

## Prevalence of behaviors and risk factors for cardiovascular diseases in hypertensive population in the north of Minas Gerais, Brazil

Prevalência de comportamentos e fatores de risco para doenças cardiovasculares em população de hipertensos no norte de Minas Gerais, Brasil\*

La prevalencia de conductas y factores de riesgo de enfermedades cardiovasculares en la población hipertensa en el norte de Minas Gerais, Brasil

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### ABSTRACT

**Objective:** Estimate the prevalence of high-risk behaviors and cardiovascular risk factors in hypertensive population assisted by the teams of the Family Health Strategy (FHS) in a northern city of Minas Gerais, Brazil. **Methods:** This is cross-sectional study with representative sample of hypertensive population registered by teams of the FHS. The prevalence of risk factors and behaviors were compared between men and women using the chi-square test, assuming a significance level of 5% ( $p < 0.05$ ). **Results:** The study included 720 people. Among the variables investigated, we highlight the following risk behaviors: inactivity, low fruit intake and consumption of red meat with visible fat. Some risk factors were more prevalent among men and higher proportions of values for uncontrolled hypertension were also recorded for men (57.6%). **Conclusions:** The results showed a high prevalence of risk factors and high-risk behaviors for cardiovascular disease in this population, especially among men.

**Descriptors:** Hypertension, Risk Factors, Cardiovascular Diseases.

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## RESUMO

**Objetivo:** Estimar a prevalência de comportamentos e fatores de risco cardiovascular em hipertensos assistidos pelas equipes da Estratégia Saúde da Família (ESF) em uma cidade do norte de Minas Gerais. **Método:** Trata-se de estudo transversal, com amostra de hipertensos cadastrados em equipes da ESF. As prevalências de fatores e comportamentos de risco foram comparadas entre homens e mulheres por meio do teste qui-quadrado, assumindo-se um nível de significância de 5% ( $p < 0,05$ ). **Resultados:** Participaram do estudo 720 pessoas. Dentre as variáveis investigadas, destacam-se os seguintes comportamentos de risco: sedentarismo, o baixo consumo de frutas e o consumo de carnes vermelhas com gordura aparente. Alguns fatores de risco foram mais prevalentes entre os homens e proporções maiores de valores para hipertensão não controlada também foram registradas para os homens (57,6%). **Conclusão:** Os resultados revelaram elevada prevalência de fatores e comportamentos de risco para doença cardiovascular para a população estudada, especialmente entre os homens.

**Descritores:** Hipertensão, Fatores de Risco, Doenças Cardiovasculares.

## RESUMEN

**Objetivo:** Estimación la prevalencia de conductas y factores de riesgo cardiovascular en hipertensos asistidos por los equipos de la Estrategia de Salud de la Familia (ESF) en una ciudad del norte de Minas Gerais. **Método:** Este es un estudio transversal, una muestra representativa de hipertensos registrados en los equipos de la ESF. La prevalencia de factores de riesgo y los comportamientos fueron comparados entre los hombres y las mujeres que usan la prueba de chi-cuadrado, asumiendo un nivel de significación del 5% ( $p < 0,05$ ). **Resultados:** El estudio incluyó a 720 personas. Entre las variables investigadas, destacamos los siguientes comportamientos de riesgo: La falta de actividad física, bajo consumo de frutas y el consumo de carne roja con grasa visible. Algunos factores de riesgo son más prevalentes entre los hombres y las más altas proporciones de valores para la hipertensión no controlada también se registraron para los hombres (57,6%). **Conclusión:** los resultados. Los revelaron una alta prevalencia de factores de riesgo y los comportamientos de la enfermedad cardiovascular en esta población, especialmente entre los hombres.

**Descriptores:** Hipertensión, Factores de Riesgo, Enfermedad Cardiovascular.

## INTRODUCTION

Cardiovascular diseases are the leading cause of death in both developed and developing countries.<sup>1</sup> This can be explained in part by the high prevalence of associated risk factors such as: smoking, obesity, sedentary lifestyle, diabetes, dyslipidemia, and systemic arterial hypertension (SAH).<sup>2</sup> Among cardiovascular diseases, SAH, ischemic heart and cerebrovascular diseases are considered to be the most important in terms of collective health, since they are an important cause of morbidity and mortality, directly affecting daily activities of patients, with economic repercussions and the quality of life of the patient.<sup>3</sup>

Particularly in relation to SAH, its adequate approach must take into account not only its blood pressure levels, but also the presence of target organ lesions and the presence of other associated risk factors. This recommendation is based on the fact that few hypertensive patients have only high blood pressure levels, since most of them have other

cardiovascular risk factors (CVR).<sup>4</sup> The measurement is particularly important because the combination of SAH with these factors is more damaging than the sum of them alone, considering a potential severe cardiovascular outcome.

It is desirable, therefore, that the hypertensive patient be globally assisted and have his/her CVR systematically evaluated, so that specific measures are adopted. The Framingham Scale or Score (FS) is recommended by the Brazilian Ministry of Health for evaluation and follow-up of hypertensive patients.<sup>5</sup> It estimates the likelihood of myocardial infarction or coronary heart disease death within 10 years in individuals without prior clinical atherosclerosis. Although this risk estimate is subject to corrections, according to epidemiological indicators of the studied population, FS correctly identifies high and low risk individuals.<sup>5</sup> It is important to note, however, that there are other scales for the evaluation of CVR, each with its particularities and some behaviors are known to be harmful to cardiovascular health, but are not present in some scales.<sup>6</sup>

Unfortunately, systematic evaluation of patients for the recognition of CVR is not a common practice for primary care teams in the country.<sup>7</sup> Some authors also point out that these teams do not achieve great successes in the control of hypertensive patients.<sup>8-9</sup> All of these conditions highlight the importance of knowing the prevalence of cardiovascular risk factors and risk behaviors associated with hypertension, an aspect that is still little discussed in the national literature.

The present study aimed to estimate the prevalence of cardiovascular risk factors and behaviors in hypertensive patients assisted by the Family Health Strategy (FHS) teams in a city in the north of Minas Gerais.

## METHODS

This is a cross-sectional study, whose data were collected in the city of Pirapora (MG), in the basic health units of the ESF teams, by a specially trained team.

The data collection instrument was based on previously validated forms<sup>10</sup> and included socio-demographic, economic variables, life habits, comorbidities, aspects related to the use of health services and self-perception of health. Anthropometric and blood pressure measures were also checked, following classic norms for the measurement of such procedures.<sup>11-12</sup>

For the allocation of the users to the research, a probabilistic sampling process was used, with proportional stratified sampling. That is, the number of hypertensives allocated in each unit was proportional to the number of people enrolled. All units of the municipality's FHS teams were involved in the study.

The size of the hypertensive sample in the study was defined considering a prevalence of 25%, an estimated population of 30,000 people assisted by FHS and over the age of 18 years, a margin of error of 5% and a confidence level of 95%. Considering that this was a cluster sampling (health units), the identified number was multiplied by a

correction factor (deff) equal to 2 and increased by 20% for eventual losses. Thus, minimum number of people for the study defined by the sample calculation was 687 people.

The data collected were analyzed through the Statistical Package for the Social Sciences (SPSS), version 17.0 (SPSS for Windows, Chicago, USA). Initially, the demographic and socioeconomic characteristics of the group were evaluated in a descriptive way. The behaviors and risk factors were evaluated comparatively between men and women using the chi-square test, assuming a level of 5% ( $p < 0.05$ ) to define statistically significant differences between the genders.

All the participants were guided about the research and presented their consent by signing a Free and Informed Consent Form (either directly or through a relative, for the illiterate). The research project was approved by the

Research Ethics Committee of the State University of Montes Claros.

## RESULTS AND DISCUSSION

The study involved 720 people, aged between 23 and 98 years, with a predominance of the age group of 60 years or older. The predominant gender was female (71.8%). The self-reported brown skin color was the most cited (51.5%) and the most prevalent marital status was married or stable. The main demographic and socioeconomic characteristics of the studied population are presented in Table 1.

Table 2 presents the risk behaviors and comorbidities reported by the group studied. Among the variables investigated, we highlight the sedentarism, the low consumption of fruits and the consumption of red meat with apparent fat.

**Table 1** – Demographic and socioeconomic characteristics of hypertensive patients assisted by Family Health teams; 2014

Variables	Men		Women		Total	
	n	%	n	%	n	%
<b>Agee (years)</b>						
< 40	2	1,0	37	7,2	39	5,4
40-59	65	32,0	177	34,2	242	33,6
≥60	136	67,0	303	58,6	439	61,0
<b>Skin color</b>						
Brown	108	53,2	263	50,9	371	51,5
Black	55	27,1	145	28,0	200	27,8
White	37	18,2	105	20,3	142	19,7
Asian/Indigenous	3	1,5	4	0,8	7	1,0
<b>Marital status</b>						
Single	22	10,8	77	14,9	99	13,8
Married/Stable union	153	75,4	243	47,0	396	55,0
Divorced/separated	10	4,9	42	8,1	52	7,2
Widow	18	8,9	155	30,0	173	24,0
<b>Health plan</b>						
Yes	39	19,3	92	18,3	131	18,3
No	163	80,7	422	81,7	585	81,7
<b>Education</b>						
No education	26	12,9	65	12,7	91	12,8
1-5 years	102	50,7	279	54,5	381	53,4
6-9 years	41	20,4	82	16,0	123	17,3
> 9 years	32	15,9	86	16,8	118	16,5
<b>Family income</b>						
≤ 1 minimum wage	72	35,5	252	48,7	324	45,0
1,1 – 2,0	71	35,0	170	32,9	241	33,5
> 2,0	60	29,6	95	18,4	155	21,5
<b>Inhabitants per residence</b>						
≤ 4	159	78,3	385	74,5	544	75,6
5-7	41	20,2	106	20,5	147	20,4
≥ 8	3	1,5	26	5,0	29	4,0
<b>Sanitary sewage</b>						
Present	112	55,2	314	60,7	426	59,2
Absent	91	44,8	203	39,3	294	40,8

**Table 2** – Risk behaviors and comorbidities referred by hypertension patients assisted by Family Health teams; 2014

Variable	Men		Women		p-value*
	n	%	n	%	
<b>Smoking</b>					<b>&lt;0,001</b>
Smoker	28	13,8	37	7,2	
Ex-smoker	99	48,8	116	22,4	
Never smoked	76	37,4	364	70,4	
<b>Physical activity</b>					0,710
Sedentary	95	46,8	231	44,7	
Insufficiently active	47	23,2	135	26,1	
Active/Very active	61	30,0	151	29,2	
<b>Red meat consumption</b>					<b>&lt;0,001</b>
Does not consume	5	2,5	17	3,3	
No apparent fat ever	135	66,5	417	80,7	
With apparent fat	63	31,0	83	16,1	
<b>Consumption of chicken</b>					<b>0,001</b>
Does not consume	8	3,9	11	2,1	
Removes the skin	158	77,8	471	91,1	
Does not remove the skin	37	18,2	35	6,8	
<b>Use of salt</b>					<b>&lt;0,001</b>
Never	176	86,7	493	95,4	
Occasionally	18	8,9	17	3,3	
Frequently/Always	9	4,4	7	1,4	
<b>Consumption of fruits</b>					<b>0,088</b>
Never/almost never	20	9,9	36	7,0	
Less than thrice/week	58	28,6	117	22,6	
Thrice or more/week	125	61,6	364	70,4	
<b>Soft drink consumption</b>					<b>0,020</b>
Never/almost never	130	64,0	356	69,5	
Less than thrice/week	30	14,8	88	17,2	
Thrice or more/week	43	21,2	68	13,3	
<b>Family history of cardiovascular event</b>					<b>0,002</b>
Yes	74	36,5	260	50,3	
No	100	49,3	185	32,8	
Does not know	29	14,3	71	13,9	
<b>Self-reported co-morbidities</b>					
Diabetes	74	36,5	154	29,8	0,084
Heart problem	57	28,1	239	46,2	<0,001
High cholesterol	72	35,5	230	44,5	0,027
Arthritis/artrosis/rheumatism	34	16,7	163	31,5	<0,001
Osteoporosis	18	8,9	105	20,3	<0,001
AVE	22	10,8	31	6,0	0,025

(\*) Chi-square test between genders

Differences were observed between men and women in the following risk behaviors: smoking ( $p < 0.001$ ), consumption of red meat with apparent fat ( $p < 0.001$ ), consumption of chicken without skin removal ( $p = 0.001$ ), use of salt in the dish ( $p < 0.001$ ) and refrigerant consumption ( $p = 0.020$ ). All these behaviors were more frequent among men.

With regard to comorbidities, there was a greater emphasis on high cholesterol and diabetes. Women had a higher frequency of high cholesterol, arthritis / arthrosis / rheumatism, and osteoporosis compared to men. Personal

history of stroke was more commonly reported by males ( $p = 0.025$ ) and family history of cardiovascular event was more commonly reported by females ( $p = 0.002$ ).

Table 3 presents the classification of blood pressure levels and the anthropometric measurements for the hypertensive patients evaluated. More than half of the women presented with controlled or borderline blood pressure. Higher values for mild, moderate and severe hypertension were recorded among males ( $p = 0.001$ ).

Regarding the anthropometric measurements, women presented a higher proportion of abdominal circumference

**Table 3** – Blood pressure and anthropometric and measured variables among hypertensive patients assisted by Family Health teams; 2014

Variable	Men		Women		p-value*
	n	%	n	%	
<b>Measurement of Blood Pressure</b>					<b>0,001</b>
Normal	54	26,6	205	39,7	
Borderline normal	32	15,8	100	19,3	
Slight hypertension	65	32,0	129	25,0	
Moderate hypertension	31	15,3	54	10,4	
Severe hypertension	21	10,3	26	5,0	
<b>Abdominal circumference**</b>					<b>&lt;0,001</b>
< superior limit	129	63,5	112	21,7	
≥ superior limit	74	36,5	405	78,3	
<b>Body Mass Index</b>					<b>&lt;0,001</b>
Low weight/eutrophic	69	34,0	106	20,8	
Overweight	87	42,9	197	38,7	
Obesity	47	23,2	206	40,5	

(\*) Chi-square test between genders

(\*\*) Upper limit set at 102cm for men and 88cm for women

measurements above the upper limit of normality and a higher proportion of obesity ( $p < 0.001$ ).

The present study made it possible to reveal a high prevalence of cardiovascular risk factors and behaviors in hypertensive patients assisted by the FHT teams in the municipality studied. This is a worrying situation, considering that such behaviors and factors are added to the fact that all persons evaluated are already hypertensive and therefore already have a significant risk of having an undesirable cardiovascular outcome.

Study conducted in the South of the country also revealed a high frequency of modifiable risk factors for cardiovascular diseases.<sup>13</sup> The agglomeration of cardiovascular risk factors and a high prevalence of cardiovascular risk factors was also observed in a large population-based study conducted in 16 Brazilian capitals.<sup>14</sup>

Among the risk factors assessed, the sedentary lifestyle was the most frequent, with a similar distribution between men and women. This data was already recorded in a study conducted in the South of Brazil.<sup>13</sup> Although the level of physical activity has not yet been established as a risk factor in classic cardiovascular risk assessment scales, some studies have already established the potential for protection of physical activity against the risk of cardiovascular events. Data from the Multi-Ethnic Study of Atherosclerosis (MESA), concluded that higher levels of physical activity were associated with lower risks of atrial fibrillation.<sup>15</sup> Another important national study observed that the occurrence of in-hospital cardiovascular complication was associated to the time of physical inactivity regardless of age, systolic blood pressure and previous congestive heart failure.<sup>16</sup>

The agglomeration of risk factors showed to be similar between men and women according to the study conducted in Brazilian capitals.<sup>14</sup> However, the results of the present study showed some risk behaviors have distinct characteristics between men and women. Some inappropriate eating behaviors were more prevalent among males, with statistically significant differences: consumption of red meat

with apparent fat, chicken consumption with the skin, use of salt in the meal plate and excessive consumption of soft drinks. These inappropriate behaviors, associated with smoking, also more frequent among men are bad habits that reinforce the chances of cardiovascular diseases. Thus, the presence of cofactors, in addition to arterial hypertension, culminates in a multiplicative effect, that is, increased chances of developing comorbidities.

These results reflect the need to implement public policies aimed at promoting healthy habits for men. A study conducted in São Paulo revealed that male discourses show that most men do not understand their sense of health, disease and prevention. For the authors, the National Policy of Attention to the Health of the Man still requires that professionals and institutions of diverse areas, besides the health, are more effective and better able to deal with the masculine singularity and its vulnerabilities.<sup>17</sup>

Regarding self-referred co-morbidities, high prevalences were recorded. This fact probably occurs because many habits that predispose to hypertension (such as sedentary lifestyle, obesity, smoking and eating disorders) also raise the risk of developing other conditions. Hypertension, on the other hand, also increases the likelihood of the patient developing such problems, constituting a two-way.<sup>14</sup> Significant gender differences highlighted high prevalences of heart problems, high cholesterol, arthritis/arthrosis/rheumatism, and osteoporosis among women, which is consistent with the results of other studies.<sup>18-19</sup>

Regarding the blood pressure measured at the time of the interview, it was possible to register a high proportion of people with uncontrolled blood pressure, predominantly men. The data is worrisome and probably reflects the result of inadequate behaviors related to cardiovascular risk, such as lack of adherence to dietary measures, low adherence to physical activity, smoking, among other inappropriate behaviors. The use of medications prescribed by physicians is not always enough to control blood pressure. Almost always, patients should adhere to physical activity practices, salt control and red meat intake, assuming changes in lifestyle,

which are enthusiastically recommended in the primary prevention of SAH, and may have a positive impact on morbidity and mortality indicators cardiovascular.<sup>20</sup>

Anthropometric measures also had a high risk for the studied group, but with a higher proportion of inadequate measures among women, both in relation to the waist circumference above the expected upper limit (88 cm) and the higher proportion of obesity. The national literature records that, in relation to anthropometric measurements, the values vary according to the area of study. The prevalence of overweight was 52.3% (95% CI: 49.9-54.8), similar between men and women, according to a study carried out in the metropolitan region of Minas Gerais.<sup>21</sup> In another study conducted in the Brazilian northeast, the results were similar to the present study, with a higher prevalence of obesity among women.<sup>22</sup> The profile of the studied population is likely to contribute to these observed differences. In the present study, the predominance of the older population is compatible with the profile of the hypertensive population and, in this case, there is a trend of increased obesity, including central obesity, according to the population-based survey.<sup>14</sup>

In summary, the present study revealed a worrying situation with the concentration of cardiovascular risk factors for the studied population, especially men. The concomitance of risk factors multiplies the probability of coronary events twice in men and up to four times in women.<sup>2</sup> It is important to emphasize, however, that the epidemiology of cardiovascular disease and the results of intervention studies show that the situation is avoidable and reversible, although it is not a simple action, since it involves changes in the behavior of individuals and society.<sup>23</sup>

The present study has limitations that must be considered in the process of data analysis and generalization. Many of the information was self-reported and may contain misunderstandings. The population evaluated presents particularities of a highly deprived population, not representing all the social strata. However, the results are relevant for similar populations, which may benefit from more effective actions by health managers. The prevalence of the main cardiovascular risk factors is an important subsidy in the sense of designing strategies that prevent complications related to cardiovascular diseases.

The SAH alone is responsible for 7.5 million deaths worldwide, and is considered the most deadly disease in developed countries. The prevention of hypertension and frequently associated cardiovascular risk factors is an extremely important measure to improve patients' quality of life. The FHS plays a leading role so that this can be achieved.<sup>24</sup> The use of cardiovascular risk assessment scores, such as Framingham, has the role of alerting to an overall assessment of hypertensive patients and should be directed at the stratification measures of these patients, allowing the direction of the most recommended therapy for each situation, helping not to Only the physician in the management of the hypertensive, but in the attempt to help the individual's

participation with hypertension in the treatment process, when he/she becomes aware of the cardiovascular risks.<sup>25</sup>

## CONCLUSION

The results revealed a high prevalence of cardiovascular risk factors and behaviors for the studied population, especially among men.

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