awareness,

treatment and influence of socioeconomic variabels on control of high blood pressure: results of the ELSA-Brasil Study. PLoS ONE. 2015;10(6): e 01277382.

15. Santos MV, Oliveira DC, Arraes LB, Oliveira DA, Medeiros L, Novaes MA. Adesão ao tratamento anti-hipertensivo: conceitos, aferição e estratégias inovadoras de abordagem. Rev Bras Clin Med. 2013;11(1):55-61.

16. **Silva,SSBE, Oliveira SFSB, Pierin AMG. O controle da hipertensão arterial em mulheres e homens: uma análise comparativa. Rev Esc Enferm USP. 2016;50(1):50-8.**

17. **Mengue SS, Bertoldi AD, Ramos LR, Farias MR, Oliveira MA, Tavares NUL. et al. Access to and use of high blood pressure**

medications in Brazil. Rev Saude Publica. 2016;50:8s.

18. Andrade SSA, Stopa SR, Brito AS, Chueri PS, Szwarcwald CL, Malta DC. Prevalência de hipertensão arterial autorreferida na população brasileira: análise da Pesquisa Nacional de Saúde. Epidemiol Serv Saúde. 2013; 24(2): 297-304.

19. **Machado JC, Cotta RMM, Moreira TR, Silva LS. Análise de três estratégias de educação em saúde para portadores de hipertensão arterial. Ciência & Saúde Coletiva. 2016;21(2):611-20.**

20. Pires CGDS, Mussi FC. Crenças em saúde para o controle da hipertensão arterial. Ciência & Saúde Coletiva. 2008; 13(suppl 2): 2257-67.