

## Obesity and lifestyle risk factors among an adult population in Legal Amazon, Mato Grosso, Brazil

### Obesidad y estilo de vida en una población adulta en la Amazonia Legal, Mato Grosso, Brasil

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#### ABSTRACT

**Objective** To evaluate the frequency of obesity and lifestyle risk factors in the population of Barra do Garças, Legal Amazon.

**Methodology** A randomized, transversal study with 305 adults of both genders was performed. Weight, height, body mass index (BMI), waist circumference, food dietary habits, frequency of smoking and alcoholic consumption, practice of physical activity, and the physical activity level were evaluated.

**Results** Smoking and alcoholic consumption was higher among men compared to women. Almost 60 % of men engaged in leisure-time physical activities, whereas only 42.4 % of women practiced physical activity. Women were engaged in mostly sedentary behavior activities, such as watching television and using the computer use than men. Dietary daily intake of fruits and vegetables were higher among women compared to men (65.9 % and 51.5 %, respectively). Men were more prone to drink soft drinks than women. However, 39.4 % of men and only 3.4 % of women drank soft drinks three or more days *per* week. The prevalence of overweight and obesity according to body mass index (BMI) was higher in this study. 34.4 % of men and 33.7 % of women were overweight and 15.10 % and 17.50% of men and women, respectively, were classified as obese. Elevated values of waist circumference were found in 35.35 % of men and 70.73 % of women.

**Conclusión** Women were more sedentary than men and had higher prevalence of abnormal waist circumference values.

**Key Words:** Waist circumference, obesity, adult, women's health (*source: MeSH, NLM*).

## RESUMEN

**Objetivo** Evaluar la frecuencia de obesidad y factores de riesgo del estilo de vida, en la población de Barra do Garças, Amazônia Legal.

**Metodología** Se realizó un estudio transversal con 305 adultos de ambos sexos, seleccionados al azar. Se evaluaron el peso corporal, estatura, índice de masa corporal (IMC), circunferencia de la cadera, hábitos alimentarios, frecuencia del tabaquismo, ingestión de alcohol y el nivel de actividad física.

**Resultados** La frecuencia del tabaquismo y de la ingestión de bebidas alcohólicas fue mayor entre los hombres en comparación con las mujeres. Alrededor del 60 % de los hombres realizaban actividades físicas durante el tiempo libre, mientras que sólo el 42,4 % de las mujeres lo hizo. Las mujeres estaban más ocupadas en actividades sedentarias como ver televisión y el uso de computadora que los hombres. La ingesta diaria de frutas y verduras fue mayor en mujeres que en hombres (65,9 % y 51,5 %, respectivamente). Los hombres fueron más propensos a consumir refrescos que las mujeres (40 % de las mujeres y 23,2 % de los hombres consumían refrescos una o dos veces a la semana). Sin embargo, el 39,4 % de los hombres y sólo el 3,4 % de las mujeres ingirieron refrescos tres o más veces por semana. La prevalencia de sobrepeso y obesidad, según el IMC, resultó alta en este estudio. Un 34,4 % de los hombres y el 33,7 % de las mujeres tenían sobrepeso; el 15,1 % y el 17,5 % de los hombres y mujeres, respectivamente, fueron clasificados como obesos. Se encontraron valores excesivos de circunferencia de la cadera en 35,4 % y 70,7 % de los hombres y de las mujeres, respectivamente.

**Conclusión** El sedentarismo y la prevalencia de valores excesivos de circunferencia de la cadera fueron mayores en las mujeres.

**Palabras Clave:** Circunferencia de la cadera, obesidad, adulto, salud de la mujer (*fuentes: DeCS, BIREME*).

**A**dequate dietary habits, regular practice of physical activities and avoidance of stressful situations are important components of a healthy lifestyle that are associated with decreased risk of overweight, obesity and its comorbidities (1-3). Nonetheless, sleeping problems, sedentary behavior (or physical inactivity), and lacking of leisure time, allied to a lower intake of fruits, vegetables, cereals, and fibers, as well as higher intake of fatty, fried and caloric foods, snacks, and soft-drinks have been associated with increased overweight and obesity risk in children and adults (3-7).

In the United States (US), the prevalence of obesity among adults is 33.80 %, and the overall prevalence of overweight and obesity is 68.0 %, 72.3 % among men, and 64.1 % among women (8). In Brazil, the prevalence of adult excessive body weight is 47.0 % for men and 39.0 % for women, and obesity prevalence reached 11.0 % for both genders (7). Furthermore, obesity has been also implicated in many important co-mor-

bities such as hypertension, stroke, type 2 *Diabetes mellitus*, metabolic syndrome, chronic kidney disease, and some cancer types (6,9,10).

The objective of this work was to evaluate obesity and its associated lifestyle factors among a representative sample of adults from “Vale do Araguaia”, Legal Amazon, Brazil.

### METHODOLOGY

We developed a descriptive transversal study in the Barra do Garças municipality. Over the course of four weeks, 99 adult men and 205 adult women were randomly selected in two supermarkets and two banks.

The inclusion criteria were agreement to engage into the research as well as capacity of understanding the questionnaire. Those people who did not agree to join the study were excluded.

The instrument included lifestyle factors according to the diabetes score risk (alcohol drinking, smoking, regular practice of physical activities, engagement on sedentary behavior activities such as television watching and use of microcomputer) and a food frequency questionnaire including the most frequent food groups and also unhealthy junk foods (11,12).

For characterization of overweight and obesity the body mass index (BMI=body mass (in kg)/height<sup>2</sup> [in meters]) and the waist circumference (measured at the mean point between the last rib and the iliac crest) were measured with anthropometric tape (Sanny, model SN-4010, USA) and weight scale (Tanita, model TBF551, Japan).

Measurements were taken individually in a reserved room in each health unit, preserving the privacy of each study participant. The study was conducted in August and October 2011.

All participants received adequate information regarding the study's procedures and signed the free and clarified term and the study protocol that was approved by the ethical committee on research of the “Hospital Universitário Júlio Müller” (Protocol no. 665/CEP-HUJM/09).

## RESULTS

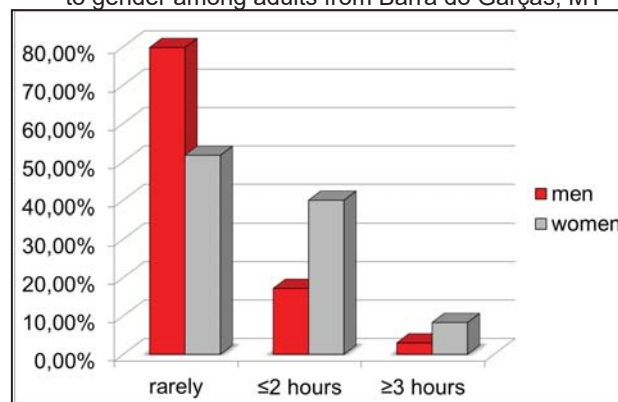
Smoking frequency was higher among men compared to women (22.2 % and 16.1 %, respectively). Still in this respect, 12.0 % of men and only 1.95 % of women smoked more than one cigarette pack *per day*.

In terms of alcohol consumption, men also drank more than women (39.4 % and 30.2 %, respectively). In this regard, 13.1 % of men and 3.9 % of women were found to consume alcohol three or more days *per week*. The overall prevalence of alcoholic beverage consumption was 33.2 % in the sample.

Almost 60.0 % of men were engaged on leisure-time physical activities, whereas only 42.4 % of women reported to practice physical activity.

Women appeared to be involved in more weekly leisure activities (dancing, singing and other) than men. However, they were engaged in most sedentary behavior activities, such as television watching and use of microcomputer (electronic games), than men (Figure 1).

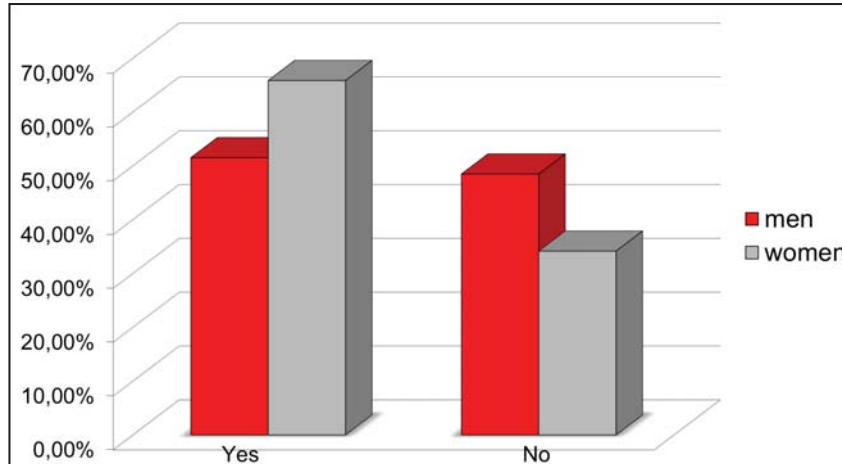
**Figure 1.** Daily use of microcomputer and electronic games (in hours) according to gender among adults from Barra do Garças, MT



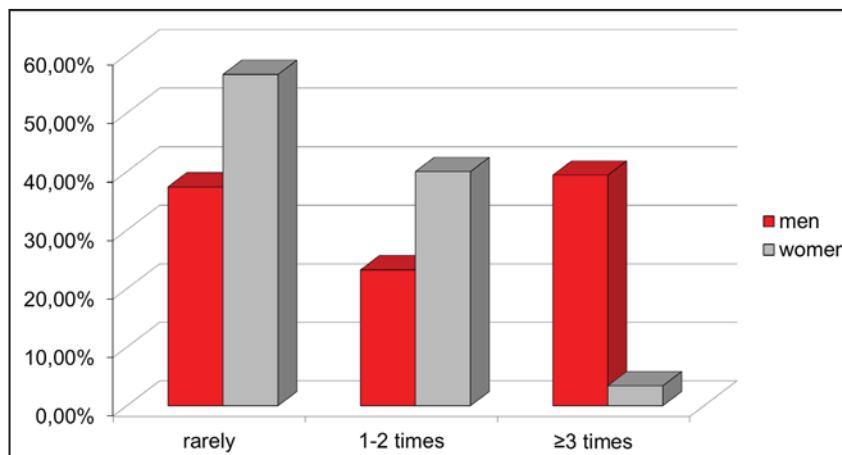
Dietary daily intake of fruits and vegetables were higher among women compared to men (65.9 % and 51.5 %, respectively) (Figure 2).

Men were more prone to drink soft drinks than women. 40.0 % of women and 23.2 % of men were found to drink soft drinks one or two days *per week*. However, 39.4 % of men and only 3.40 % of women drank soft drinks three or more days *per week* (Figure 3).

**Figure 2.** Daily dietary intake of fruits and vegetables according to gender among adults from Barra do Garças, MT, Legal Amazon



**Figure 3.** Weekly drinking of soft-drinks by adults according to gender in Barra do Garças, MT, Legal Amazon

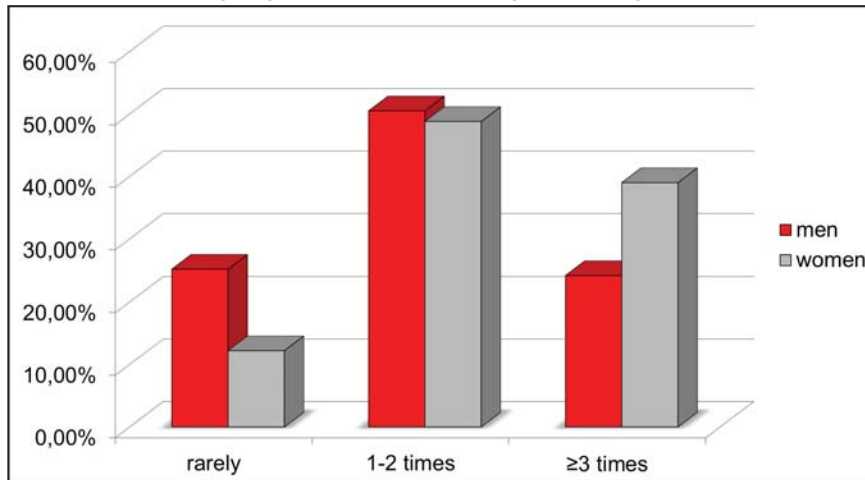


The weekly dietary intake of sweets and candies were equally distributed among men and women. The dietary intake of one or two days per week was 35.4 and 34.6 %, respectively among men and women. Women were more prone to consume sweets and candies three or more days per week than men (11.1 % and 15.1 %, respectively).

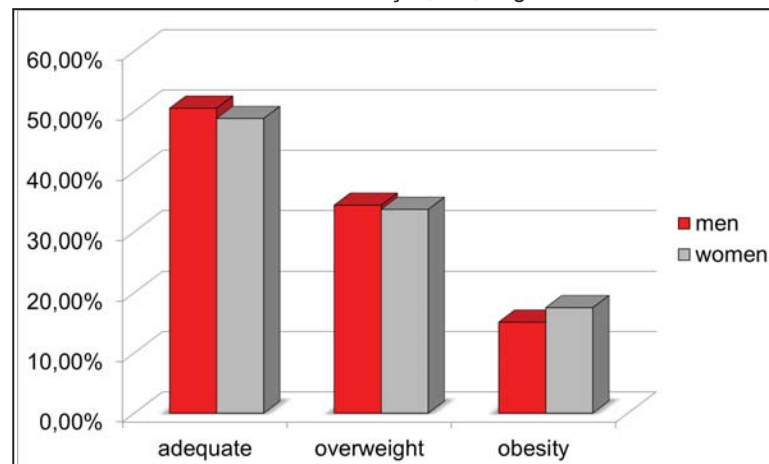
Fried foods were regularly consumed during one or two days per week, and women consumed those foods more than men (Figure 4).

The prevalence of overweight and obesity was higher in this study. 34.40 % of men and 33.7 % of women were overweight and 15.1 % and 17.5 % of men and women, respectively, were classified as obese according to BMI (Figure 5).

**Figure 4.** Weekly dietary intake of fried foods by adults according to gender in Barra do Garças, MT, Legal Amazon



**Figure 5.** Prevalence of overweight and obesity among adults in Barra do Garças, MT, Legal Amazon

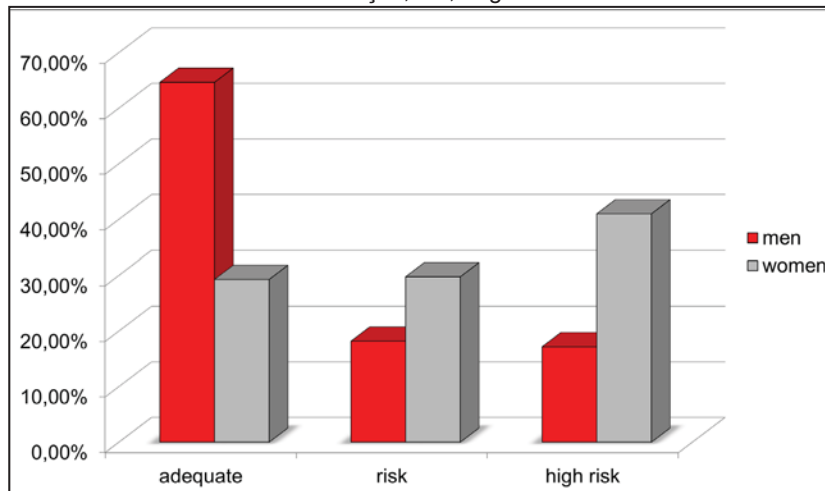


Nevertheless, considering waist circumference, women had increased cardiovascular, cerebrovascular, and metabolic risk than men (Figure 6).

## DISCUSSION

In this study, 22.2 % of men and 16.1 % of women were current smokers, which is in agreement with a study from Argentina (13). In a recent study within a small Brazilian city (14) the prevalence of smoking among men was similar to that found in the present study, whereas fewer women smoked (10.30 %) than in the current study. Considering alcohol consumption, the prevalence found in the present study (33.2 %) was higher than that reported by other authors in Brazil (15,16).

**Figure 6.** Prevalence of abdominal obesity among adults in Barra do Garças, MT, Legal Amazon



The prevalence of excessive body weight (overweight and obesity) according to body mass index was higher in this study (50.4 %). Analysing waist circumference values, women had increased cardiovascular, cerebrovascular, and metabolic risk than men. These results were similar to those found in a representative sample of adults from Sao Leopoldo, Rio Grande do Sul State (RS), Brazil (17). The excessive body weight in 26 Brazilian State capitals and in the Federal District was 44.4 % (49.6 % among men and 39.7 % among women) (18). However a probabilistic population study of adults in Lages, Santa Catarina State (SC), Brazil, found a prevalence of excessive body weight of almost 57.0 % (19).

Considering waist circumference values, women had increased cardiovascular, cerebrovascular, and metabolic risk than men. In this study,

elevated values of waist circumference were found; 35.4 % of men and 70.7 % of women had increased waist circumference values. In the study of Longo *et al.* (19) 19.5 % of men and 59.1 % of women had increased waist circumference values. Waist circumference is a good predictor of both insulin sensitivity and high density cholesterol (HDL) levels (20,21).

In this study the dietary intake of fruits and vegetables was higher (61.2 %) than that reported by Figueiredo *et al* (22).

In the current study, daily dietary intake of fruits and vegetables for men (51.5 %) was higher than that reported by Coca *et al* (15) in Dourados city (40.0 %), Brazil, whereas it was similar among women in both studies. In a population-based study covering adults with 30 years of age or more in Ribeirao Preto, Sao Paulo State (SP), Brazil, women ate more fruits and vegetables than men (23), which corroborates data from this study.

Excessive intake of fats and fried foods had been associated with increased risk of obesity and the metabolic syndrome according to Brazilian, Spanish, and US studies (3,5,7,8,24).

In this study, the dietary intake of fried and salted foods of three or more days *per week* was higher among women (39.00 %) compared to men (24.20 %).

In the present work, the dietary intake of sweets and candies three or more days *per week* was lower when compared to other studies in Los Angeles and Louisiana, USA, and in SP, Brazil (25, 26).

Consumption of soft drinks three or more days per week was higher for men than for women. Regular drinking of soft drinks strongly increases the risk of obesity, type 2 diabetes mellitus, metabolic syndrome, and cardiovascular disease (27,28).

In the present study, only 60.0 % of men and 42.4 % of women were involved in regular practice of physical activities during their leisure times. In a population-based study of 2 732 adults from Pelotas (RS), Brazil, sedentary behavior was the most prevalent cardiovascular risk factor (75.6 %) (29). Women were engaged in most sedentary behavior activities, such as television watching and use of microcomputer than men. Sedentary behavior, especially watching television, has been linked to increased frequency of daily consumption of soft drinks and dietary intake of snacks,



fast foods, and high-energy foods (30,31). Television watching has been associated with increased risk of cardiovascular disease, type 2 diabetes mellitus, and all-cause mortality (32). Lower levels of physical activity are associated with an increased risk of breast, colon, uterine, and other cancers (33). Furthermore, regular practice of physical exercise also helps to decrease the risk of depression and affective disorders, type 2 diabetes mellitus, obesity, metabolic syndrome and osteoporosis (1-6,34).

In this study, more men were engaged on leisure-time physical activity than women. On the other hand, women were more prone to perform sedentary activities but they had more adequate eating habits than men. Half of the people had excessive body weight and one third of men and 70% of women had abdominal obesity •

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