INCOME AND EATING HABITS
OF HYPERTENSIVE PEOPLE

RENDA E HÁBITO ALIMENTAR
DE PESSOAS HIPERTENSAS

INGRESOS Y HÁBITOS ALIMENTICIOS
DE LAS PERSONAS HIPERTENSAS

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Objective: to verify an association between income and eating habits of hypertensive people in Health Multicenter (Multicentro de Saúde in Portuguese) in the city of Salvador, Bahia. Method: cross-sectional study with 221 hypertensive patients. Sociodemographic and eating habits data were collected through interviews and a standardized instrument from July to December 2017. Bivariate analysis was performed using Pearson's Chi-square test. The level of statistical significance adopted was 5%. Results: predominance of consumption of vegetables (69.1%) and fruits (57.6%) less than five days/week, and use of salt substitute products (69.6%) by people with an income of less than one minimum wage; statistically significant associations were found (p=0.027, p=0.003, p=0.043, respectively). Conclusion: the association between income and eating habits of hypertensive people showed that those with income lower than a minimum wage consumed fruits and vegetables less frequently and used salt substitute products.

Descriptors: Hypertension. Income. Health Economics. Feeding Behavior.

Objetivo: verificar associação entre renda e hábitos alimentares de pessoas hipertensas em Multicentro de Saúde na cidade de Salvador, Bahia. Método: estudo transversal, com 221 hipertensos. Coletaram-se dados sociodemográficos e de hábitos alimentares, por meio de entrevista e instrumento padronizado, no período de julho a dezembro de 2017. Realizou-se análise bivariada utilizando teste Qui-quadrado de Pearson. O nível de significância estatístico adotado foi de 5%. Resultados: predominou consumo de verduras ou legumes (69,1%) e frutas (57,6%) em frequência menor que cinco dias/semana, e uso de produtos substitutivos do sal (69,6%) por pessoas com renda inferior a um salário mínimo; constatadas associações estatisticamente significantes (p=0,027, p=0,003, p=0,043, respectivamente). Conclusão: a associação entre renda e hábitos alimentares de pessoas hipertensas mostrou que aquelas com renda menor que um salário mínimo consumiam com menor frequência frutas e verduras ou legumes e faziam uso de produtos substitutivos do sal.

Descritores: Hipertensão. Renda. Economia da Saúde. Comportamento Alimentar.

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Objetivo: verificar una asociación entre los ingresos y los hábitos alimenticios de las personas hipertensas en Multicentro de Saúde en la ciudad de Salvador, Bahía. Método: estudio transversal con 221 pacientes hipertensos. Los datos sociodemográficos y de hábitos alimenticios se recopilaron a través de entrevistas y un instrumento estandarizado de julio a diciembre de 2017. El análisis bivariante se realizó mediante la prueba Chi-square de Pearson. El nivel de significación estadística adoptado fue del 5%. Resultados: predominio del consumo de hortalizas (69,1%) y frutas (57,6%) menos de cinco días/semana, y el uso de productos sustitutos de la sal (69,6%) por personas con ingresos inferiores a un salario mínimo; se encontraron asociaciones estadísticamente significativas (p=0,027, p=0,003, p=0,043, respectivamente). Conclusión: la asociación entre los ingresos y los hábitos alimenticios de las personas hipertensas demostró que aquellos con ingresos más lentos que un salario mínimo consumían frutas y verduras con menos frecuencia y usaban productos sustitutos de la sal.

Descriptores: Hipertensión. Renta. Economía de la Salud. Conducta Alimentaria.

Introduction

Hypertension, a public health problem with high prevalence and low rates of treatment adhering to, is an important cardiovascular risk factor that affects 32.5% of the Brazilian population[1]. In the city of Salvador, Bahia, Brazil, through the research of the Surveillance System of Risk and Protective Factors for Chronic Diseases by Telephone Survey in Brazil (Vigitel Brazil), in 2019, 25.2% of the population over 18 years of age reported a medical diagnosis of hypertension[2].

This prevalence of hypertension varies according to sociodemographic characteristics. For adults living in Brazilian capitals and the Federal District, this predominance was lower for people of brown color (21.4%) and higher for black (25.8%)[3]. There is also potential evidence of an association between income, occupational activity, schooling and hypertension control[4].

Eating habits have a relevant impact on the prevention and control of hypertension. In Brazil, a diet with excess calories from free sugars and saturated fats associated with lower consumption of fruits and vegetables is identified[5]. Oils, fats, salt and sugar are food products with high nutrient content, but can be harmful to health, since excessive consumption of sodium and saturated fats increases the risk of Cardiovascular Diseases (CVD)[6].

This inadequate eating habit may be associated with several socioeconomic factors, among which the purchasing power stands out. The choice of food may be directly related to family income. People with low incomes tend to have less access to adequate food. This fact makes them predisposed to the development of hypertension, besides making them more susceptible to new risk factors for complications of the disease, since healthy eating is an important element both in the prevention and treatment of hypertension. Conversely, individuals with higher income sit with an opportunity for healthier eating, with a higher amount of fruits and vegetables and lower exposure to risk factors for hypertension or complications[7].

Therefore, studies of this nature are important and necessary to identify the eating habits of the population, according to the income situation. Planning and interventions should be carried out for people in income conditions more exposed to inadequate eating habits, in order to stimulate the adoption of healthy eating behavior. This process is relevant for the adequacy and maintenance of blood pressure levels satisfactory to health and, consequently, to control hypertension[8]. In addition, few studies address the relationship between eating habits and socioeconomic status of hypertensive people[5,7,9].

Based on the above and considering the scarcity, in Brazil, of studies that establish a relationship between income and eating habits of hypertensive people, the objective was to verify the association between income and eating habits of hypertensive people in Health Multicenter in the city of Salvador, Bahia.

Method

This cross-sectional study was conducted in Health Multicenter located in the Liberdade

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neighborhood, one of the most populous in the city of Salvador, Bahia, Brazil, with 35,704 people of self-declared black race/color, corresponding to 85.41% of the population of this locality[10]. The Multicenter serves hypertensive and diabetic clients attending the Chronic Diseases Service of the Unified Health System, which acts in a complementary way to the primary care network and offers medical care in the following specialties general practice, orthopedics, pediatrics, gynecology, ophthalmology, endocrinology, among others. In addition, it offers assistance from a nutritionist, psychologist and social worker.

The sample consisted of people of both genders, with a medical diagnosis of hypertension (ICD: I-10) who attended the Health Multicenter. A simple random sample without replacement was calculated in order to find the proportion of individuals over 18 years diagnosed with hypertension in a Public Health Service in Salvador (BA).

The prevalence of 25.5% of hypertension in Salvador was adopted in older than 18 years, obtained based on Vigitel results[11], in which a sampling error of 5% (d=0.05) was admitted, under the confidence level of 95%. In the denominator, we used the total number of patients registered in the System of Registration and Follow-up of Hypertensive and Diabetic (HIPERDIA), during the period of January 1, 2003 (year in which the system began to be fed) up to April 14, 2014. A loss of 20% was considered for replacement. Thus, the study population consisted of 221 individuals diagnosed with hypertension + 20% replacement (n=264). The use of replacement would only be indicated in situations where the questionnaires were filled out incorrectly or with a large number of questions without information. Refusals (not registered) would be counted as part of the sample.

The following inclusion criteria were met: people with medical diagnosis of hypertension (ICD:I-10) and who attended the Health Multicenter researched for consultations and/or withdrawal of medications, through prescription, during the period of collection of data from the research, and aged 18 years or older. As exclusion criteria, pregnant women were established, with motor sequelae and psychiatric and/or cognitive disorders, according to a previously defined diagnosis, as they could compromise the results of the research.

Data collection, performed by two duly trained scientific initiation fellows and/or the researcher responsible for the matrix project, occurred from July to December 2017. The participants were randomly selected and approached in the waiting room of the study site, while waiting for consultation with a doctor or nurse, in the System of Registration and Follow-up of Hypertensive and Diabetic patients and/or in the pharmacy, at the time of dispensing medications.

Those responsible for the collection asked the participants if they had had a medical diagnosis of hypertension for at least six months. After confirmation on the registration card of the service, the invitation to participate in the research was made. Then, the objective of the research was informed. In case of acquiescence, the participant was referred to a private room provided by the Research Site Management. After reading, clarifying and signing the Free and Informed Consent Form – a way was provided for each participant – the interview was initiated face to face. Each interview lasted around 30 minutes. At the end, the participant was grateful for his contribution to the study. Freedom of participation was ensured, without causing embarrassment or reprisal.

The interviews were conducted to investigate sociodemographic characteristics, such as gender (female; male); age in years (less than 60 years; greater than or equal to 60 years); self-declared race/color (black; non-black); monthly family income (less than one minimum wage; greater than or equal to a minimum wage, being considered the minimum wage of the time equivalent to R$ 937); education (without formal education; high level; higher education); marital status (with partner; without partner).

Continuing the interview, the frequency of consumption of each variable related to the participants' eating habits was investigated. Food

consumption of beans, vegetables and greens, salads, red meat, chicken, fruits, foods categorized into consumption for five or up to seven days or consumption less than five days (consumption during the week) was raised. In addition, data were collected on the consumption of soft drinks (zero to two days or three or more days), eggs (up to three eggs or three or more eggs), salt consumption per day (up to one coffee spoon or greater than or equal to a coffee spoon) and use of salt substitutes, with regard to the use of industrialized seasonings , such as powder broths and sauces (yes or no). These eating habits explored were categorized based on Vigitel Brazil, elaborated by the Brazilian Ministry of Health. This instrument addresses aspects related to the risk and profile of food of the Brazilian people[2]. The monthly family income was considered as an independent variable; and as dependent variables, eating habits.

The data were coded and entered in the statistical software Statistical Package for the Social Sciences (SPSS), version 21.0, for treatment and generation of results.

The variables studied were analyzed descriptively and presented in tables, containing absolute (n) and relative (%) frequencies. Bivariate analyses were performed in order to describe and verify proportional differences between the characteristics of interest of the study (income variables and eating habits), by applying Pearson's Chi-square tests. The level of statistical significance adopted was 5%.

The matrix research was approved by Opinion nº 1,182,032, of 5/6/2015, of the Research Ethics Committee of the School of Nursing of the Federal University of Bahia. The research had to be interrupted due to the reform of the study unit, the Multicenter, and soon submitted an addendum to the Research Ethics Committee, requesting new authorization to begin collection after the reopening of the site. Therefore, it was analyzed and approved, according to Opinion n. 273.310/2017 and Certificate of Presentation for Ethical Appreciation n. 43800915.0.0000.5531.

The research followed the ethical principles involving research with human beings regulated by the National Health Council, as well as the basic principles of bioethics.

Results

In the sample, consisting of 221 hypertensive participants, women predominated (81.4%), older than 60 years (53.4%), self-declared black race/color (95.9%), people with a partner (76.0%), educational level up to complete high school (74.6%) and monthly income below one minimum wage (value = R$ 937) (60.6%), according to Table 1.

Table 1 – Sociodemographic characteristics of hypertensive people attended at Health Multicenter, Salvador, Bahia, Brazil – 2017. (N=221)   (continued)

Variables	n	%
Gender		
Male	41	18.6
Female	180	81.4
Age (years)		
≤ 60	103	46.6
> 60	118	53.4
Self-declared race/color		
Black	212	95.9
Not black	9	4.1
Marital Status		
With partner	168	76.0
Without partner	53	24.0
Monthly family income/minimum wage (1)		
<1	134	60.6
1 - 2	78	35.3
≥3	9	4.1

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Table 1 – Sociodemographic characteristics of hypertensive people attended at Health Multicenter, Salvador, Bahia, Brazil – 2017. (N=221) (conclusion)

Variables	n	%
Educational Level		
No formal education	9	4.1
High school	165	74.6
Higher Education	47	21.3

Source: Created by the authors.

(1) Minimum Wage (MW) at research time: R$ 937.

Regarding the frequency of eating habits in relation to income, there was a predominance of the consumption of vegetables (69.1%), beans (68.2%), salad (65.6%), red meat (64.5%) and chicken (64.9%), in a period of less than five days a week, among people with an income below one minimum wage. Between income and consumption of beans, salad, red meat, chicken, soda, salt and eggs, there were no statistically significant associations. However, the association between income and consumption of vegetables and greens and fruits was statistically significant (p=0.027 and p=0.003, respectively), demonstrating that hypertensive people with incomes lower than a minimum wage consume these types of foods less times a week. The use of products to replace salt by people with an income lower than one minimum wage (69.6%) predominated, with a statistically significant difference between the variables use of salt substitutes and income (p=0.043) (Table 2).

Table 2 – Monthly income and eating habits of hypertensive people attended at Health Multicenter. Salvador, Bahia, Brazil – 2017. (N=221) (continued)

Eating Habit	n (%)	Monthly income		P value
Consumption / week (days)	221 (100%)	Lower than one minimum wage	Higher or equal than one minimum wage	
Bean				
≥ 5	117 (52.9)	70 (59.8)	47 (40.2)	0.122
< 5	104 (47.1)	71 (68.2)	33 (31.8)	
Vegetables and greens				
≥ 5	85 (38.5)	47 (55.3)	38 (44.7)	0.027(2)
< 5	136 (61.5)	94 (69.1)	42 (30.9)	
Salad				
≥ 5	67 (30.3)	40 (59.7)	27 (40.3)	0.246
< 5	154 (69.7)	101 (65.6)	53 (34.4)	
Red meat				
≥ 5	80 (36.2)	50 (62.5)	30 (37.5)	0.436
< 5	141(63.8)	91 (64.5)	50 (35.5)	
Chicken				
≥ 5	87 (39.4)	54 (62.1)	33 (37.9)	0.386
< 5	134 (60.6)	87 (64.9)	47 (35.1)	
Fruits				
≥ 5	70 (31.7)	54 (77.1)	16 (22.9)	0.003(2)
< 5	151 (68.3)	87 (57.6)	64 (42.4)	
Soda				
0 - 2	208 (94.1)	133 (63.9)	75 (36.1)	0.539
≥ 3	13 (5.9)	8 (61.5)	5 (38.4)	
Eggs				
≤ 3	147 (66.5)	92 (62.6)	55 (37.4)	0.353
> 3	74 (33.5)	49 (66.2)	25 (33.8)	

Table 2 – Monthly income and eating habits of hypertensive people attended at Health Multicenter. Salvador, Bahia, Brazil – 2017. (N=221)

(conclusion)

Eating Habit Consumption / week (days)	n (%) 221 (100%)	Monthly income		P value
		Lower than one minimum wage	Higher or equal than one minimum wage	
Salt/day				
Up to a coffee spoon	111 (50.2)	71 (64.0)	40 (36.0)	0.536
Greater than or equal to a coffee spoon	110 (49.8)	70 (63.6)	40 (36.4)	
Uses salt substitute product (1)				
Yes	115 (52.0)	80 (69.6)	35 (30.4)	0.043(2)
No	106 (48.0)	61 (57.6)	45 (42.4)	

Source: Created by the authors.

Season minimum wage = R$ 937.
(1) Use of industrialized spices, examples of powdered powder broths and sauces.
(2) Statistically significant p-value.

Discussion

The results of this research revealed a statistically significant association between monthly income and the participants' eating habits, specifically with regard to the consumption of vegetables or vegetables, fruits and the use of salt substitute products.

It is believed that economic vulnerability, combined with the personal and collective preferences of participants, may influence the adoption of healthier habits or not. The results of this research showed lower consumption of vegetables among people with incomes below one minimum wage. The specificities and cultural, social and demographic characteristics of the community stand out, which integrate, in daily life, the potential afrodescendant influence, with access to foods rich in calories and condiments, typical of African cuisine.

Healthy eating, indicated by health professionals for people with hypertension for disease control, is based on a daily food menu rich in fruits, vegetables, greens, nuts, chicken, fish, whole grains, being reduced in the diet fatty dairy foods, total fats, saturated fats and foods rich in cholesterols, in addition to reducing red meat and foods with high amount of sodium – Dietary Approaches Stop to Hypertension (DASH). However, this study points out difficulties that were reported by individuals with hypertension to comply with this healthy diet. The financial factor was highlighted, because low income limits the acquisition of foodstuffs, as well as makes it difficult to obtain nutritional guidance individually, since the access they have to the nutritionist occurs in the Family Health Unit. Considering that this service has only one nutritionist for the entire population covered by the unit, individual follow-up with high frequency is difficult[12].

Another study, conducted in 2018 with hypertensive people[13], reports that the DASH diet, rich in fruits, vegetables and vegetables, is capable of reducing systolic blood pressure by 5.5 mmHg and diastolic blood pressure by 3.0 mmHg. It also points out that this diet can be a nutritional therapy strategy for the treatment of hypertension.

The examination of the association between various diseases and chronic conditions, such as hypertension, in research conducted in Brazil by the Federal University of Rio Grande do Sul[14] and, in Spain, by the University of Navarra[15], states that a diet rich in fruits, vegetables and greens and with a reduction in sodium content is related to the reduction of blood pressure, justified by the control of body weight and intake of vitamins and minerals.

In the sample of this study, there was an association between fruit consumption, on five or more days a week, by people with a

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monthly income lower than one minimum wage. Therefore, for the studied sample, fruit consumption was a protective factor for hypertension condition, since this intake occurred regularly. According to Vigitel Brazil, the consumption of fruits and vegetables on five or more days a week is considered regular. In 2017, in the city of Salvador, the consumption of fruits and vegetables on five or more days a week obtained a percentage of 17,8%[2]. Therefore, it is observed that a small portion of the population had regular consumption of fruits and greens.

In a study conducted in the city of Fortaleza, Ceará[16], Brazil, a reduced consumption of fruits and vegetables was found by people with hypertension. It is emphasized that the intense consumption of these foods favors the obtaining of nutrients such as potassium, calcium and fibers, essential elements for reducing blood pressure.

Another important aspect, evidenced in this research, is the association between monthly income lower than a minimum wage and use of salt substitute products, such as industrialized seasonings, examples of broths and sauces. These salt substitutes make people in this group more exposed to the risk of developing complications and dying as a result of hypertension due to excess sodium. As for the consumption of the salt itself, there was no significant difference between the groups.

The literature shows that the new eating habits of society, accompanied by excessive sodium intake, both in industrialized foods and in those in natural state that contain this substance, negatively influence the homeostasis of the body and cause cardiovascular diseases and complications, such as hypertension. New disease prevention strategies and healthier eating practices need to be encouraged, as a small reduction in the amount of sodium consumed can improve health and reduce financial expenses with the treatment of hypertension and its complications. Alternative products to sodium have been listed, such as the use of turmeric, basil, rosemary, oregano, among others, which are important for reducing sodium in food, besides providing more flavor in recipes[17].

Regarding the other food products listed in the research, such as chicken, red meat, eggs and soda, no significant differences were found between the groups.

The research identified a predominance of women, since it can be justified by male beliefs that cause men not to recognize their own health needs, reject the possibility of getting sick and performing preventions, perpetuating the cultural issue of male invulnerability, the social role of family provider[18].

Most of the participants were elderly, about three quarters of the sample lived with a partner and studied until high school. This reflects the conditions of vulnerability to which study participants are exposed and can directly influence the greater control of the disease and increased cardiovascular risk. There is evidence that hypertension is more prevalent in men, more severe in the black race and less controlled in subjects with low educational level and income, conditions that may further expose the participants of this research for the development of complications of the disease[19].

There was a predominance of afrodescendants, which was expected, since data collection was developed in a place that has origin and black culture, the neighborhood that is home to the oldest Afro block of Salvador carnival. In another study conducted with hypertensive patients from the primary care network of the same city, in 2017, 92.6% of the patients were black/black and brown[20], data that are similar to that found in this study.

In the city of Passos, Minas Gerais, Brazil, a study was developed with patients assisted in the Family Health Strategy, which indicates a prevalence of hypertension in black people and individuals with low income, affirming the association between schooling and lower socioeconomic level[21]. This result corroborates the data found in this study.

Studies conducted in the interior of Bahia[12] and in Porteirinha, Minas Gerais[22], indicate the predominance of low educational level among individuals with hypertension. The studies consider school education as fundamental for

effective treatment, because low educational level can cause, in individuals, difficulties to understand the orientations transmitted by professionals and imply negative evolution of hypertension. This may occur because the information is misassimilated or incomplete, causing harm to the well-being of individuals in the treatment of hypertension. Nevertheless, in this study, school education was a protective factor for hypertension, since most hypertensive patients had a higher educational level, including people with high school and higher education.

The predominant monthly family income was lower than one minimum wage, a factor that can make people in this group more exposed to the disease's control[12,19,22-23]. In line with what was found in the on-screen study, other studies conducted in Family Health Units, one in Bahia[12] and another in Minas Gerais[22], found that most people with hypertension had a monthly family income of up to one minimum wage, and that this would be a factor that interfered in the follow-up of hypertension treatment correctly.

According to data from the Superintendence of Economic and Social Studies of Bahia (SESS), considering only the Economically Active Population (EAP), in Salvador, the number of unemployed in the last quarter of 2017 was 470,000, which represented an increase of 14,000 unemployed, compared to the previous quarter of the same year. In the first months of 2018, the total unemployment rate in the metropolitan region of Salvador increased from 25.0% to 25.5%. There was also an increase in the rate of open unemployment, referring to unemployed people who were not involved in any activity that guaranteed them any income, from 18.3% to 18.8%[24]. This growth in the unemployment rate may limit adequate food consumption, due to low or no income that allows the choice or maintenance of a healthy diet rich in fruits, vegetables and greens.

According to data from the Brazilian Institute of Geography and Statistics – IBGE Cities[25] –, the average salary of formal workers in the capital of Bahia was 3.5 minimum wages, and the proportion of people employed in relation to

the total population was 30.5%. The proportion of households with monthly income of up to half a minimum wage was 36.8%. It is noted that Salvador is one of the Brazilian capitals with a high number of people who receive less than one minimum wage.

The predominance of individuals with low income among the population with hypertension, as well as the predominance of unhealthy eating among people with lower purchasing power, may probably be directly influencing the uncontrollability of the disease. In addition, they can cause complications, such as the emergence of new chronic diseases and, therefore, bring to the fore the need for interventions to improve the health perspective of these individuals in situations of higher risk.

As limiting factors of the study, we mention the data collection to have occurred in a single Multicenter, located in a neighborhood of afrodescendant predominance, with characteristics specific to the local culture, and strong scientific evidence of risk for hypertension in this population, besides the self-reported data, a factor that may also be limiting for future research. Thus, because this is a cross-sectional study, a cause-effect relationship is not established, which is reflected in the caution regarding the generalization of the results. Expanding this research to other regions may be important and necessary to ask how hypertensive people from different contexts behave in the face of the object of study.

Conclusion

A group with a predominance of low income and inadequate eating habits was found. Among the variables studied, there was a statistically significant association between income below one minimum wage and consumption of vegetables or greens and fruits, in frequency less than five days a week, and use of salt substitute products.

The results of this study may favor the more effective direction of the treatment of people with hypertension who present risk factors related

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to lack of control of the disease. Moreover, the study requires rethinking public policies and, perhaps, a more interdisciplinary approach, which addresses the specificities related to each of the risk factors that interfere in the lack of control of hypertension in more vulnerable populations.

Collaborations:

1 – conception, design, analysis and interpretation of data: Cláudia Geovana da Silva Pires;

2 – writing of the article and relevant critical review of the intellectual content: Cleise Cristine Ribeiro Borges Oliveira, Alana de Souza Reis Carneiro, Tatiane Araújo dos Santos, Elieusa e Silva Sampaio, Mariana de Almeida Moraes and Cláudia Geovana da Silva Pires;

3 – final approval of the version to be published: Cleise Cristine Ribeiro Borges Oliveira, Alana de Souza Reis Carneiro, Tatiane Araújo dos Santos, Elieusa e Silva Sampaio, Mariana de Almeida Moraes and Cláudia Geovana da Silva Pires.

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