The Bambuí Health and Aging study (BHAS): prevalence of risk factors and use of preventive health care services

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ABSTRACT

Objective.   *To describe, for the first time in Brazil, the prevalence of risk factors and the use of preventive health care services among adults 60 years and older.*

Methods.   *This population-based study was conducted during 1996–1997 in the state of Minas Gerais, in the town of Bambuí, which is located in the municipality of the same name. In 1996 the town had 14 950 inhabitants. For the study, all the town's residents aged ≥ 60 years were selected, along with a comparison sample of persons aged 18–59 years. Data were gathered using interviews and physical examinations.*

Results.   *Of the 1 742 inhabitants of the town of Bambuí aged ≥ 60 years, 1 606 (92.2%) participated in the interview and 1 495 (85.8%) were examined (blood pressure, anthropometric measurements, and blood tests). Among the 1 020 younger adults selected for the survey, 909 of them (89.1%) participated in the interview, and 820 of them (80.4%) underwent the physical examination. The prevalence of the following risk factors was higher among older adults than among younger adults: physical inactivity (47.7% vs. 28.0%); blood pressure 140–159 mmHg (systolic) or 90–99 mmHg (diastolic) (25.8% vs. 8.7%); blood pressure ≥ 160 mmHg (systolic) or ≥ 100 mmHg (diastolic) (19.1% vs. 4.1%); total cholesterol ≥ 240 mg/dL (40.6% vs. 9.8%); and blood glucose ≥ 126 mg/dL (12.4% vs. 2.2%). The daily consumption of fruits and vegetables was similar among the older adults and the younger ones (51.9% and 51.7%), as was also body mass index ≥ 25 kg/m² (51.6% and 56.2%). Smoking was lower among the older adults (18.7%) than among the younger ones (31.1%). The proportion of participants whose blood pressure had been checked in the preceding year was high (86.8% among the older adults and 61.2% among the younger ones), suggesting that the high prevalence of uncontrolled hypertension was not due to limited access to health care.*

Conclusions.   *For a long time it was believed that the kinds of risk factors that we found in the urban section of the municipality of Bambuí were public health problems only in large Brazilian cities. Around 72% of the municipalities in Brazil have ≤ 20 000 inhabitants, and these smaller municipalities contain some 19% of the country's entire population. The high prevalence of various risk factors among the older and younger adults in Bambuí indicates a great need for health promotion and disease prevention actions. More research is needed to find out whether our results in Bambuí reflect the reality of other small towns in Brazil.*

Key words   Health surveys, health of the elderly, risk factors, health services, disease control and prevention.

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In Brazil older adults are growing rapidly both in number and as a proportion of the country's overall population. Between 1991 and 1996 the number of inhabitants ≥ 60 years old increased 8.2%, by 1.7 million people (1, 2). In 1996 the leading causes of death among these older Brazilians were cardiovascular diseases (1 463 deaths/100 000 population), malignant neoplasms (512/100 000), and respiratory diseases (477/100 000). Together, these three causes accounted for 63.8% of the total deaths among these older adults. For each of these groups of causes, the highest mortality rates were found for cerebrovascular and ischemic heart diseases among males and females; malignant neoplasms of the lung, trachea, and bronchus, as well as prostate cancer among males; breast cancer and malignant neoplasms of the stomach among females; and chronic obstructive pulmonary disease and pneumonia among both males and females (3).

Most of the above-mentioned causes of death could be reduced by health promotion and disease prevention actions. For example, modifiable risk factors that account in part for premature/avoidable mortality from cardiovascular diseases during later life include smoking, excessive alcohol consumption, physical inactivity, obesity, hyperlipemia, and poor control of hypertension and diabetes (4). Smoking is also an important risk factor for malignant neoplasms of the lung, trachea, and bronchus as well as for chronic obstructive pulmonary disease and pneumonia (5). Secondary prevention, by early diagnosis, is the best way to reduce the mortality due to breast and prostate cancers (6). Vaccination protects against pneumonia and influenza (4).

In order to estimate the needs of older adults for health promotion and disease prevention activities, information is needed on the distribution of risk factors and the use of preventive health services among these persons. In Brazil there have been few population-based epidemiologic studies of older adults. Further, to our knowledge, none of these studies has pro-

vided information on risk factors and the use of preventive health care services (7–11).

In this study we used data from the Bambuí Health and Aging Study (BHAS) (12) to describe the prevalence of selected risk factors and the use of preventive health services among older Brazilian adults. Because maintaining health into old age requires investments during earlier stages of life, we compared the above-mentioned data with data obtained from younger adults living in the same community.

MATERIALS AND METHODS

Study area

The Bambuí Health and Aging study (BHAS) is a population-based cohort study of older adults living in the town of Bambuí, which is in the southeastern Brazilian state of Minas Gerais. The town of Bambuí is located in the municipality of the same name. In 1991 the municipality had a population of 20 573 inhabitants, and the urban area (the town of Bambuí) had a population of 15 032 (1). Life expectancy in the municipality was 70.2 years, and 75% of deaths were among people aged ≥ 50 years. The main economic activities of the area are agriculture and trading. The town has one doctor per 1 000 inhabitants, with one general hospital with 62 beds.

In the municipality of Bambuí in 1996 the main causes of death were stroke (category I60–I69 in the *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision* (*ICD-10*) of the World Health Organization; death rate, 110.0 per 100 000), Chagas' disease (*ICD-10*: B57; death rate, 61.4 per 100 000), ischemic heart disease (*ICD-10*: I20–I25; death rate, 42.5 per 100 000), and chronic obstructive pulmonary disease (*ICD-10*: J43, J44; death rate, 18.9 per 100 000). Chagas' disease used to be endemic in the Bambuí area. Because transmission of *Trypanosoma cruzi* was only interrupted around 20 years ago, the prevalence of infection among the

aged remains high, with a high mortality rate due to Chagas' disease in the town (13).

Study population

To identify participants for the study, the research team carried out a complete census in the town in 1996 and found a population of 14 950 inhabitants. All 1 742 town residents aged ≥ 60 years were selected to participate in the study. A nonreplaceable simple probabilistic sample of 1 020 out of 8 899 inhabitants aged 18–59 years was also selected (12). This sample size was sufficient to estimate a prevalence of risk factors/use of health services = 0.50, with a confidence interval (CI) = 0.95, losses = 0.20, and precision = 0.03 (14). All the older and younger study participants were interviewed and underwent physical examinations (blood tests, blood pressure measurements, and anthropometric measurements).

Interview

In this study we considered the following variables: 1) demographics (age, sex), 2) lifestyle (smoking, consumption of fruits and vegetables, physical activity during leisure time, and self-rated physical activity), and 3) use of preventive health care services (frequency of checking of blood pressure and cholesterol). The interview used a precoded structured questionnaire.

Current smokers were defined as those who reported having smoked ≥ 100 cigarettes during their lifetime and who currently smoked. Consumption of fresh fruits or vegetables was assessed by the following question: *How often did you eat fresh fruits or vegetables during the last 12 months?* Physical activity during leisure time was assessed by the following: *During your leisure time in the last 30 days, how often did you walk for exercise and/or do any sport and/or any other kind of exercise for at least 30 minutes?* Self-rated physical activity was assessed by this question:

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Which of the following sentences best defines your habits in daily living? Those who answered that they remained seated during most of the day and rarely walked were classified as having a low level of physical activity (sedentary). Those who answered that they remained standing or walked much during the day, and sometimes carried heavy packages, were classified as having an intermediate level of physical activity. The remaining cases were classified as having a high level of physical activity.

Regarding the use of preventive health care services, two variables were considered: 1) number of years since last blood pressure check *(When was your blood pressure last checked?)* and 2) blood cholesterol checked at any point *(Has your blood cholesterol ever been checked?).*

When an older participant was unable to be interviewed because of a cognitive deficit or for some other health reason, a proxy respondent was used (12).

Physical examinations

The first blood pressure (BP) measurement was performed 30 or more min after the last caffeine intake or cigarette smoked, and after at least 5 min of initial rest. Two more measurements were taken at 2-min intervals. BP was considered as the arithmetic mean of the second and third measurements. Elevated blood pressure stage 1 was considered as 140–159 mmHg (systolic) or 90–99 mmHg (diastolic) and stage 2 as ≥ 160 mmHg (systolic) or ≥ 100 mmHg (diastolic) (15).

We performed the anthropometric measures with the participants wearing light clothes and no shoes. We defined overweight as body mass index (BMI) (weight/height squared) ≥ 25 kg/m^2 and obesity as ≥ 30 kg/m^2 (16). All measures were performed by specially trained health technicians, using standard equipment (12)

The blood tests included biochemical analysis of fasting total cholesterol and blood glucose, using an auto-mated analyzer (12). The following cutoffs were used to define high levels of cholesterol and of blood glucose: ≥ 240 mg/dL and ≥ 126 mg/dL, respectively (17, 18). Blood samples were scheduled in advance, with a recommended 12-hour fast; we offered snacks and coffee afterwards.

All the interviews and physical examinations were carried out between October 1996 and August 1997. We obtained signed voluntary informed consent from all the participants. Further details on the study methods and procedures are in Lima e Costa et al. (12).

Data analysis

Data analyzed was based on the Pearson chi-square statistic and on crude and adjusted odds ratios (ORs) and their 95% confidence intervals (Woolf's method) (19). The odds ratios were adjusted by sex using multivariate logistic regression (20). The analysis was carried out using Stata statistical software (21).

RESULTS

Of the 1 742 inhabitants of the town of Bambuí aged ≥ 60 years, 1 606 (92.2%) participated in the interview and 1 495 (85.8%) were examined (blood pressure, anthropometric measurements, and blood tests). Proxy respondents were necessary for 5.6% of the older adults interviewed. Among the 1 020 younger adults (18–59 years old) who were selected for the survey, 909 of them (89.1%) participated in the interview, and 820 of them (80.4%) underwent the physical examination.

The median age of the older-adult participants was 68 years (range = 60–95), and for the younger participants it was 36 years (range = 18–59). The proportion of females was higher among the older participants than among the younger ones, 60.0% versus 54.6% (*P* = 0.008).

The distribution of selected lifestyle risk factors among older and younger adults is presented in Table 1. Current smoking was less frequent among the older adults than among the younger

TABLE 1. Percentages of older and younger adults with selected lifestyle risk factors, and corresponding odds ratios (ORs), with 95% confidence intervals (CIs), Bambuí, Minas Gerais, Brazil, 1996–1997

| | Age group (years) | | | |
| | ≥ 60 (*n* = 1 606) | 18–59 (*n* = 909) | Crude OR (95% CI) | Adjusted OR (95% CI)[a] |
Lifestyle characteristic	%	% (95% CI)		
Current smoker				
No	81.3	68.9 (65.9–71.9)	1.0	1.0
Yes	18.7	31.1 (28.1–34.1)	0.5 (0.4–0.6)	0.5 (0.4–0.6)
Daily consumption of fresh fruits or vegetables				
Yes	48.1	48.3 (45.1–51.5)	1.0	1.0
No	51.9	51.7 (48.5–54.9)	1.0 (0.8–1.2)	0.9 (0.8–1.1)
Frequency of exercise during leisure time in past 30 days				
≥ 3 times a week	12.8	16.7 (14.3–19.1)	1.0	1.0
1–2 times a week	7.7	16.1 (13.7–18.5)	0.6 (0.5–0.9)	0.6 (0.5–0.9)
Never	79.5	67.2 (64.1–70.3)	1.6 (1.2–2.0)	1.5 (1.2–1.9)
Self-rated physical activity in daily living				
High	5.6	19.7 (17.1–22.3)	1.0	1.0
Intermediate	46.6	52.3 (49.0–55.6)	3.1 (2.4–4.1)	3.1 (2.3–4.2)
Low (sedentary)	47.7	28.0 (25.1–30.9)	6.0 (4.5–8.0)	6.0 (4.4–8.0)

[a] Adjusted OR = crude OR adjusted by sex.

FIGURE 1. Prevalence of lifestyle risk factors, according to age and sex, Bambuí, Minas Gerais, Brazil, 1996–1997
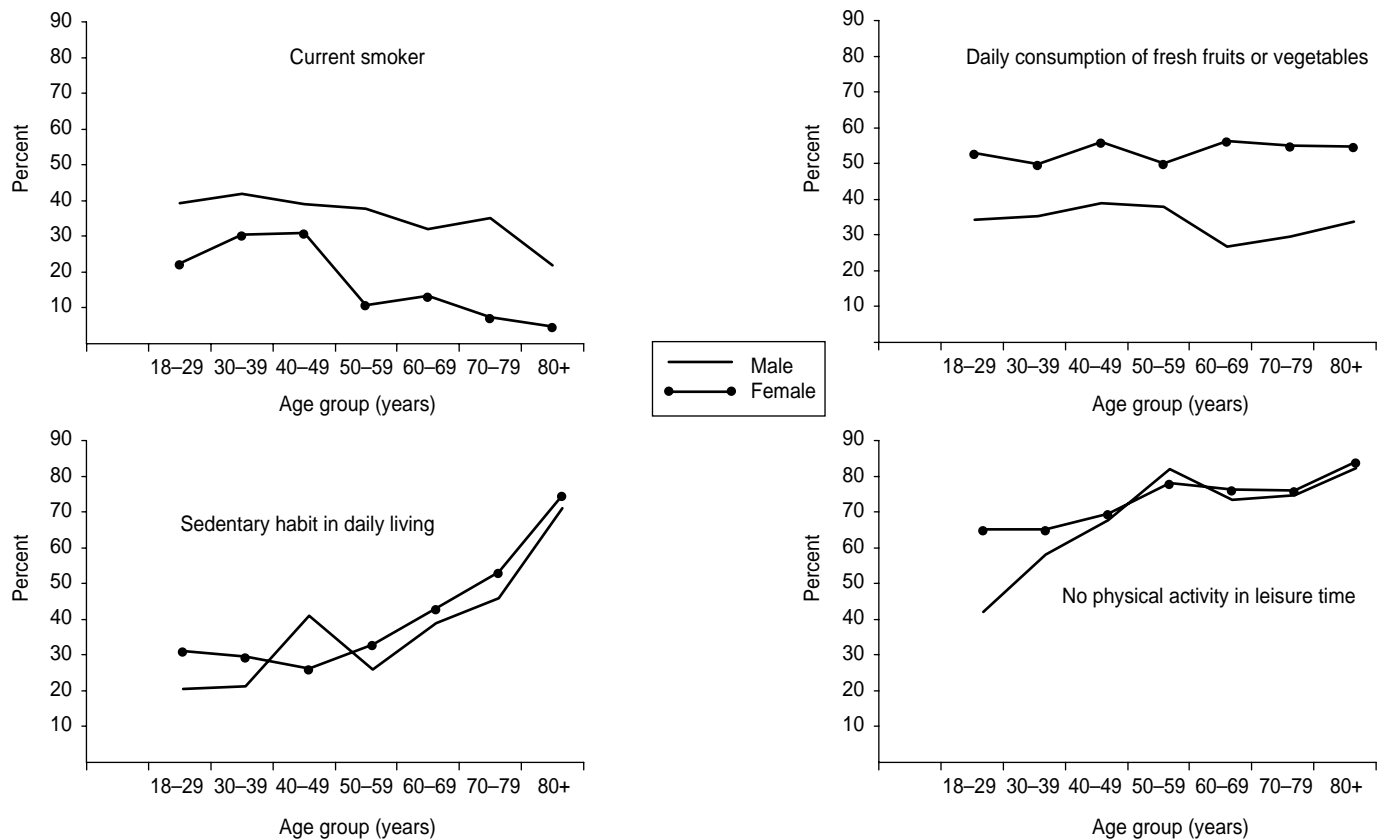
adults, 18.7% vs. 31.1%. The prevalence of daily consumption of fresh fruits or vegetables was similar among the older and younger adults. A large majority of the persons in both age groups reported doing no exercise during their leisure time in the previous 30 days. In terms of their self-rated daily physical activity, 5.6% of the older adults reported themselves as having a high level of physical activity, 46.6% reported they had an intermediate level, and 47.7% reported a low level. Among the younger adults, the corresponding figures for high, intermediate, and low levels of daily physical activity were 19.7%, 52.3%, and 28.0%. The prevalences of four different lifestyle risk factors, according to age and sex, are presented at Figure 1.

Table 2 shows the distribution of high blood pressure, body mass index, total cholesterol, and blood glucose among the older and younger adults.

TABLE 2. Percentages of older and younger adults with selected health-related conditions, and corresponding odds ratios (ORs), with 95% confidence intervals (CIs), Bambuí, Minas Gerais, Brazil, 1996–1997

| | Age group (years) | | | |
| | ≥ 60 (n = 1 495) | 18–59 (n = 820) | Crude OR | Adjusted OR |
Health-related condition	%	% (95% CI)	(95% CI)	(95% CI)[a]
High blood pressure[b]				
No	55.1	87.2 (84.9–89.5)	1.0	1.0
Stage 1	25.8	8.7 (6.8–10.6)	4.7 (3.6–6.2)	4.7 (3.6–6.2)
Stage 2	19.1	4.1 (2.7–5.5)	7.3 (5.0–10.5)	7.4 (5.1–10.7)
Body mass index (kg/m²)				
< 25.00	51.6	56.3 (52.9–59.7)	1.0	1.0
25.01–29.99	35.4	30.7 (27.5–33.9)	1.2 (1.0–1.5)	1.2 (1.0–1.5)
≥ 30.00	13.0	13.0 (10.7–15.3)	1.0 (0.8–1.4)	1.0 (0.8–1.4)
Total cholesterol ≥ 240 mg/dL				
No	59.4	90.2 (88.2–92.2)	1.0	1.0
Yes	40.6	9.8 (7.8–11.8)	6.3 (4.9–8.1)	6.3 (4.9–8.2)
Blood glucose ≥ 126 mg/dL				
No	87.6	97.8 (96.8–98.8)	1.0	1.0
Yes	12.4	2.2 (1.2–3.2)	6.3 (3.8–10.3)	6.2 (3.8–10.2)

[a] Adjusted OR = crude OR adjusted by sex.
[b] High blood pressure stage 1 is 140–159 (systolic) or 90–99 mm Hg (diastolic); stage 2 is ≥ 160 (systolic) or ≥ 100 mmHg (diastolic).

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FIGURE 2. Prevalence of individuals with selected health-related conditions, according to age and sex, Bambuí, Minas Gerais, Brazil, 1996–1997
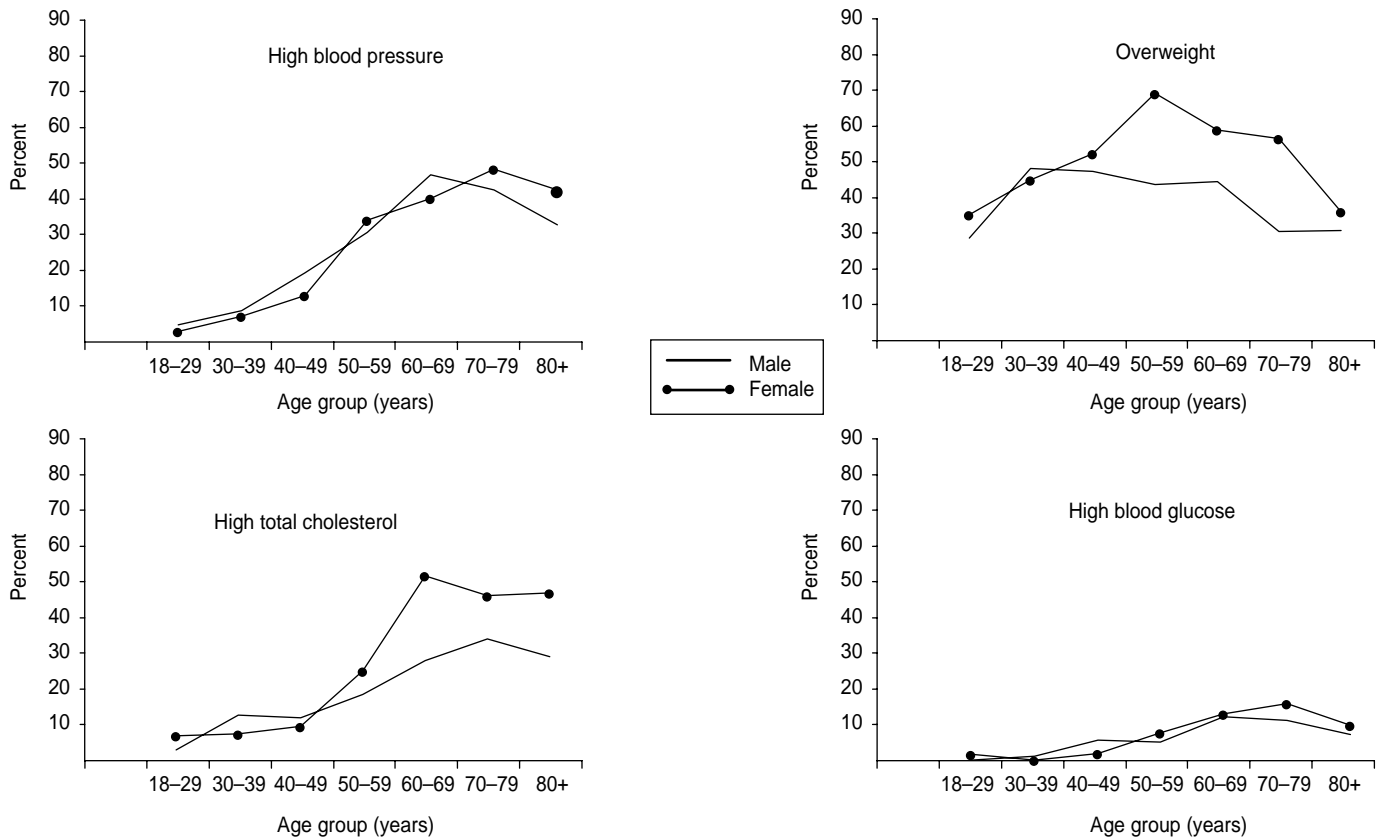
As expected, the prevalence of high blood pressure at any stage was higher among the older adults than among the younger ones, 44.9% vs. 12.8%. Fasting total cholesterol ≥ 240 mg/dL and blood glucose ≥ 126 mg/dL were also strongly associated with older age. Overweight was slightly more frequent among the older participants (35.4%) than among the younger adults (30.7%). The prevalence of obesity was the same in the two age groups, 13.0%. Figure 2 presents the distributions of high blood pressure, overweight, total cholesterol ≥ 240 mg/dL, and blood glucose ≥ 126 mg/dL by age and by sex.

Table 3 shows the distribution of selected preventive health care measures among older and younger adults. Those aged ≥ 60 were more likely to have had their blood pressure checked in the preceding year and to have had their cholesterol checked during their lifetime.

DISCUSSION

The high prevalence of risk factors that we found among older and young adults indicates a great need for health promotion, risk prevention, and adequate treatment in the study community. As expected, many of the studied risk factors were significantly more frequent among older inhabitants than among younger ones.

Previous studies have assessed the prevalence of selected risk factors among younger adults in large cities in Brazil. One study, of São Paulo, investigated persons 15–59 years old (22). Another study, of Porto Alegre, was of persons 15–64 years old (23). Despite methodological differences and/or possible differences in age distribution, the estimated prevalences of high blood pressure and of physical inactivity during leisure time among younger adults in Bambuí were reasonably similar to those for São Paulo and Porto Alegre. However, in Bambuí the percentages of persons who were obese or who reported a low (sedentary) level of physical activity were lower than what was found in these two larger cities. The estimated prevalence of current smoking among young adults in Bambuí was lower than in São Paulo and Porto Alegre, but it was still twice the level recommended by the United States' Healthy People 2000 national health promotion and disease prevention objectives (24). Our results agree with the above-

TABLE 3. Percentages of older and younger adults using selected preventive health care measures, and corresponding odds ratios (ORs), with 95% confidence intervals (CIs), Bambuí, Minas Gerais, Brazil, 1996–1997

| | Age group (years) | | Crude OR (95% CI) | Adjusted OR (95% CI) |
| | ≥ 60 (*n* = 1 606) | 18–59 (*n* = 909) | | |
Indicator	%	% (95% CI)		
No. of years since blood pressure was last checked				
> 5	3.8	19.1 (16.4–21.8)	1.0	1.0
1–5	9.4	18.9 (16.2–21.6)	2.6 (1.8–3.8)	2.6 (1.8–3.7)
< 1	86.8	61.2 (57.9–64.5)	7.4 (5.5–10.1)	7.4 (5.4–10.1)
Cholesterol checked during lifetime				
No	52.8	77.2 (76.0–78.4)	1.0	1.0
Yes	47.2	22.8 (21.6–24.0)	3.0 (2.5–3.6)	3.0 (2.5–3.5)

[a] Adjusted OR = crude OR adjusted by sex.

mentioned studies in Brazil (22, 23) in terms of males showing higher levels of current smoking and of physical activity than do females.

With respect to the prevalence of smoking and physical activity among older adults, to our knowledge there are no other comparable data for Brazil. Among older adults in the United States, depending on educational level, the prevalence of smoking varies from 12% to 18% for persons 65–75 years old and from 5% to 8% among those ≥ 75 years old (24). Among the older adults in the United States, persons with ≥ 8 years of schooling are more likely to be current smokers. In our study the prevalence of current smokers among those aged 60–79 years (20%) and among those ≥ 80 years old (11%) was reasonably similar to what was observed in the United States for older adults with lower education levels. In Bambuí we found a decrease in the prevalence of smoking with age. This decrease, also observed in the United States (24), may be a consequence of one or more of three factors: an increase in the number of persons who quit smoking as they get older, a cohort effect (different generations may smoke differently), and a survival bias (the premature death of smokers).

The prevalence of physical inactivity during leisure time among the older adults in Bambuí (78.6% and 86.8% among those aged 60–79 and ≥ 80 years, respectively) was much higher than that observed for older adults in the United States (34% and 44% among those aged 65–74 and ≥ 75 years, respectively) (24). These differences between Brazil and the United States are large, and are thus unlikely to be explained by methodological differences. Cultural patterns might be an alternative explanation. As previously shown, physical activity during leisure time is not common in Brazil, even among young adults living in large cities, such as São Paulo (22) and Porto Alegre (23), and there are no reasons to believe that it would be different in a small town such as Bambuí.

Around half of the participants in our study reported daily consumption of fresh fruits or vegetables. This proportion was higher among females, and it did not vary with age. Among older persons in the United States, about one-third ate fruits and vegetables ≥ 5 times daily. This proportion increased with age, and it was higher among females than among males (24). In our study, because the frequency of consumption of fruits and vegetables in the previous 12 months was self-reported, the data are subject to recall bias. Aging might influence a person's ability to recall eating habits, and it is possible that our results un-

derestimate the proportion of older adults in Bambuí with a low consumption of fruits and vegetables.

Studies differ from each other in their estimates of the prevalence of high blood pressure among older adults, depending on such factors as the age and race of the group studied, the blood pressure cutoff points used, and the number of measurements made. Broadly speaking, in the United States the prevalence of hypertension among those older than 65 exceeds 25% among whites and 30% among African-Americans (25). In our study the prevalence of high blood pressure stage 1 or higher was above 40% among those aged ≥ 60 years. Among males the prevalence of high blood pressure increased until age 60–69 years and decreased thereafter. Among females, the prevalence of high blood pressure increased up to age 70–79.

High blood pressure is a leading risk factor for coronary heart disease, congestive heart failure, stroke, ruptured aortic aneurysm, renal disease, and retinopathy. Unrecognized and uncontrolled hypertension are important indicators of the need for preventive actions in the community. Assuming that the goals for blood pressure lowering are systolic blood pressure < 140 mmHg and diastolic blood pressure < 90 mmHg (15, 25), there were many older adults in Bambuí who needed evaluation for adequate treatment of hypertension. The United States' Healthy People 2000 effort recommended increasing to ≥ 90% the proportion of adults who have had their with blood pressure measured during the preceding 2 years (6).

In our study, 87% of the older adults and 61% of the younger ones had had their blood pressure measured in the preceding year, indicating that access to measurement was not a problem for them. Further investigations are needed to examine the determinants of high blood pressure and the appropriate corresponding treatment among older adults in Bambuí.

Excess bodyweight is a risk factor for coronary artery disease, some cancers, diabetes, hypertension, and os-

teoarthritis (26). The prevalence of self-reported overweight (BMI $\geq$ 25 kg/m^2) among older adults in the United States is higher among males than among females, and it decreases with age, for example, from 58% to 46% among whites aged 65–74 years and $\geq$ 75 years, respectively (24). In comparison to those figures for the United States, in Bambuí, using physical measurements, we found lower levels of overweight (45% among those aged 60–79 and 33% among those aged $\geq$ 80 years). In contrast to older adults in the United States (24), in our study the prevalence of overweight was higher among females than among males. This finding in Bambuí agrees with studies in large Brazilian cities showing a higher prevalence of overweight among younger females than among younger males (22, 23).

Regarding total cholesterol levels, 41% of the older adults in Bambuí and 10% of the younger ones presented fasting total cholesterol $\geq$ 240 mg/dL. Among females the prevalence of total high cholesterol levels increased up to age 60–69 years and decreased thereafter. Among males, the prevalence of hypercholesterolemia increased up to age 70–79. These patterns in Bambuí are reasonably similar to ones observed among adults in the United States (27), except that the decline began at a later age in the Bambuí population.

There is considerable evidence that fasting total cholesterol is a risk factor for coronary heart disease (CHD) in both males and females aged < 75 years, with less support for that among those aged $\geq$ 75 years. The screening and treatment of individuals aged > 75 years for hyperlipidemia (particularly those without overt CHD) remain controversial (17, 28). The Healthy People 2000 effort in the United States recommended routine measurement of fasting total cholesterol and high-density lipoprotein cholesterol in all adults aged $\geq$ 20 years at least once every 5 years (26). In Bambuí only 47% of older adults and 23% of younger ones had ever had their cholesterol checked.

The prevalence of diabetes mellitus (previous diagnosis and/or blood glucose $\geq$ 126 mg/dL) in the general population of the United States is around 7%, and is higher among males than among females (18). The highest prevalence rates, around 20%, are found among those aged $\geq$ 60. We do not know the prevalence of diabetes in Bambuí. However, the prevalence of high blood glucose and thus of those who need further evaluation for diagnosis and/or treatment was 12% among older adults and 2% among younger ones. The highest prevalence level for males, 12%, was among those aged 60–69. For females the highest prevalence level, 15%, was among those aged 70–79. Unfortunately, we do not have information for Bambuí concerning the frequency of checking blood glucose. The American Diabetes Association recommends that all individuals older than 45 years be tested for diabetes every 3 years, with the fasting glucose level being the recommended test (18).

We took a number of steps in the BHAS to avoid bias (12). These included encouraging participation, collecting information in a double-blinded manner, assessing the reliability of the data gathered, standardizing procedures and instruments, and conducting exhaustive training of field work and laboratory teams. Internal validity was assured because the participation rate was high. Also, the older and younger participants were similar to their respective overall town populations in terms of gender, age, marital status, monthly family income, and education (12).

On the other hand, our and other population-based cross-sectional studies of older adults have two major limitations: 1) older participants are survivors (i.e., those exposed to risk factors have a higher probability of dying prematurely) and 2) participants are noninstitutionalized elderly, with those living in the community tending to be healthier. In Bambuí there are no institutions for older adults. Nevertheless, one cannot discard the possibility of survival bias. Differential misclassification of self-reported variables is another potential bias in this study because the accuracy of memory seems to vary between younger and older adults. The survival or information bias would tend to reduce the prevalence of risk factors among older participants.

Of the 4 475 municipalities in Brazil, 72% of them have $\leq$ 20 000 inhabitants. These smaller municipalities together contain 19% of the total population of Brazil, or around 27 million persons (2). Information on the health and related conditions of inhabitants of small Brazilian municipalities is very limited. For a long time, it was believed that risk factors for chronic noninfectious diseases were public health problems in large cities, and that small municipalities should devote their public resources to controlling infectious diseases. However, our results indicate that the prevalences of most risk factors for chronic noninfectious diseases in Bambuí were high, pointing to a critical need for health promotion, disease prevention activities, and adequate treatment of diabetes and hypertension. Further research is needed to verify whether our results can be generalized to other small towns in Brazil.

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RESUMEN

El Estudio de Bambuí sobre la Salud y el Envejecimiento (BHAS): prevalencia de factores de riesgo y uso de los servicios de salud preventivos

Objetivos. Describir por primera vez en Brasil la prevalencia de factores de riesgo y el uso de servicios de salud preventivos por parte de los adultos de edad ≥ 60 años.

Métodos. Este estudio basado en la población se realizó en 1996–1997 en la ciudad de Bambuí, localizada en el municipio del mismo nombre, Estado de Minas Gerais. En 1996 la ciudad tenía 14 950 habitantes. Para este estudio se seleccionaron todos los residentes en la ciudad con ≥ 60 años y una muestra de comparación formada por personas de 18 a 59 años. Los datos registrados se obtuvieron mediante entrevistas y exámenes físicos.

Resultados. De los 1 742 habitantes de la ciudad de Bambuí de edad ≥ 60 años, 1 606 (92,2%) participaron en la entrevista y 1 495 (85,8%) fueron examinados (mediciones antropométricas y de la tensión arterial y pruebas de sangre). De los 1 020 adultos más jóvenes seleccionados para el estudio, 909 (89,1%) participaron en la entrevista y 820 (80,4%) fueron examinados. La prevalencia de los siguientes factores de riesgo fue mayor en los adultos de edad ≥ 60 años que en los adultos más jóvenes: inactividad física (47,7 frente a 28,0%); tensión sistólica de 140–159 mm Hg o diastólica de 90–99 mm Hg (25,8 frente a 8,7%); tensión sistólica ≥ 160 mm Hg o diastólica ≥ 100 mm Hg (19,1 frente a 4,1%); colesterol total ≥ 240 mg/dL (40,6 frente a 9,8%), y glucemia ≥ 126 mg/dL (12,4 frente a 2,2%). El consumo diario de frutas y vegetales fue similar en ambos grupos (51,9 frente a 51,7%), al igual que el índice de masa corporal ≥ 25 kg/m^2 (51,6 frente a 56,2%). El consumo de tabaco fue menor en el grupo de más edad (18,7%, frente a 31,1% en los adultos más jóvenes); con la proporción de participantes cuya tensión arterial había sido registrada durante el año anterior ocurrió lo contrario (86,8%, frente a 61,2% en los adultos más jóvenes), lo cual indica que la mayor prevalencia de la hipertensión no controlada no se debió a limitaciones en el acceso a la atención sanitaria.

Conclusiones. Durante mucho tiempo se ha creído que los factores de riesgo encontrados en este estudio en la zona urbana del municipio de Bambuí solo constituían problemas de salud pública en las grandes ciudades brasileñas. Cerca del 72% de los municipios de Brasil tienen ≤ 20 000 habitantes y estos pequeños municipios representan cerca del 19% de la población total del país. La alta prevalencia de varios factores de riesgo en los adultos ancianos y más jóvenes de Bambuí señala la gran necesidad de acciones de promoción de la salud y de prevención de enfermedades. Son necesarias más investigaciones para determinar si estos resultados obtenidos en Bambuí reflejan la realidad de otras pequeñas ciudades de Brasil.

Risk factors are based only on associations demonstrated in epidemiological studies; hence they may be directly causative, secondary manifestations of more basic underlying metabolic abnormalities or early symptoms of the disease.

[Los factores de riesgo se basan exclusivamente en las asociaciones demostradas en los estudios epidemiológicos; por lo tanto pueden ser directamente causales, manifestaciones secundarias de anormalidades metabólicas fundamentales, o síntomas tempranos de la enfermedad.]

William B. Kannel
"An overview of the risk factors for cardiosvacular disease"
Prevention of coronary heart disease: practical management of the risk factors, 1983