

## Health behaviors and hypertension control: the results of ELSI-BRASIL

Comportamentos em saúde e o controle da  
hipertensão arterial: resultados do ELSI-BRASIL

Comportamientos de salud y control de la  
hipertensión arterial: resultados de ELSI-BRASIL

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### Abstract

*This study aimed to measure the contribution of selected health behaviors to the prevalence of hypertension control in Brazilian adults 50 years or older, based on data from the ELSI-Brasil study. The study included 4,318 individuals 50 years or older who reported having received a medical diagnosis of hypertension and were taking antihypertensive medication. The selected health behaviors were: physical activity, healthy diet, not consuming excessive alcohol, and never having smoked. The contribution of each health behavior to prevalence of hypertension control was estimated by the attribution method, via adjustment of the binomial additive hazards model, stratified by sex. Prevalence of hypertension control was 50.7% (95%CI: 48.2; 53.1). Overall, health behaviors made a larger contribution to hypertension control in women (66.3%) than in men (36.2%). Moderate alcohol consumption made the largest contribution in both sexes, but particularly in women (52.7% in women versus 19% in men). Physical activity contributed 12.6% in women and 10.7% in men. The other behaviors were more relevant in men: never having smoked (3.4%) and regular consumption of vegetables, legumes, and fruits (3.1%). These results underline the need for measures to promote the adoption of healthy behaviors by hypertensive individuals to reduce blood pressure levels, improve the effectiveness of antihypertensive medication, and decrease their cardiovascular risk.*

Hypertension; Healthy Lifestyle; Epidemiology; Sex

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## Introduction

Hypertension is still a public health problem worldwide due to its high prevalence and difficult control<sup>1,2,3</sup>. Prevalence of hypertension is high in the general population (about 30%) and increases sharply with age, reaching some 65% of the elderly<sup>1,4,5,6,7</sup>. The importance of hypertension control (systolic pressure < 140mmHg and diastolic pressure < 90mmHg)<sup>8,9</sup> to reduce cardiovascular morbidity and mortality has been highlighted in various studies<sup>10,11</sup>. In recent decades, even with the development of modern pharmaceutical technologies, blood pressure control is still low, posing a major global public health challenge<sup>2,3,10</sup>.

Various studies in different populations have focused on assessing the prevalence of blood pressure control in hypertensive individuals. A study in China consisting of 1,738,886 adults 35 to 75 years of age showed that fewer than 30% of the study population had their blood pressure controlled<sup>12</sup>. A multicenter study of Ghanaian migrant men living in Amsterdam, London, and Berlin showed low hypertension control, with prevalence ranging from 20 to 36%<sup>13</sup>. The same result was observed in Mozambique, where prevalence of control was 33%<sup>14</sup>. In the United States, in 1999-2000, according to a report from the *National Health and Nutrition Examination Survey* (NHANES), prevalence of hypertension control was 31.6%, increasing to 53.1% from 2009 to 2010 and remaining stable until 2016, when prevalence of hypertension control dropped to 48.3%<sup>15</sup>. In Canada, prevalence of control increased from 12% to 66% from 1990 to 2006<sup>16</sup>.

In Brazil, to our knowledge, only one study examined the prevalence of hypertension control from 1997 to 2008 in community-living elderly 70 years or older, showing a decrease in prevalence of this control from 44.6% to 40.1%<sup>17</sup>.

Although antihypertensive medication has precise indications, the adoption of a healthy lifestyle is strongly recommended for the control of this condition<sup>9</sup>, featuring regular physical activity, healthy eating, smoking cessation, and moderate alcohol consumption<sup>11,18,19</sup>. This indication is based on evidence that these behaviors can reduce blood pressure levels, improve the effect of antihypertensive drugs, and decrease the cardiovascular risk, and that this effect is enhanced when two or more of these practices are combined<sup>20</sup>. However, unhealthy behaviors are persistent even after a diagnosis of hypertension, which can contribute to the lack of blood pressure control in these individuals<sup>8</sup>.

Although some studies have assessed factors associated with blood pressure control in hypertensive individuals<sup>2,20</sup>, to our knowledge there are no population-based studies that have measured the contribution of health behaviors to this control. The current study thus aimed to quantify the contribution of selected health behaviors (physical activity, diet, and drinking and smoking habits) to blood pressure control in a representative national sample of the Brazilian population 50 years or older.

## Methods

### Study scenario and population

The *Brazilian Longitudinal Study of Aging* (ELSI-Brasil) is a household-based study that aims to examine the dynamics of aging in the Brazilian population and its determinants, as well as this population's demand on the social and health systems. The sample was designed to represent the Brazilian population 50 years and older, and the baseline consisted of all the residents from this age bracket in the sampled households. For the sample calculation, municipalities were allocated in four strata according to their population size. The first three strata consisted of municipalities with up to 750 thousand inhabitants, and the sample was selected in three stages (municipality, census tract, and household). In the fourth stratum, consisting of large municipalities, selection was in two stages (census tract and household). The final sample consisted of 10 thousand individuals (9,412 participated) living in households located in 70 municipalities in different regions of Brazil. Data were collected using a questionnaire at the participant's home, where physical examination was performed and samples were collected for laboratory tests. All the personnel involved in this process were trained and certified by the project's coordinators. Further details on ELSI are available on the research project's homepage (<http://elsi.cpqrr.fiocruz.br/>) and in another publication<sup>21</sup>.

The eligible population for the current study consists of participants who responded affirmatively to the following questions: (a) “Has a doctor ever told you that you have hypertension (high blood pressure)?” and (b) “Are you taking medication for hypertension (high blood pressure)?”.

### **Study variable**

The study’s dependent variable is hypertension control, defined as systolic pressure < 140mmHg and diastolic pressure < 90mmHg<sup>8,9</sup>. To measure blood pressure, participants remained sitting and resting for at least five minutes. Three measurements were taken, and the final measurement was recorded as the mean of the second and third measurement.

The target health behaviors were regular physical activity, weekly consumption of vegetables, legumes, and fruits, moderate alcohol consumption, and never having smoked. Physical activity included walking and moderate activities, considering only activities performed for at least 10 straight minutes each time. Individuals reported the frequency (days per week) and duration (time per day) of the activities in the week prior to the interview, converted into total time of physical activity in that week. Regular physical activity was defined as at least 150 minutes a week, according to recommendations by the World Health Organization<sup>22</sup> and the 7<sup>th</sup> Brazilian Guidelines on Hypertension<sup>9</sup>.

Regular consumption of vegetables, legumes, and fruits was defined as the consumption of five or more portions of these foods distributed across at least five days a week<sup>22</sup>.

Moderate alcohol consumption was defined as mean consumption of up to two daily doses of alcoholic beverages for men and up to one daily dose for women. One dose contains about 14g of ethanol and is the equivalent of 350mL of beer, 150mL of wine, and 45mL of distilled liquor<sup>23</sup>.

### **Data analysis**

We estimated the prevalence rates for hypertension control and the health behaviors in the sample, stratified by sex. Comparison of the prevalence rates between the sexes used Pearson’s chi-square test, considering the sampling parameters and individuals’ weights.

The attribution method is used to quantify the contribution of a set of explanatory variables to the prevalence of a target outcome in cross-sectional studies<sup>24</sup>. It was used in the current study to quantify each health behavior’s contribution to the prevalence of hypertension control. The method allows estimating each variable’s contribution based on cross-sectional data, combining the health behavior’s prevalence in the sample and the effect (impact) of each behavior on hypertension control, the latter estimated by the binomial additive hazards model.

Using this method, the prevalence of hypertension control is divided into the different health behaviors, recalling that individuals may adopt more than one healthy behavior and that individuals who do not practice any healthy behavior may still have their blood pressure under control. The prevalence of hypertension control not explained by the variables considered in the model is called “background”. Hypertension control of individuals who do not adopt any of the healthy behaviors is thus attributed entirely to background. For individuals who report only or more healthy behaviors, the contribution is divided between these behaviors and the background.

Estimation of the contribution pertaining to each health behavior to the prevalence of hypertension control can be summarized in the following stages:

- (1) Calculation of the likelihood of hypertension control according to cause: prevalence of hypertension control by each health behavior is obtained by calculating the predicted probability of hypertension control for each individual, defined as the sum of the probabilities of hypertension control due to the various health behaviors and the control due to background;
- (2) Total number of individuals with hypertension controlled by cause: sum of the probabilities from each health behavior and background estimated in item (1);
- (3) Contribution of each health behavior to hypertension control: division of the estimated number of individuals with hypertension control according to cause (item 2) by the total number of individuals in the sample.

This process results in each health behavior’s relative contribution, and that of the background, to the prevalence of hypertension control in the study sample (which was the study’s objective).

Further details on the method and its applications can be found in other studies<sup>25</sup> (Yokota RTDC, Looman CW, Nusselder WJ. Addhaz: binomial and multinomial additive hazard models. R package version 0.4. <https://rdr.io/cran/addhaz/>).

The analysis was done for the total sample and stratified by sex, and the results were presented as the regression model's coefficients and respective 95% confidence intervals (95%CI), along with each health behavior's relative contribution to hypertension control. A bubble graph was used to illustrate the results. The data were analyzed with the R software, version 3.4.1 (<http://www.r-project.org>). Analysis of the attribution method used the "addhaz" package, version 0.5, to adjust the binomial additive hazards model and calculate the relative contribution (Yokota RTDC, Looman CW, Nusselder WJ, Van Oyen H. addhaz: binomial and multinomial additive hazard models. R package version 0.5. <https://cran.r-project.org/web/packages/addhaz/index.html>), considering the individuals' weights.

### **Ethical aspects**

ELSI-Brasil was approved by the Institutional Review Board of the René Rachou Research Institute, Oswaldo Cruz Foundation, Minas Gerais (CAAE: 34649814.3.0000.5091). All those who agreed to participate in the study signed a free and informed consent form, specific for each procedure performed.

### **Results**

Among the 9,412 participants from the ELSI-Brasil baseline, 4,451 reported having a medical diagnosis of hypertension and were using antihypertensive medication and were included in this analysis. Of these, 4,310 (96.8%) had complete information for all the variables in the analysis and were included in the study. Prevalence of adequate control of hypertension was 50.2% (95%CI: 47.7; 52.6). Mean age of participants was 64.7 years (standard deviation = 9.9), 59.9% were women, and 37% had less than four years of schooling, while median monthly per capital income was BRL 799.00.

Among 4,451 participants of the ELSI study that reported having received a medical diagnosis of hypertension and using antihypertensive medication, 4,318 (97%) had information for all the variables and were included in the study.

Table 1 shows the prevalence rates for hypertension control and health behaviors in the older adults, according to sex. Among the participants, 50.7% presented controlled blood pressure levels, with no significant differences between women (51.4%) and men (49.6%). As for health behaviors, 58.9% of the women reported never having smoked, a higher proportion than men (33.7%); 98.7% of the women reported moderate alcohol consumption (compared to 94.3% of the men); and 18.9% of the women consumed vegetables, legumes, and fruits regularly, a higher proportion than in men (13.4%). Regular physical activity was similar in women and men (62.5% and 61.7%, respectively).

**Table 1**

Prevalence of hypertension control and healthy behaviors among older Brazilian adults, according to sex. *Brazilian Longitudinal Study of Aging* (ELSI-Brasil, 2016).

| Variables  | Total |            | Women |            | Men  |            |
|--|-------|------------|-------|------------|------|------------|
|  | %     | 95%CI      | %     | 95%CI      | %    | 95%CI      |
| Hypertension control                                     | 50.7  | 48.3; 53.1 | 51.4  | 48.4; 54.4 | 49.6 | 45.9; 53.3 |
| Regular physical activity (at least 150 minutes/week)    | 62.2  | 59.5; 64.8 | 62.5  | 59.2; 65.7 | 61.7 | 58.6; 64.6 |
| Never smoked   | 48.8  | 46.5; 51.1 | 58.9  | 55.7; 62.1 | 33.7 | 30.5; 37.0 |
| Regular consumption of vegetables, legumes, and fruits * | 16.7  | 15.0; 18.6 | 18.9  | 17.0; 21.0 | 13.4 | 11.2; 16.0 |
| Moderate alcohol consumption *                           | 96.9  | 96.1; 97.6 | 98.7  | 98.2; 99.1 | 94.3 | 92.4; 95.7 |

95%CI: 95% confidence interval.

\*  $p < 0.05$ , chi-square test between the sexes.

Table 2 shows the prevalence of hypertension control among participants according to the adoption of healthy behaviors, for the total sample and stratified by sex. Among women, hypertension control was more frequent in those reporting regular physical activity (54.1%), while in men, the highest prevalence of blood pressure control was in those reporting regular consumption of vegetables, legumes, and fruits (56.6%).

Table 3 shows the health behaviors' impact and relative contribution to hypertension control, separately for men and women. In women, moderate alcohol consumption ( $\beta = 0.39$ ) and physical activity ( $\beta = 0.15$ ) had a significant impact on blood pressure control. In men, the only significant impact was from physical activity ( $\beta = 0.15$ ). For the sample as a whole, physical activity ( $\beta = 0.14$ ) and moderate alcohol consumption ( $\beta = 0.21$ ) showed a significant impact on blood pressure control.

The relative contribution of health behaviors to prevalence of hypertension control depends on both the model's estimated impact and the behavior's prevalence in the sample. Both in the total population and the sex strata, moderate alcohol consumption and regular physical activity were the health behaviors that contributed most to blood pressure control. The contribution of moderate alcohol consumption was greater in women (52.68%) than in men (19.02%). For regular physical activity, the contributions were more similar (12.64% for women and 10.74% for men). Table 3 provides detailed information on the contribution by the other health behaviors in the total study population and among women and men.

Figure 1 illustrates the size of the contributions by health behaviors to blood pressure control, as a function of its two dimensions: prevalence of the behavior in the sample and its impact on the outcome. An analysis of the bubble's diameter, which is proportional to the contribution by each health behavior, shows the consistency of the key contribution by moderate alcohol consumption (more intensely by women), followed by regular physical activity (in women and men).

## Discussion

The current study showed that only half (50.7%) of older Brazilian adults who reported taking anti-hypertensive medication had their blood pressure under control. It was also possible to estimate the contribution of selected health behaviors to the prevalence of hypertension control, generally

**Table 2**

Prevalence of hypertension control in older Brazilian adults according to adoption of healthy behaviors, by sex. *Brazilian Longitudinal Study of Aging* (ELSI-Brasil, 2016).

| Healthy behaviors                                      | Total |            | Women |            | Men  |            |
|--|-------|------------|-------|------------|------|------------|
|  | %     | 95%CI      | %     | 95%CI      | %    | 95%CI      |
| Regular physical activity (at least 150 minutes/week)  |       |            |       |            |      |            |
| Yes  | 53.3  | 50.4; 56.2 | 54.1  | 50.6; 57.6 | 52.0 | 47.8; 56.3 |
| No   | 46.4  | 43.3; 49.5 | 46.8  | 42.6; 51.1 | 45.7 | 40.5; 50.9 |
| Never smoked   |       |            |       |            |      |            |
| Yes  | 51.8  | 48.5; 55.2 | 51.7  | 47.8; 55.6 | 52.1 | 47.0; 57.2 |
| No   | 49.6  | 46.5; 52.7 | 50.9  | 47.1; 54.8 | 48.3 | 43.8; 52.8 |
| Regular consumption of vegetables, legumes, and fruits |       |            |       |            |      |            |
| Yes  | 53.3  | 48.1; 58.5 | 51.7  | 46.1; 57.3 | 56.6 | 47.3; 65.5 |
| No   | 50.2  | 47.6; 52.7 | 51.3  | 48.3; 54.3 | 48.5 | 44.7; 52.3 |
| Moderate alcohol consumption                           |       |            |       |            |      |            |
| Yes  | 51.0  | 48.6; 53.4 | 51.7  | 48.7; 54.6 | 50.0 | 46.2; 53.8 |
| No   | 39.6  | 29.1; 51.0 | 29.4  | 15.7; 48.3 | 42.9 | 31.0; 55.7 |

95%CI: 95% confidence interval.

**Table 3**

Coefficient (95%CI) from the binomial additive hazards ratio and relative contribution of health behaviors to hypertension control in older Brazilian adults, according to sex. *Brazilian Longitudinal Study of Aging* (ELSI-Brasil, 2016).

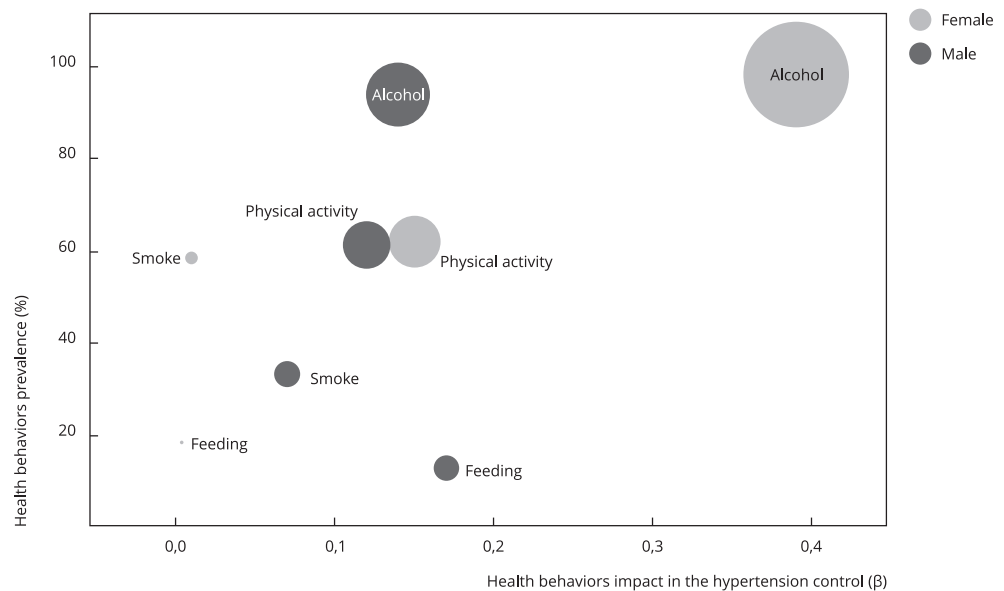
| Health behaviors                                       | Total sample           |                           | Women                  |                           | Men                    |                           |
|--|------------------------|---------------------------|------------------------|---------------------------|------------------------|---------------------------|
|  | Coefficient (95%CI)    | Relative contribution (%) | Coefficient (95%CI)    | Relative contribution (%) | Coefficiente (IC95%)   | Relative contribution (%) |
| Background   | 0.39 *<br>(0.25; 0.57) | 55.61                     | 0.24 *<br>(0.02; 0.57) | 33.67                     | 0.44 *<br>(0.23; 0.68) | 63.72                     |
| Regular physical activity (at least 150 minutes/week)  | 0.14 *<br>(0.07; 0.21) | 11.93                     | 0.15 *<br>(0.06; 0.24) | 12.64                     | 0.12 *<br>(0.01; 0.24) | 10.74                     |
| Never smoked   | 0.04<br>(-0.03; 0.12)  | 2.63                      | 0.01<br>(-0.09; 0.11)  | 0.90                      | 0.07<br>(-0.05; 0.20)  | 3.42                      |
| Regular consumption of vegetables, legumes, and fruits | 0.06<br>(-0.04; 0.16)  | 1.42                      | 0.004<br>(-0.11; 0.13) | 0.11                      | 0.17<br>(-0.02; 0.39)  | 3.10                      |
| Moderate alcohol consumption                           | 0.21 *<br>(0.02; 0.36) | 28.42                     | 0.39 *<br>(0.06; 0.59) | 52.68                     | 0.14<br>(-0.09; 0.34)  | 19.02                     |

95%CI: 95% confidence interval.

\*  $p < 0.05$ .

**Figure 1**

Relative contribution of health behaviors to hypertension control, according to sex. *Brazilian Longitudinal Study of Aging* (ELSI-Brasil, 2016).



evidencing a larger contribution by these behaviors in women. The behaviors that were investigated featured moderate alcohol consumption and regular physical activity.

The prevalence of controlled blood pressure levels in older adults diagnosed with hypertension and taking antihypertensive medication was lower than in Canada (66%)<sup>16</sup>, but higher than in the United States (48%)<sup>15</sup> and in other developing countries (20 to 36%)<sup>13,14</sup>. Our results did not show a significant difference in the prevalence of hypertension control between women and men, although such differences between the sexes (even though not entirely understood) have been identified in other studies, possibly reflecting women's greater concern for the own health<sup>26,27,28</sup>. The differences observed between the sexes and between populations may be partly explained by the combination of factors determining hypertension control, especially adequate treatment and the adoption of healthy habits<sup>26,27,28</sup>. Understanding these combinations is thus important, because although the literature confirms a possible behavior change resulting from the impact of the diagnosis of hypertension (leading the individual to adhere to healthier habits)<sup>8</sup>, it is still possible to observe persistent unhealthy behaviors among hypertensive individuals<sup>29</sup>.

In general, our results indicate that health behaviors can help improve hypertension control, as an adjuvant to medication. The adoption of such behaviors thus has positive repercussions on quality of life and mortality rates in hypertensive individuals, as already demonstrated in the literature<sup>2,11,18</sup>.

The contribution of health behaviors to hypertension control, as described in this study, depends on the behaviors' prevalence and their impact on this control<sup>25</sup>. Larger contributions are not necessarily observed between the most prevalent behaviors or between those with the greatest impact on hypertension control, since such contributions result from the combination of these factors. In men, for example, the greatest estimated impact was from regular consumption of vegetables, legumes, and fruits ( $\beta = 0.17$ ), but since this behavior was less prevalent (13.4%), its contribution was exceeded by that of regular physical activity, which has a smaller impact ( $\beta = 0.12$ ), but which is a more prevalent behavior (61.7%) in this group.

Moderate alcohol consumption (up to two doses a day for men and up to one dose a day for women) was the health behavior that contributed the most to blood pressure control in this population. Evidence indicates that decreasing alcohol consumption significantly reduces blood pressure levels (systolic and diastolic), with a dose-response effect. A decrease in alcohol consumption is even recommended for the prevention and treatment of hypertension among individuals who drink excessively<sup>9,30,31</sup>. The effect of alcohol intake on blood pressure is more striking in the elderly than in the younger population<sup>32</sup>. This may partly explain the large contribution by moderate alcohol consumption to blood pressure control in this population, which consists of individuals 50 years or older. In our study, the contribution of moderate alcohol consumption to blood pressure control was larger in women. This was due to the larger impact of this behavior in women, since the prevalence rates were similar between the sexes. Our results are consistent with findings from a study in Japanese adults, in which alcohol intake increased blood pressure levels more in men than in women<sup>32</sup>.

Next to moderate alcohol consumption, regular physical activity was the health behavior that most contributed to hypertension control, both in the total sample and in men and women. Various studies have evidenced the positive association between physical activity and blood pressure control<sup>10,18,19,33</sup>. The current study corroborates these results, quantifying the contribution of physical activity to hypertension control and highlighting the importance of maintaining physical activity at recommended levels among hypertensive individuals, as an important adjuvant to medication. Despite its importance, regular physical activity is still not a common habit in the population, and especially among the elderly there has been an increase in physical inactivity<sup>18,20</sup>.

Regular consumption of vegetables, legumes, and fruits and never having smoked make a larger contribution to blood pressure control in men than in women (for whom the contribution by these two behaviors was practically nil). This is because the impact of these factors on hypertension control in this population is very low. Women in the current study displayed healthier habits than men, with the largest differences in the prevalence rates of regular consumption of vegetables and fruits and never having smoked. A study in the Austrian adult population ( $\geq 20$  years)<sup>28</sup> found evidence of women's greater propensity to adopt healthy habits, especially quality diet. Another study showed that among females 10 years or older in Campinas, São Paulo, adherence to healthy life habits is not due to the adoption of single health behaviors. In this study, among women with healthier diet, the



proportions of physical exercise and absence of smoking were also higher<sup>27</sup>. These results suggest a more comprehensive adoption of healthy behaviors by women, occurring homogeneously in the two groups assessed (both with controlled and uncontrolled hypertension) and attenuating the impact of these behaviors on prevalence of blood pressure control.

Special attention should be given to the control of hypertension attributed to background, indicating that among both women (33.7%) and men (63.7%), hypertension control is attributed to other factors, such as schooling, socioeconomic status, obesity, and others, which are widely described in the literature as associated with hypertension control<sup>2,10,20,28</sup>, but which were not the focus of the current study. In addition, the drug treatment variable used in ELSI-Brasil was based on the participant's self-report and does not mean that the reported treatment was followed according to the medical prescription. A qualitative study in Bambuí, Minas Gerais, Brazil, showed that elderly individuals' understanding of the use of antihypertensive medication does not necessarily coincide with the medical prescription<sup>34</sup>. These findings suggest that in addition to the other factors mentioned above, part of the prevalence attributed to background may be due to the inability to determine whether the drug prescription was followed correctly.

The current study's potential limitations include the cross-sectional design, which does not allow establishing a temporal relationship between the variables. The study was not exploratory, nor did it aim to identify the determinants of hypertension control, so that the discussion only pointed to possible hypotheses for the prevalence attributed to background and for the observed differences between the sexes. Importantly, these results cannot be extrapolated to the individual level or to other populations, since they depend on the behavior's prevalence in the respective population. Despite the above, the study was conducted in a representative sample of Brazil's older adult population, using standardized data collection procedures, as the first study to quantify the contribution of health behaviors to blood pressure control.

In short, the study's results showed that only half of the hypertensive individuals had their blood pressure under control. The study also identified an important contribution by moderate alcohol consumption and physical activity to blood pressure control. These data reinforce the need for measures that promote and encourage improvements in health behaviors in the population.

## Contributors

J. O. A. Firmo, S. V. Peixoto, A. I. Loyola Filho, P. R. B. Souza-Júnior, F. B. Andrade, M. F. Lima-Costa e J. V. M. Mambrini participated in the study's conception, analysis and interpretation of the results, preparation and writing of the manuscript, and critical revision of the content.

## Additional informations

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## Resumo

O objetivo foi quantificar a contribuição de comportamentos em saúde selecionados para a prevalência do controle da hipertensão junto a adultos brasileiros com 50 ou mais anos de idade. Foram analisados os dados do ELSI-Brasil. Foram incluídos, no estudo, 4.318 indivíduos com 50 anos ou mais, que relataram ter recebido diagnóstico médico de hipertensão arterial e faziam tratamento medicamentoso para ela. Os comportamentos em saúde selecionados foram: prática de atividade física, adoção de dieta saudável, não consumir de forma excessiva bebida alcoólica e nunca ter fumado. A contribuição de cada comportamento em saúde estudado para a prevalência do controle da hipertensão arterial foi estimada pelo método da atribuição, por meio do ajuste do Modelo Binomial de Riscos Aditivos, estratificado por sexo. A prevalência do controle da hipertensão foi de 50,7% (IC95%: 48,2; 53,1). De maneira geral, os comportamentos em saúde tiveram uma maior contribuição para o controle da hipertensão nas mulheres (66,3%) do que nos homens (36,2%). O consumo moderado de álcool foi o que mais contribuiu em ambos os sexos (52,7% em mulheres; 19% em homens), sendo destacada a sua contribuição para as mulheres. A prática de atividade contribuiu com 12,6% em mulheres e 10,7% em homens. Os demais comportamentos apresentaram maior relevância entre os homens: nunca ter fumado (3,4%) e consumo regular de verduras, legumes e frutas (3,1%). Esses resultados reforçam a necessidade de medidas que promovam a adoção de comportamentos saudáveis entre hipertensos para reduzir os níveis pressóricos, melhorar o efeito dos anti-hipertensivos e diminuir o risco cardiovascular.

Hipertensão; Estilo de Vida Saudável;  
Epidemiologia; Sexo

## Resumen

El objetivo fue cuantificar la contribución de comportamientos de salud, seleccionados para la prevalencia del control de la hipertensión, entre adultos brasileños con 50 o más años de edad. Se analizaron los datos de ELSI-Brasil. Se incluyeron en el estudio a 4.318 individuos, con 50 años o más, que informaron haber recibido un diagnóstico médico de hipertensión arterial y contaban con un tratamiento médico para la misma. Los comportamientos de salud seleccionados fueron: práctica de actividad física, adopción de una dieta saludable, no consumir de forma excesiva bebidas alcohólicas y no haber fumado nunca. La contribución de cada comportamiento de salud estudiado para la prevalencia del control de la hipertensión arterial se estimó mediante el método de la atribución, a través del ajuste del modelo binomial de riesgos añadidos, estratificado por sexo. La prevalencia del control de la hipertensión fue de un 50,7% (IC95%: 48,2; 53,1). De manera general, los comportamientos de salud tuvieron una mayor contribución para el control de la hipertensión en las mujeres (66,3%) que en los hombres (36,2%). El consumo moderado de alcohol fue lo que más contribuyó en ambos sexos (52,7% en mujeres; 19% en hombres), siendo destacada su contribución en el caso de las mujeres. La práctica de actividad contribuyó con un 12,6% en mujeres y un 10,7% en hombres. Los demás comportamientos presentaron mayor relevancia entre los hombres: no haber fumado nunca (3,4%) y consumo regular de verduras, legumbres y frutas (3,1%). Esos resultados refuerzan la necesidad de medidas que promuevan la adopción de comportamientos saludables entre hipertensos para reducir los niveles presóricos, mejorar el efecto de los antihipertensivos y disminuir el riesgo cardiovascular.

Hipertensión; Estilo de Vida Saludable;  
Epidemiología; Sexo

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