# 25 - BLOOD PRESSURE AND BODY MASS INDEX OF WORKERS OF THE REGIONAL ELECTORAL COURT – MS

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## INTRODUCTION

During the last decades, there has been an increase in life expectancy of the Brazilian population, designing an epidemiological picture where emerging importance in the chronic non-communicable diseases, such as the nutritional disorders of overweight and obesity. We have in Brazil, the hypertension and the sedentary lifestyle as major concerns of public health.

The concern to monitor the levels of body fat has been increasingly an appeal in the detection of risk factors to health (cardiac hypertrophy, arrhythmias and cardiac output increase, in addition to being intimately associated with Hypertension and Diabetes Mellitus), in addition to being an important component of physical fitness related to quality of life. Godoy-Matos (2005) says that the excess body weight is associated with increased risk of cardiovascular diseases (CVD) and with increased mortality, both by CVD as with mortality from other causes, and that, in fact, the central fat accumulation is associated with this risk.

Obesity is a disorder of energy metabolism characterized by excessive storage of energy in the form of fat in adipose tissue. The pathophysiological mechanisms that lead to the increase in weight and the stock of excessive adipose tissue are only partially delineated. It is known that obesity results from the chronic imbalance between food intake and energy expenditure, leading to positive energy balance represented by stock of fat as energy reserve.

Some genetic and environmental factors are involved in this phenomenon (FROGUEL, 2000), believing that the genetic factors would have permissive action on environmental factors (genetic susceptibility) and in some cases might, in isolation, be determinants of constitutional obesity (ARNER, 2000).

The distribution of body fat can be verified by a variety of anthropometric procedures such as body mass index (BMI), waist-hip ratio (WHR) and waist circumference (WC). According to Mahan and Scott-Stump (2002), in general, hypertension is defined as a systolic pressure (SP) equal to or greater than 140 mmHg and diastolic blood pressure (DBP) greater than or equal to 90 mmHg or if both change.

There is in Maso (2001), which the cause of hypertension in obese individuals and resulting from the increased blood volume ejected by the heart, with the consequent increase of cardiac output by the greater body mass, there is also the increased peripheral resistance, generated by the accumulation of subcutaneous adipose tissue.

Thus the objective of this study is to determine the Body Mass Index (BMI), blood pressure (BP) and their correlation, drawing the profile of the workers of the Regional Electoral Court of Campo Grande in Mato Grosso do Sul.

## METHODOLOGY

This research has answered the "Standards of Conduct for Research involving Human Beings", Resolution No. 196, of October 10, 1996, of the National Health Council, which makes reference to research that, individually or collectively, involving the human being, directly or indirectly, in its entirety or parts of it, including the management of information or materials.

The research is considered descriptive, that according to Thomas and Nelson (2002), are used to obtain information about existing conditions, with respect to variables or conditions in a situation. Before data collection, the volunteers were informed about the objectives and procedures, and instructed to sign the consent form.

For the data collection were used anthropometric measures of weight and height to calculate BMI, following the criteria of ISAK - International Society for the Advancement of Kinanthropometry (2001).

Blood pressure was collected using aneroid blood pressure device WANMEDC (stethoscope of one head), which according to the WHO (World Health Organization) is classified as normal, pre-hypertension, level 1 of hypertension and level 2 hypertension.

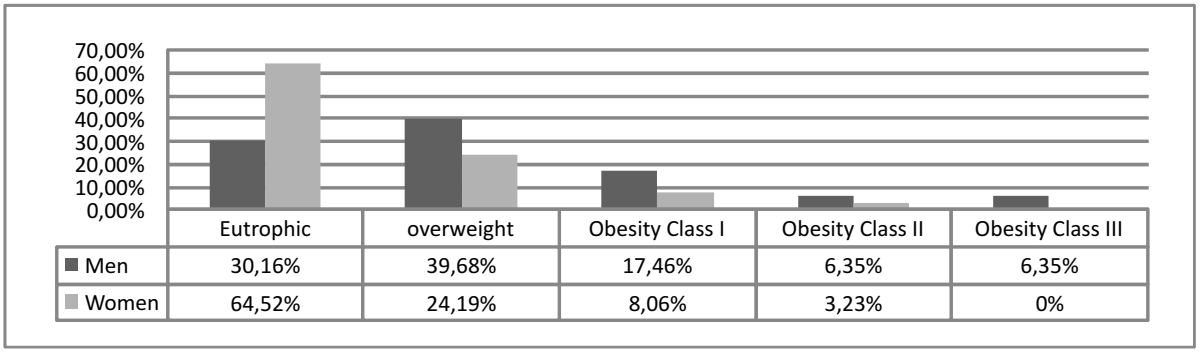
The sample was composed of 125 individuals of both sexes, 62 women and 63 men residing in Campo Grande – MS, working in Regional electoral Court.

For statistical analysis data were processed by percentage.

## RESULTS AND DISCUSSION

Below are the results collected from BMI and BP in 125 individuals of both sexes who work at the REC (Regional electoral Court) in Campo Grande – MT.

Figure 1. Relationship between genders and degree body composition of workers.

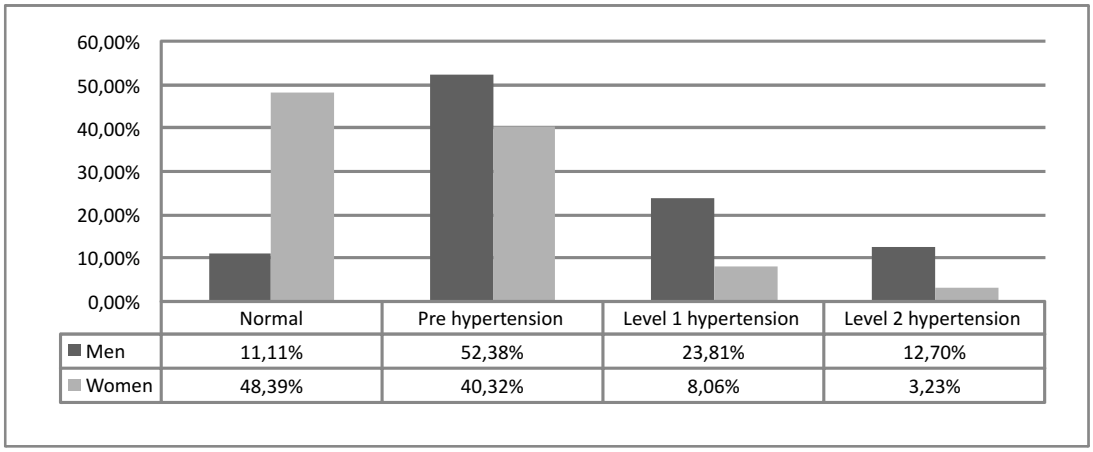



| | Eutrophic | overweight | Obesity Class I | Obesity Class II | Obesity Class III |
|---|---|---|---|---|---|
| Men | 30,16% | 39,68% | 17,46% | 6,35% | 6,35% |
| Women | 64,52% | 24,19% | 8,06% | 3,23% | 0% |

Despite several studies (OLIVEIRA and collaborators 1998; CEDDIA, 1998), have shown that obesity is prevalent in people of females, that its incidence increases with age and that women have a higher percentage of fat than men, our research found some different data. We observed that the classification of women in relation to BMI Eutrophic was 64.52 % and obesity in worrying levels of 11.29 % (Obesity Classes I, II and III). In men these same rates were 30.16 % and 30.16 % respectively.

Such results may be justified by the fact that women are increasingly concerned with the aesthetic enhancement, and the BMI in relation to the classification of overweight not always represents an accumulation of fat in men. Our results showed an overweight classification of 24.19 % in women against 39.68 % in men.

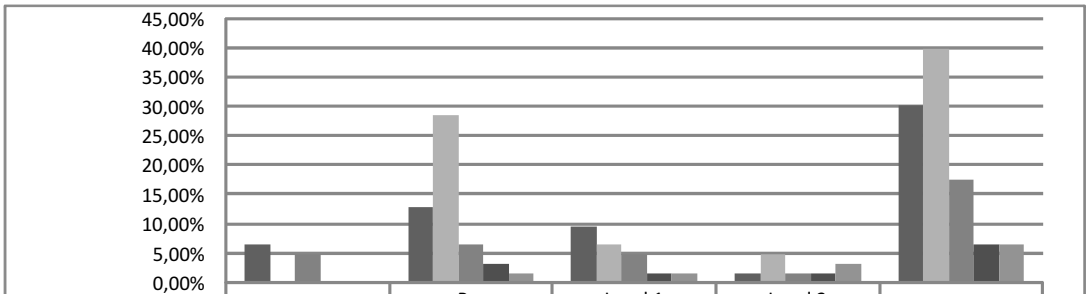
Figure 2. Relationship between genders and blood pressure levels.




| | Normal | Pre hypertension | Level 1 hypertension | Level 2 hypertension |
|---|---|---|---|---|
| Men | 11,11% | 52,38% | 23,81% | 12,70% |
| Women | 48,39% | 40,32% | 8,06% | 3,23% |

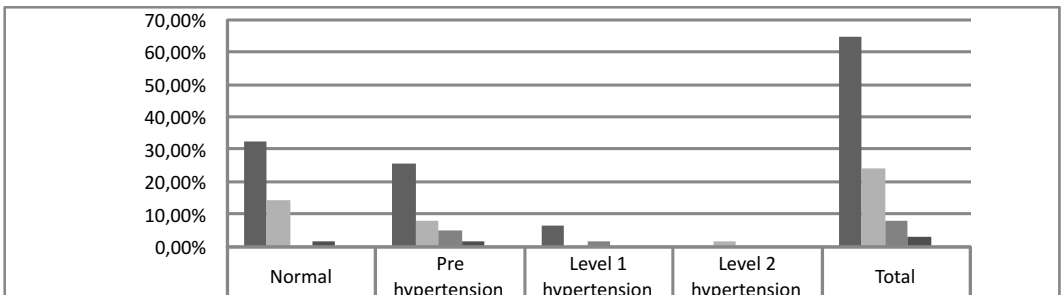
In the results of BP, we noticed a predominance of hypertension in men of 36.51 % (between hypertension levels 1 and 2) against 11.29 % in women between these levels, demonstrating in this study specifically that there was a strong influence of excess weight in relation to levels of hypertension found in the male group (although we know that the hypertension has multifactorial origin and is therefore not directly associated with only the factor of excess weight).

Figure 3. Correlation between the classification of blood pressure and the degree of body composition of men.




| | Normal | Pre hypertension | Level 1 hypertension | Level 2 hypertension | Total |
|---|---|---|---|---|---|
| Eutrophic | 6,35% | 12,70% | 9,52% | 2% | 30,16% |
| Overweight | 0,00% | 28,57% | 6% | 4,76% | 39,68% |
| Obesity Class I | 5% | 6,35% | 4,76% | 2% | 17,46% |
| Obesity Class II | 0,00% | 3,17% | 2% | 2% | 6,35% |
| Obesity Class III | 0% | 2% | 2% | 3% | 6% |

Figure 4. Relationship between the classification of blood pressure and the degree of body composition of women.




| | Normal | Pre hypertension | Level 1 hypertension | Level 2 hypertension | Total |
|---|---|---|---|---|---|
| Eutrophic | 32,26% | 25,81% | 6,45% | 0% | 64,52% |
| Overweight | 14,52% | 8,06% | 0% | 1,61% | 24,19% |
| Obesity Class I | 0% | 4,84% | 1,61% | 0% | 8,06% |
| Obesity Class II | 1,61% | 1,61% | 0% | 0% | 3,23% |
| Obesity Class III | 0% | 0% | 0% | 0% | 0% |

In the relation between the BP and the body composition, it can be seen from figures 3 and 4 that the majority of eutrophic men presents itself in the group Pre-Hipertens to 12.70 %, while the majority of eutrophic women is classified with the normal BP 32.26 %, thus showing that even presenting a normal body composition, these individuals are subject to have some level of hypertension.

In body composition overweight, note that 14.52 % of the women present with normal blood pressure, while the men in this same category all feature - with some level of hypertension.

All the women who have class I obese, have pre-hypertension or are hypertensive, while men in this same category, 5% of them present with normal blood pressure.

In obesity class II, the women are presented with the normal BP or pre-hypertensive, while none of the men in this body composition has the normal BP, but with any of the levels of hypertension.

In class III obesity none of the women interviewed has this type of body composition, while 6.35 % of men in this category have some of the levels of risks offered by (Pre-hypertensive, hypertension levels 1 and 2).

With this the results of the present work shows that there was a correlation between the two indices analyzed. In relation to blood pressure, is already fairly widespread and consolidated the association between obesity and hypertension. The Framingham study showed a strong association between obesity and hypertension, because 61% of women and 70% of men with a history of hypertension presented with excess weight.

Among the risk factors for cardiovascular disease, hypertension is one of the most important, affecting about 11 to 20% of the population above the age of 20 years (BRAZIL, 1988). It is estimated that in Brazil about 15% of the adult population can be labeled as hypertensive, increasing the prevalence as the age progresses. The AH is considered one of the major risk factors of morbidity and cardiovascular mortality, its high cost and social responsible for around 40% of cases of early retirement and absenteeism at work in our environment. "The adequate control of this situation significantly reduces the individual risks and social costs" (CONSENSO, 1998).

**CONCLUSION**

When we calculate obesity using BMI (despite being an easy index to be obtained and have low cost) we must observe if the values related to the classification of overweight really indicate accumulation of fat, because individuals with a high amount of muscle mass may have rates of overweight, without having excess fat.

Our results demonstrated that women had to be healthier than men and in spite of all the considerations made, we concluded that there was a correlation between the two analyzed indices (BMI and BP).

By these conclusions, it is suggested:

Conducting a process of systematic follow-up to this population.

Plan educational activities for the promotion of general health.

Performing practice regular physical activities.

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**ABSTRACT**

The nutritional disorders such as overweight and obesity, hypertension and sedentary lifestyle are major concerns of public health in Brazil, being important risk factors for chronic non-communicable diseases. Therefore the objective of the present work is to determine the correlation between body mass index (BMI) and blood pressure (BP) of individuals of both sexes, who work in Regional Electoral Court in Campo Grande - MS. The sample was composed of 125 individuals, 62 women and 63 men.

To obtain data was measured body weight and height equalizing the values of BMI = weight/height2, while the blood pressure was measured using the aneroid blood pressure device WANMEDC (stethoscope of 1 head). With the obtained results we observed that the classification of women in relation to Eutrophic BMI was 64.52 % and obesity in worrying levels of 11.29 % (Obesity Classes I, II and III). In men these same rates were 30.16 % and 30.16 % respectively. Our results showed that women are healthier than men and in spite of all the considerations made, we concluded that there was a correlation between the two analyzed indices (BMI and BP).

**KEY WORDS:** Obesity, blood pressure, body mass index.

**PRESSION SANGUINE ET INDICE DE MASSE CORPORELLE DES TRAVAILLEURS DES TRIBUNAL RÉGIONAL ÉLECTORAL – MS**

**RÉSUMÈ**

Les troubles nutritionnels tels que le surpoids et l'obésité, l'hypertension et l'inactivité physique sont les principaux problèmes de santé publique au Brésil, avec des facteurs de risque de maladies chroniques. Par conséquent, la présente étude vise à déterminer la corrélation entre l'indice de masse corporelle (IMC) et la pression artérielle (TA) chez les individus des deux sexes, travaillant dans le tribunal régional électoral dans la ville de Campo Grande - MS. L'échantillon était composé de 125 personnes, 62 femmes et 63 hommes. Pour obtenir les données ont été mesurées poids corporel et la hauteur égale à l'IMC de poids/taille2, tandis que la pression artérielle a été mesurée en utilisant l'appareil anéroïde pression WANMEDC (1 stéthoscope tête). Avec les résultats, nous avons observé que la classification des femmes par rapport à l'IMC était Eutrophe 64,52% et l'obésité chez des niveaux inquiétants de 11,29% (classe Obésité I, II et III). Ces mêmes proportions pour les hommes étaient 30,16% et 30,16%, respectivement. Nos résultats ont démontré que les femmes ont une meilleure santé que les hommes, et malgré toutes les considérations faites, nous concluons qu'il ya une corrélation entre les deux indices (l'IMC et AP).

**MOTS-CLÉS:** obésité, pression sanguine, indice de masse corporelle.

**PRESIÓN ARTERIAL E ÍNDICE DE MASA CORPORAL DE TRABAJADORES DEL TRIBUNAL REGIONAL ELECTORAL – MS**

**RESUMEN**

Trastornos nutricionales como el sobrepeso y la obesidad, la hipertensión y la inactividad física son los principales problemas de salud pública en Brasil, con factores de riesgo de las enfermedades crónicas. Por tanto, el presente estudio tiene como objetivo determinar la correlación entre el índice de masa corporal (IMC) y la presión arterial (PA) en individuos de ambos sexos, que trabajan en el Tribunal Electoral Regional en la ciudad de Campo Grande - MS. La muestra estuvo conformada por 125 personas, 62 mujeres y 63 hombres. Para obtener los datos se midió el peso corporal y la altura igualando los valores de IMC = peso/altura², mientras que la presión arterial se midió usando el aparato de presión aneroide WANMEDC (1 estetoscopio cabeza). Con los resultados se observa que la clasificación de las mujeres en relación con el IMC Eutrófico fue 64,52% y las tasas de obesidad son alarmantes 11,29% (obesidad de clase I, II y III). Ya en hombres estos mismos índices es 30,16% y 30,16% respectivament. Nuestros resultados demuestran que las mujeres tienen más saludable que los hombres ya pesar de todas las consideraciones realizadas, se concluye que existe una correlación entre ambos índices (IMC y PA).

**PALABRAS CLAVE:** obesiad, presión arterial, índice de masa corporal.

**PRESSÃO ARTERIAL E ÍNDICE DE MASSA CORPORAL DE TRABALHADORES DO TRIBUNAL REGIONAL ELEITORAL – MS**

**RESUMO**

Os distúrbios nutricionais como o sobrepeso e a obesidade, a hipertensão arterial e o sedentarismo são grandes preocupações da saúde pública no Brasil, sendo importantes fatores de risco para doenças crônicas não transmissíveis. Portanto o presente trabalho tem como objetivo determinar a correlação entre o Índice de Massa Corporal (IMC) e a Pressão Arterial (PA) de indivíduos de ambos os sexos, que trabalham no Tribunal Regional Eleitoral no município de Campo Grande – MS. A amostra foi constituída por 125 indivíduos, sendo 62 mulheres e 63 homens. Para a obtenção dos dados foi mensurado o peso corporal e a estatura equalizando os valores de IMC = peso/altura2, enquanto a pressão arterial foi aferida utilizando o aparelho de pressão aneróide WANMEDC (estetoscópio de 1 cabeça). Com os resultados obtidos observamos que a classificação das mulheres em relação ao IMC Eutrófico foi de 64,52% e de obesidade em níveis preocupantes de 11,29% (Obesidade Classes I, II e III). Já nos homens esses mesmos índices foram de 30,16% e 30,16% respectivamente. Nossos resultados demonstraram que as mulheres apresentam-se mais saudáveis que os homens e apesar de todas as considerações realizadas, concluímos que houve uma correlação entre os dois índices analisados (IMC e PA).

**PALAVRAS-CHAVES:** Obesidade, Pressão arterial, Índice de massa Corporal.