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HEALTH WORKERS: PREVALENCE OF OVERWEIGHT IN OBESITY IN A LEGAL AMAZONIAN MUNICIPALITY

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ABSTRACT

Introduction: Obesity has been discussed in different lines of research in recent years, as it is a chronic non-communicable disease characterized by excess body fat resulting from the prolonged imbalance between food consumption and energy expenditure, producing several deleterious health effects. In this sense, according to the World Health Organization (WHO), obesity can be defined as the accumulation of fat in the body, affected by aspects (biological, historical, ecological, socioeconomic, psychosocial, cultural, and political), resulting even serious health risks over time).**Objective:** to analyze the level of overweight and obesity in employees of the Municipal Health Department (MHD) in the municipality of Gurupi-TO. **Methodology:** The study included 122 employees of the administrative headquarters of MHD and 13 Basic Health Units (BHU), with positions of physicians, nurses, pharmacists, nursing technicians, dentists, oral health technicians, administrative, coordination. **Results:** The present study found that the highest percentage in waist-to-hip ratio (WHR) was higher in both sexes. **Conclusion:** It is concluded that the workers of MHD of Gurupi (TO), both sexes, presented the prevalence of overweight and indicators that predispose to chronic non-communicable diseases.

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INTRODUCTION

Obesity is defined by the World Health Organization (WHO) as a chronic, multifactorial disease with abnormal excess body fat. This is a risk factor for the development of Chronic Noncommunicable Diseases (NCDs), such as hypertension, hypercholesterolemia, diabetes mellitus, cardiovascular diseases, and certain forms of cancer (WHO, 2020). Obesity is the excessive accumulation of body fat, in the form of adipose tissue, resulting from a positive energy balance, capable of causing damage to the health of individuals. Also, the etiology of obesity is multifactorial, and environmental and genetic aspects are involved in its genesis (Enes, 2010). According to data from the Brazilian Institute of Geography and Statistics (Brasil, 2010) linked to anthropometry and nutritional status of children, adolescents, and adults in Brazil, obesity has increased in all age groups and both sexes, in all socioeconomic groups, with more expressive growth in the population with lower family income. In Brazil, obesity and overweight are alarming. In a short period, the country left the classification of malnourished to malnourished with overweight, accompanied by a high number of medical diagnoses for Systemic Arterial Hypertension (SAH), diabetes, cancer, cardiovascular diseases, and kidney diseases (Dias, 2019). Data show that in Brazil overweight in the population increased from 47,5% in men in 2006 to 57,7% in 2016, while in women from 38,5% to 50,5%, and the city of Rio Branco (AC) presented itself as the capital with the highest prevalence of overweight, while Palmas (TO) reveals a lower percentage of overweight. The obesity rate in Brazil increased by about 60% in 10 years, from 12,1% to 19,6% in women and 11,4% to 18,1% in men (Vigitel Brasil, 2016). It is estimated that at the moment the number of obese in the world reaches 700 million, bringing a worrying forecast for the scenario of 2030, where the incidence of obese people could exceed 1.2 billion

(DIAS, 2016). One of the anthropometric indicators that correlate with metabolic complications is the body mass index (BMI) a fast and practical indicator to assess the ideal weight of each person based on weight (kg) and height (cm), so BMI greater than 25 kg/m indicates excess weight, and greater than 30kg/m classifies as obesity (Enes, 2010 and Vigitel Brasil, 2016). Second Oliveira et al. (Oliveira, 2009) the increase in the overweight and obesity index is due to social, cultural, environmental and behavioral changes, which are highlighted mainly by the population's dietary pattern and lifestyle, where habits are characterized by reduced physical activity, smoking, excessive consumption of alcoholic beverages and increased urbanization rate. A study by Freitaset al. (Freitas, 2016) concluded that there is a direct relationship between the work environment and overweight. When studying health professionals who worked in pre-hospital care in the city of São Paulo, the researchers observed that 66% were overweight or obese and 70% had an altered abdominal waist, there was also a prevalence of SAH in 33%, in addition to high rates of smoking, alcohol intake and sedentary lifestyle (Cavagioni, 2012). On the other hand, in day-time employees of the Basic Health Units of the Municipality of Teresina-PI, the prevalence of overweight was obtained in 53.72% (Sousa, 2007). In 2012, 68% ofall deaths world wide were related to Chronic Noncommunicable Diseases (CNDs). It isprojected that by 2030, mortality from CNDswillrepresent 73,9% of world deaths, which will increase from 38 million in 2012 to 52 million in 2030 (OMS, 2010). This work is justified by the importance of obtaining data on the prevalence of overweight and obesity in health workers so that measures to prevent and treat CNDs and optimize health and quality of life are elaborated.

MATERIALS AND METHODS

This research is cross-sectional, descriptive qualitative, carried out from October 2018 to October 2019 with 122 medical, nurse, pharmacists, nursing technicians, dentists, oral health technicians, administrative, coordination of sectors, general services, and transportation, portraying the incidence of overweight and obesity of both sexes, without age limit. The employees were stationed in the administrative departments of the Municipal Health Department (MHD) of Gurupi-to and the 13 urban Basic Health Units (BHU) of Gurupi-TO. After signing the Free and Informed Consent Form (FICF), the volunteers were submitted to an evaluation, with completion of the evaluation form containing data on eating habits, sports practices, routine tests, family history, position, age, length of service. Addressing the multifactorial character of obesity, genetic, and environmental factors, which directly affect the incidence of overweight and obesity increase. The physical evaluation was performed as follows:

- Height measurement: physical evaluation of the size of a body vertically, the height was measured with a wooden ruler supported on the wall fixed from the floor up to 1,90 cm high to calculate the Body Mass Index (BMI).
- Abdominal waist measurement: this measure is related to assessing cardiovascular risks due to visceral fat. The measurement was performed in the abdomen region by a universal measuring tape between the lower edge of the last rib and the upper edge of the iliac crest.
- Waist/Hip Ratio (WHR): this calculation is performed with waist and hip measurements to analyze the risk of cardiovascular diseases. It was performed with a universal measuring tape to measure the abdominal circumference at the height of the umbilical scar and hip in the region of the greatest prominence of the glutes.

For data on body weight, body fat (BF), Body Mass Index (BMI), bone mass (BM), muscle mass (MM), visceral fat (VF), body hydration, basal metabolism (Kcal) and metabolic age (MA), the portable bioimpedance platform Tanita ® model Bc601 was used. Regarding the results of the means and standard deviation of the interviewees about weight, BMI and total fat of the professionals interviewed, it was calculated according to the analysis of the prevalence of overweight and obesity and classified by the Criteria of the World Health Organization (WHO), being BMI < 18.5 kg/m2 (low weight); BMI ≥ 18.5 kg/m2 to 24.9kg/m2 (eutrophic); BMI ≥ 25 kg/m2 to 29.9 kg/m2 (overweight) and BMI ≥ 30 kg/m2 (obese). The study followed resolution 466/2012 of the National Health Council, being submitted to an Ethics Committee on Research with Human Beings and approved according to an opinion no. 2,902,671. Data processing and analysis were performed based on the Microsoft® Excel 2019 program for data organization and tabulation. The Mann-Whitney U protocol was used for the independent sample from the Statistical Package SPSS version 20.

RESULTS AND DISCUSSION

The characteristics of the sampling concerning the number of servers evaluated, the percentage by sex, and distribution by workplace are available in Tables 1 and 2.

Table 1. Descriptive results of workers of the Municipal Secretariat of Gurupi according to variables, Position in MHD, and gender. (n= 122)

Position at MHD	Women (%)	Men (%)	Total (%)
Administrative	14,75	4,10	18,85
Coordination of sectors	14,75	4,92	19,67
General Services/Transportation	4,92	1,64	6,56
Nursing	7,38	0,82	8,20
Pharmacist	1,64	1,64	3,28
Doctor	2,46	3,28	5,74
Dentist	4,10	2,46	6,56
Oral healthtechnicality	6,56	0,00	6,56
Nursing technician	24,59	0,00	24,59
Total	81,15	18,85	100

Table 2. Descriptive results of the positions of workers of the Municipal Secretariat of Gurupi-TO, 2019. (n=122)

Workplace	Women (%)	Men (%)	Total (%)
UnirGOutpatientClinic	6,1	1,22	7,32
Beautiful view	4,88	0,00	4,88
Casego	3,66	0,00	3,66
Buritis Gardens	3,66	1,22	4,88
João Manoel	9,76	1,22	10,98
Acacia Park	3,66	0,00	3,66
Pandey	3,66	2,44	6,1
São José	9,76	1,22	10,98
MHD	40,26	15,86	56,12
Seville	4,88	0,00	4,88
Rising Sun	9,76	1,22	10,98
Iris Village	12,2	0,00	12,20
New Village	4,88	2,44	7,32
Waldir Lins	3,66	1,22	4,88

After the fragmentation of the group presented by Table 1, in decreasing order, it was noted that professionals in the nursing technical sector correspond to 24,59%, coordination of sectors 19,67%, administrative 18,85%, nursing 8,20%, general services/ transportation 6,56%, dentist 6,56%, oral health technician 6,56%, physician 5,74% and pharmacist for 3,28%, concerning the total number of individuals surveyed. Regarding the percentage of the gender variable distributed according to the sectors, the highest values presented by women who predominated in most departments were in nursing technicians with 29,59%, following administrative 14,75%, and coordination of sectors with 14,75%.

About men, the highest number was found in the coordination of sectors with 4,92%, administrative 4,10%, and physician-only predominant sector about women with 3,28%, (Table 1). Table 3 shows information by gender and age group; chronological age (CA) and metabolic age (MA). Regarding the description of the sociodemographic variables presented, it is seen that to analyze the variable chronological age (CA) and metabolic age (MA), the individuals were grouped by gender and age group of <20 and 20 to 74 years. With this division, we can see that most female health workers (16,39%) were found about CA in the age group of 35-39 years, following 25-29 (13,11%), 50-54 (11,48%) and 30-34 with 10,66%.

Table 3. Descriptive results of workers of the Municipal Secretariat of Gurupi according to variables, Chronological Age and Metabolic Age by age group in years by sex. (n= 122)

	Women(%)		Men (%)		Total (%)	
Age groups (years)	CA	MA	CA	MA	CA	MA
< 20	0,00	7,38	0,00	1,64	0,00	9,02
20 – 24	5,74	4,92	0,82	0,82	6,56	5,74
25 – 29	13,11	9,84	3,28	0,82	16,39	10,66
30 – 34	10,66	5,74	2,46	2,46	13,11	8,20
35 – 39	16,39	4,92	6,56	0,82	22,95	5,74
40 – 44	9,02	13,93	0,82	0,82	9,84	14,75
45 – 49	6,56	11,48	2,46	4,10	9,02	15,57
50 – 54	11,48	8,20	0,82	3,28	12,30	11,48
55 – 59	6,56	4,10	0,00	1,64	6,56	5,74
60 – 64	1,64	4,92	0,00	1,64	1,64	6,56
65 – 69	0,82	4,10	0,00	0,00	0,82	4,10
70 - 74	0,00	2,46	0,00	0,00	0,00	2,46

CA = Chronological age; MA = metabolic age.

Table 4. Comparative data among women in men of workers of the Municipal Secretariat of Gurupi according to health variables. (n=122)

Workplace	Women	Men	Total
Body weight(kg)	66,0 ± 13,6	81,7 ± 19,7*	72,4 ± 6,2
Stature (cm)	159,0 ± 6,4	171,4 ± 8,1*	164,3 ± 9,0
BMI(Kg/m2)	26,4 ± 6,4	27,6 ± 5,5	26,6 ± 7,8
Pelvis (cm)	101,6 ± 12,3	104,5 ± 12,5	102,5 ± 92,5
Abdomen (cm)	85,0 ± 13,1	96,8 ± 13,8*	90,5 ± 14,0
WRH(cm)	1,0 ± 0,2	1,0 ± 0,1	1,1 ± 0,2
Total fat(kg)	33,8 ± 7,1	24,9 ± 6,9*	32,5 ± 7,8
Visceral fat(kg)	5,7 ± 3,3	9,0 ± 5,3*	7,2 ± 3,9
Muscle mass(kg)	40,5 ± 5,5	57,3 ± 10,9*	45,4 ± 9,4
Bone mass(kg)	2,2 ± 0,3	3,3 ± 1,5*	2,4 ± 0,8
Water percentage (%)	48,8 ± 5,1	53,6 ± 5,4*	49,1 ± 5,5
Kcal	2156,7 ± 318,1	3093 ± 710,6*	2352,8 ± 556,0

*There was a significant difference between the sexes (p<0.05)

Table 5. Comparative data between the different positions of the Municipal Secretariat of Gurupi according to health variables, 2019. (n=122)

	Health Warehouse 1	Primary care 2	Administrative assistant 3	Nurse 4	Pharmacist 5	Doctor 6	Dentist 7	Oral technician 8	Nursing technique 9
Weight	68,9 ± 12,7	68,5 ± 18,2	83,2 ± 23,2	67,4 ± 19,4	65,3 ± 12,5	79,2 ± 15,0	69,9 ± 16,8	63,0 ± 12,4	63,9 ± 9,0
BMI	26,3 ± 4,4	26,2 ± 5,8	28,6 ± 4,4	24,9 ± 5,6	24,3 ± 3,5	26,3 ± 3,9	24,6 ± 2,7	25,8 ± 5,3	27,8 ± 9,1
Total fat	32,7 ± 9,1	32,8 ± 8,7	34,0 ± 9,9	28,2 ± 8,0	25,5 ± 7,7	27,4 ± 4,9	31,4 ± 6,1	32,2 ± 9,1	33,9 ± 5,5
Muscle Mass	43,2 ± 6,1	42,4 ± 9,3	51,7 ± 15,1	45,0 ± 10,4	46,1 ± 9,3	54,0 ± 13,6	43,2 ± 11,1	39,5 ± 3,3	39,9 ± 3,5
Bone Mass	2,3 ± 0,3	2,3 ± 0,5	2,8 ± 0,7	2,4 ± 0,5	2,4 ± 0,5	3,9 ± 2,7	2,3 ± 0,6	2,1 ± 0,2	2,2 ± 0,2
Visceral Fat	6,4 ± 3,4	7,0 ± 5,0	8,9 ± 3,2	4,4 ± 4,4	5,5 ± 2,5	6,7 ± 3,1	4,6 ± 2,4	5,4 ± 4,0	6,1 ± 2,9
kcal	2226,3 ± 375,2	2221,0 ± 507,1	2714,6 ± 955,0	2545,0 ± 669,4	2631,0 ± 654,5	3020,7 ± 874,7	2250,3 ± 492,5	2134,4 ± 195,2	2163,7 ± 249,3
Metabolic age	42,7 ± 15,1	43,2 ± 19,3	45,9 ± 6,4	28,9 ± 13,6	36,5 ± 13,9	39,4 ± 8,3	37,9 ± 11,8	40,6 ± 19,1	43,6 ± 14,3
% water	49,2 ± 6,1	49,2 ± 6,1	47,9 ± 6,4	252,9 ± 5,8	54,3 ± 5,5	50,9 ± 4,8	50,3 ± 4,3	50,3 ± 6,8	48,9 ± 4,2
Stature	161,3 ± 7,2	161,0 ± 7,9	169,1 ± 11,1i 0,023	163,7 ± 6,7	163,5 ± 8,7	173,1 ± 5,9a;b;i;h 0,027;0,021;0,000;0,006	169,4 ± 13,9i 0,023	156,0 ± 4,6	156,5 ± 5,5
Pelvis	100,7 ± 13,3	102,4 ± 11,9	109,4 ± 12,4	95,3 ± 22,2	99,8 ± 7,1	105,6 ± 6,6	103,3 ± 6,3	101,4 ± 7,5	135,0 ± 184,6
Abdomen	88,7 ± 9,7	88,3 ± 17,5	96,9 ± 14,5	87,0 ± 15,3	84,0 ± 12,1	92,7 ± 14,0	79,9 ± 9,6	83,3 ± 16,2	83,9 ± 12,3
WHR	1,0 ± 0,2	1,2 ± 0,1	1,1 ± 0,1	1,0 ± 0,2	0,8 ± 1,0	0,9 ± 0,1b 0,049	0,8 ± 0,1 a;b;c 0,044;0,000;0,005	0,9 ± 0,1b 0,004	0,8 ± 0,1 b; c 0,000;0,007

All of the following letters indicate that there was a significant difference(p< 0,05): a ≠ Health Warehouse; b ≠ Primary care; c ≠ administrative assistant; d ≠ Nurse; e ≠ Pharmacist; f ≠ Doctor; g ≠ dentist; h ≠ oral technician; i≠ nursing technician.

Regarding metabolic age (MA), the highest value was found between 40-44 years with 13,93% and 45-49 with 11,48%. According to ly, CA in males was correlative with women aboutthe age group, presenting its highest value between 35-39 years with 6,56% and 25-29 with 3,28%. The MA highest values were between 45-49 years with 4,10%, 50-54 (3,28%) and 30-34 (2,46%). Thus, when the sexes were grouped, the total referring to the CA indicator of the research participants was in the age group of 35-39 years. According to (Filardo, 2001) both men and women after 35 years of age up to the fifth or sixth decade of life tend to be more predisposed to body fat gain. The following results may be influenced by this factor. The mean and standard deviation values concerning weight in kg in males and females, respectively: men 81,7 (±19,7) and women 66,0 (±13,6). Regarding mean and standard deviation of height (cm): men 171,4 (±8,1) and women159,0 (±6,4), according to Table 4. According to the Ministry of Health (Brasil, 2020) and data from Table 4, the body mass index (BMI) of the two groups is classified as overweight, 26,4 (± 6,4) for women, and 27,6 ± 5,5 for men.

In the hip ratio (cm) there was a difference between the measurements when they were compared between both sexes. According to Malta et al. (Malta, 2015), one of the most relevant risk factors contributing to morbidity and mortality due to CNDs is overweight. In 1976 in the United States, a cohort study entitled The Nurse's Health Study was conducted and evaluated lifestyle and diet as an influence on the mortality of these professionals. Therefore, they observed that age, BMI, and weight change between factors were directly linked to the causes of mortality from cardiovascular diseases (Del pilar, 2015). According to Siqueira et al. (Siqueira, 2019), different studies were conducted to analyze the prevalence of overweight in health workers in the city of Pelotas/RS, Londrina-PR, Fortaleza/CE, and Rio de Janeiro/RJ. The results of the studies, all presented a high percentage concerning overweight, overweight, and obesity, which confirms the importance of detecting these cardiovascular risk factors in different locations. Another important factor to be considered is the circumference of the abdomen (cm). According to the Ministry of Health (Brasil, 2020) the measurement of the abdomen region in men equal to or greater than 94 cm and women 80 cm, can provide as an indicator related to overweight and its consequences. Regarding the results of the analysis in Table 4, men had a mean abdominal circumference of 96,8 (±13,8) and women 85,0 (±13,1). Both according to the Ministry of Health (Brasil, 2020) are among the risk values for chronic diseases. In the study by Gorz and Tribess (Gorz, 2009) several pieces of evidence were found determining that the use of abdominal circumference (cm) to measure abdominal fat is a strong indicator for cardiovascular risks, even if the subject is weighed within normal parameters. Gharakhanlou et al. (Gharakhanlou, 2012) complement that abdominal circumference is the simplest and best anthropometric measure of visceral fat.

Regarding WHR (cm), the Ministry of Health (Brasil, 2010) defines that for the cardiovascular risk the cutoff rate is equal to or greater than 0,90 for men and 0,85 for women. Men with WHR of 0,9 or less or women with WHR of 0,8 or less are classified as "safe". For any sex, with a ratio of 1,0 or greater, it is considered a "risk factor" for cardiovascular diseases. Taking into account these aspects, according to table 4, both females with 1,0 (± 0,2) and male 1,0 (± 0,1) WHR are classified as risk factors. Total fat (Kg), visceral fat (Kg), muscle mass (Kg), bone mass (Kg) water percentage (%) and Kcal, presented in men the highest values analyzed being significantly different from women, as shown in table 4. This result corroborates the study by Filardo e Leite (Filardo, 2001) in which it states that in the case of anthropometric indicators and body composition men present greater variation than women. According to Garvey (Garvey, 2013), it is necessary to seek other additional measures, such as waist circumference, body fat assessment, assessment of physical condition and comorbidities to achieve a better understanding of the subject, reducing the complexity of obesity disease. Table 5 shows the comparative data of the different positions, which shows the significant differences ($p < 0.05$) of the health variables. The difference occurred in WHR and Height in the administrative auxiliary, medical, dentist, oral technician, and nursing technician positions. Shift schedules, long working hours and high workload scores are specific characteristics routinely experienced by health workers that end up impacting health conditions, life habits and nutritional status, increasing in this population the predisposition to overweight and obesity (Garcia, 2010; Caruso, 2014; Coelho, 2014; Santos, 2013).

For Santos etal educational actions based on the holistic and interdisciplinary vision, directed to health promotion and healthy eating practices, are essential in the quality of life of the worker. Therefore, data collection in communities is essential to propose possible interventions, improving the quality and effectiveness of working conditions, bringing new health dynamics for these professionals, based on health promotion and prevention actions in quality of life. Thus, Dias et al show that overweight and obesity are frequent topics, discussed by the scientific community, especially when it comes to employees in the health areas. It is necessary that health professionals, especially those in Primary Care because they are ahead in promoting healthy behaviors, pay more attention to their health care and its long-term impacts. It is expected that they act as a reference because they can affect patients in their attitudes and changes in lifestyle by the simple behavior of the professional. Changes in occupational health, in addition to preventing lifestyle-related diseases, encourage such behaviors in their patients. The present study found that the highest percentage of WHR was higher in both sexes. It should be noted that the WHR was obtained from the waist and hip circumference values. It is noteworthy that WHR methods applied together with BMI are more favorable for a better diagnosis of cardiovascular disease risk factors.

Conclusion

It was concluded that MHD workers from Gurupi (TO), of both sexes, presented prevalence of overweight and indicators that predispose to chronic non-communicable diseases. In addition, men had higher values of the variables body weight (kg), height (cm), abdomen (cm), total fat (kg), visceral fat (kg), muscle mass (kg), bone mass (kg), water percentage (%) and Kcal.

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