Prevalence of Overweight, Obesity and Risk of Coronary Pathy in Jurisdictions of the State of Rondônia – Brazil

Helio Franklin Rodrigues de Almeida[1], André Ribeiro da Silva[2], Lucicleia Barreto Queiroz[3], Leonardo Severo da Luz Neto[4], Carlos Alberto Paraguassu Chaves[5], Artur Felipe Queiroz Assis[6], Almeida Andrade Casseb[7]

[1]PhD in Physiology from the University of A Coruña, Spain Revalidation University of Brasília, Brazil, Master of Exercise Physiology - Federal University of Santa Maria, Brazil, Graduated in Physical Education – State University of Pará, Brazil. Professor of the Department of Collective Health, Researcher at the OBSAT and Researcher of GEISC of the Federal University of Rondonia, Brazil. E-mail: helio@unir.br

[2]Postgraduate Program in Nursing at the University of Brasilia

[3]PhD in Educational Sciences from the University of Porto, Portugal, revalidated by USP, Master in Physical Education and Specialist in Physical Education from USP and graduated in Physical Education from UFAM. She is currently Associate Professor - IV and Director of Support for Academic Education of the Undergraduate Pro Dean of the Federal University of Acre, Brazil.

[4]Post-Doctor in Pastoral Psychology, PhD in Theology, PhD Student in Education.Master in Education, Psychology and Theology. Graduate in Physical Education, Nusring and Theology. Professor and Researcher at the GEITEC and GEISC of the Federal University of Rondonia, Brazil. Email: lluz@unir.br

[5]PhD in Health Sciences, University of Brasília - UnB, Brazil and PhD in Science – Universityof Havana, Cuba and Post-Doctor in Health Sciences, UnB and Degli StudiD'Aquila University, IT, Professor at the University Institute of Rio de Janeiro, IURJ, Brazil

[6]Graduation in Nutrition from Faculdade São Lucas (2010).Specialization in Clinical Nutrition and Nutritional Therapy (2011/2012). Has experience in the field of Nutrition, with an emphasis on Clinical Nutrition. He is a clinical nutritionist at the Emergency and Urgency Hospital of Rio Branco / Acre.

[7]PhD and Master in Experimental Biology, Graduated in Biology, Professor in the Department of Archeology and Researcher at the Laboratory of Natural Products at the Federal University of Rondônia. Email: almeida@unir.br

Abstract— *The aim of this study was to investigate the prevalence of overweight, obesity and risk of coronary artery disease in judges in the State of Rondônia, Brazil. The sample consisted of 23 subjects in work activity in the court of justice of the state of Rondônia, aged from 28 to 45 years, who were divided into two groups of studies, according to age: Study Group 1 (GE-1), composed of 10 subjects from 28 to 36 years of age (Age: 33.6 ± 2.91; Body weight: 77.27 ± 9.85; Height: 170.1 ± 7.47); and b) Study Group 2 (GE-2) composed of 13 subjects from 37 to 45 years of age (Age: 42.4 ± 2.53; Body weight: 80.76 ± 8.14; Height: 155.3 ± 16.40). To detect possible significant differences between the scores related to physical characteristics and the study variables of GE-1 and Ge-2, descriptive statistics and Student's "t" test were used for independent samples, respectively, seeking a significance of p<0.05. The scores of the analyzed variables did not present, when compared to each other, statistical differences at the level of p<0.05, with a p=0.313 for the EG-1 BMI and a p=0.313 for the risk of coronary artery disease in EG-2. = 0.236. It was also verified that the mean values of the aforementioned variable (27.4 kg/m^2 and 28.7 kg/m^{2}for EG-1 and EG-2, respectively), they are classified as "overweight", and when quantified in percentage it*

was noticed that 20% of the subjects in EG-1 have a BMI classified as "normal", 60% have " overweight" and 20% are "obese", and in EG-2 individuals only 7.8% have a BMI classified as "normal", 61.5% are "overweight" and 30.7% are "obese" . Regarding the risk of coronary artery disease (CR), it appears that in EG-1 70% of the sample has it classified as "high", 10% classified as "low", 10% bandaged as "medium", and 10% as presents as "very high". IN GE-2, no element has the RC classified as "low", being 77% classified as "high", 11.5% as "medium", and 11.5% as "very high". These results indicate that the combination of different risk behaviors such as: smoking

I.   INTRODUCTION

Although overweight and obesity were once misused and indistinctly used terms, nowadays they are known to have completely different meanings. This misunderstanding, for some time, certainly made it difficult to compare different studies on the subject, extremely impairing a more accurate diagnosis of these disorders, and thus compromising the exact assessment of their degree of incidence in the human body.

By overweight we mean the increase in total body weight that exceeds the standards associated with the individual's height, obesity being defined as a pathology characterized by the excessive accumulation of fat in a subject's body, which may negatively influence the quality of life of the individual. even and reduce its longevity, classified in two ways: a) essential fat, that necessary for organic functioning and that accumulates in the bone marrow, around the organs (heart, lungs, liver, spleen, kidneys, and intestines) , in the muscles and tissues rich in lipids distributed throughout the central nervous system; and b) reserve fat, that accumulated in the adipose tissue, occupying a greater volume under the subcutaneous surface, whose function is to protect the various internal organs from trauma, and it is important to highlight that,

For Dias et alli (2017), and also Nascimento et alli, (2020), obesity is a chronic-degenerative pathology of multifactorial character, which can be: genetic, hormonal, neurological, psychological, which when associated with inadequate nutrition and the reduction of significant motor activities in the subject's daily life, a phenomenon called sedentary lifestyle, contributes on a large scale to the emergence of degenerative diseases such as: arterial hypertension, stroke, dyslipidemia, diabetes, musculoskeletal disorders, osteoporosis, gastritis , several types of cancers, sleep disorders, depression, among others, leading the morbidity and mortality statistics to alarming rates.

As the fastest growing nutritional disorder in the world, overweight and obesity now affect more than two billion people, with an estimated 2.3 billion adults around the world being overweight in 2025, of which 700 millions of individuals with obesity, and becomes, due to the physiological consequences, cognitive and behavioral impairments, and even its deleterious effects on the affected individual's quality of life, one of the main public health problems worldwide, a fact confirmed by epidemiological and clinical (EICKEMBERG et alli, 2020; NASCIMENTO et alli, 2020).

Thus, the need for a prior and correct diagnosis of its levels seems clear, since, when the appropriate limits are exceeded, in addition to changing the morphological configuration, they can also negatively influence the subject's functional aspects. Considering this, Moreira et alli (2018) highlight the importance of the indicators of the Surveillance Survey of Risk and Protection Factors for Chronic Diseases by Telephone Survey, by the Brazilian Ministry of Health, according to which, in Brazil, the prevalence of obesity increased in alarming numbers with an increase of 67.8% in the last thirteen years, with the Brazilian Association for the Study of Obesity and Metabolic Syndrome - ABESO, estimating that in 2025 the world population of adults will reach approximately 2.3 million overweight people , and more than 700 million obese people (VIGITEL, 2018; MALVEIRA et alli, 2018; ABESO, 2019).

In this light, the Brazilian Federal Government recently reported a 72% increase in the incidence of obesity in the period between 2006 and 2019, from 11.8% to 20.3%, meaning that two out of ten Brazilians are obese, with the highest percentage affecting women (21%) and increasing with age: for young people aged 18 to 24 years, the increase is 87% and among adults aged 65 years it reaches the level of 20.9% (BRASIL, 2020).

Still in an epidemiological focus, the specialized literature considers that obesity is increasing both in rich countries and in developing countries, including in this aspect Brazil, where its prevalence has been a growing secular trend, since the rate of obesity in adults is 20.7% for women and 18.7% for men, and in relation to overweight the indicators are: 57.1% for men and 53.9%

for women. Such growth has been attributed to several processes, with the political, economic, social and cultural spheres representing part of the problem, and for this reason it is considered a multifactorial disease, in which all its dimensions must be addressed during its treatment (BARROSO etalli, 2017; MALVEIRA et alli, 2018; ABESO, 2019; BRAZIL, 2020).

This reality demands a high financial cost, and it is important to adopt governmental measures with the capacity to, through an integrated and synchronized look with the socio-cultural habits of the population, reduce the incidence of this comorbidity and improve the quality of life of affected people by the pathology on screen. Studies on the cost of obesity complement traditional epidemiological information by accounting for the high economic impact involved in treating the disease, which has been gradually increasing the sensitivity of managers, and the general public, to the adoption of preventive measures to combat it. disease on the agenda (DIAS et alli, 2017; ABESO, 2019; BRAZIL, 2020; OLIVO, 2020; EICKEMBERG et alli, 2020; ROCHA, et alli, 2021).

The control of this pathology is done using dietary, drug and even surgical forms of treatment, and in all of them, in parallel, it is necessary for the subject to permanently adopt healthy lifestyle habits, including whether in this aspect the regular practice of physical activity, for which it is important to have a detailed planning in relation to four basic aspects: intensity, duration, frequency and repetition, variables that must be properly planned and bandaged in a scientifically methodized work system regarding the prescription and control of training loads (ALMEIDA et alli, 2018; ALMEIDA et alli, 2020).

Given the above, it seems clear that there is a need to correctly identify the amount of body fat in the subject in order to better understand its consequences on the individual's organic functions, and the consequent adoption of therapeutic measures. In this aspect, there are several methods for its diagnosis, which are classified as follows: a) direct; b) indirect and c) doubly indirect, all of which have advantages and disadvantages that must be carefully analyzed (LANUTRI, 2019).

The direct method involves in its procedure the dissection and weighing of body tissues, not being viable for living beings. The indirect methods are validated as a result of the direct methods and estimate the body components based on chemical and physical assumptions, and, despite having excellent precision, they are invariably associated with high costs due to the technology required for their use. The doubly indirect methods are validated from the indirect methods, and estimate body composition

through regression equations, with bioelectrical impedance and anthropometry being the most commonly used techniques (GUEDES, 2013; SOUZA, SARON & FILHO, 2018), with the latter, the anthropometric, through the calculation of the Body Mass Index (BMI), the one with the greatest practical applicability as it does not require great material sophistication in its execution, and presents scientific reliability, economic feasibility, simplicity of use, in addition to lesser cultural restrictions. For this reason, it was the procedure adopted in this investigation, since its results, despite being less rigorous, produce estimation errors at acceptable levels by the academic community.

It is known that overweight is among the top five attributable causes of premature death, accounting for approximately 10% of deaths that occur annually worldwide, and that, when identified after the second half of life, its effects are progressively deleterious and rapidly stimulate the emergence of various comorbidities (GBD, 2019; NELSON et alli, 2007). This fact constitutes a global public health problem, with the specialized literature investigating the incidence of body fat levels in different social groups for decades, especially in relation to gender, ethnicity, age, physical fitness (MATSUDO, FRANÇA & MONTGOMERY, 1989; GUEDES & GUEDES, 1996; BÖHME & KISS, 1997; LOPES & PIRES NETO, 1997; GLANER & PIRES NETO, 1998; GUEDES, 2002; KRUG & BRAZ, 2002; MALVEIRA et alli, 2018; ROSSI, 2019; LIMA et al, 2020; DAMASCENO et alli, 2020; BIRTH et alli, 2020; OLIVO, 2020; ROCHA et al, 2021; GUEDES & MELLO, 2021; GUEDES & SILVA, 2021a; GUEDES & SILVA, 2021b).

Such researches, without exception, indicate as being of paramount importance the need for an early diagnosis of excess weight, and in the most heterogeneous social segments, since, in addition to helping to detect groups that are more vulnerable to these pathologies, it also enables the carrying out prophylactic interventions in relation to obesity-related comorbidities, and, if these are already present, anticipating treatment to improve the quality of life of affected individuals.

Under this focus, it is observed that the labor activities of servers of the judiciary, especially magistrates, impose on them, due to the specificity of their own routines, a daily behavior of low motor skills during the development of labor activities. That is, admitting the excessively passive behavior during the development of their routine work activities, a fact that almost always extends to their other daily motor achievements, it can be assumed that these, the magistrates, have markedly a

decisive contributor to greater susceptibility the acquisition of excess weight, which, as previously shown, can have negative functional consequences for the individual's body. Thus, in order to broaden the perspectives of discussion on this topic.

II.   METHODOLOGICAL PROCEDURES

The population of this study consisted of male magistrates working at the Court of Justice of the State of Rondônia. Initially, a first personal contact was made with those interested in participating in this study, voluntarily, to explain to them the relevance of the research and its methodological details, as well as requesting them to sign a free and informed consent form, authorizing the publication of the information obtained. The sample consisted of 23 subjects aged between 28 and 45 years, who, according to age, were divided into two study groups: Study Group 1 (SG-1), consisting of 10 subjects aged 28 to 36 years deity; and b) Study Group 2 (SG-2) , composed of 13 subjects from 37 to 45 years of age.

2.1. Study variables, equipment and measurement standardization

In this study, the anthropometric parameters were initially measured: a) Total Body Weight (TCP); and b) Height (EST), which together with the informed age were used to, in addition to characterizing the investigated sample, also to determine the body mass index-BMI, according to the protocols described below:

1. a) The PCT, understood as the result of the system of forces exerted by gravity on the total body mass (PITANGA, 2008), was measured using an electronic Filizola brand scale with a capacity of up to 150 kg and a precision of 1g, being their values expressed in kilograms - kg. The measurement was performed with the equipment positioned on level ground, with the individual being evaluated standing in the center of the platform, in an erect posture and with the head horizontally, legs slightly apart and arms relaxed along the body (PETROSKI, 1999) ; and

2. b) The EST, understood as the vertical linear length between the plantar region and the vertex (PITANGA, 2008), was measured using an Avanutri portable stadiometer with a precision of 1 mm, with its values expressed in centimeters - cm . The measurement was taken with the subject barefoot, the heels, buttocks, shoulder girdle and occipital bone in discreet contact with the perpendicular ruler. As recommended by standardization, a transverse cursor was slid along the ruler to the vertex, forming a right angle. The reading was carried out with the subject in maximum inspiration and with the head directed to the Frankfurt plane (PETROSKI, 1999).

Then, using the PCT/EST^2 mathematical model (PCT: total body weight - Kg; EST: height - cm) the calculation of the Body Mass Index - BMI was performed, which is understood as the relationship between the human weight and height ^{2}, whose index in kg/m ^{2}, statistically expresses a low correlation with height and a greater correlation with body fat (PITANGA, 2008).

Finally, to conclude the data collection for the study, the risk of coronary artery disease in the subjects comprising the sample was identified through the anamnesis instrument proposed by Sampedro (1996) and modified by Almeida (2011), shown below in table 1, which assesses on a growing scale of up to 80 points, the conditioning and causal factors that universally characterize individual risks for coronary heart disease, which, according to the score obtained, are classified as: Minimum (<16); Low (17-25); Medium (25-32); High (33-41); and Most High (>41).

CHART 1: Questionnaire to assess the risk of coronary artery disease.

FACTORS	PUNCTUATION					
AGE **- yearsold -**	10 – 20 Points: 1	21 - 30 Points: 2	31 – 40 Points: 3	41 - 50 Points: 4	51 - 60 Points: 6	> 60 Points: 10
FAMILY HERITAGE	0 relative with heart disease Points: 1	1 relative with heart disease Points: 4	2 relatives with heart disease Points: 8	> 2 relatives with heart disease Points: 10		
SMOKE	Does notsmoke Points: 0	Passive smoker Points: 5	Up to 10 cigarettes/day Points: 5	From 11 - 20 cigarettes/day Points: 6	From 21 - 30 cigarettes/day Points: 8	> 30 cigarettes/day Points: 10

WEEKLY EXERCISES - minutes -	> 240 Points: 0	120 - 240 Points: 2	80 - 119 Points: 3	60 - 79 Points: 5	31 - 59 Points: 8	<30 Points: 10
CHOLESTEROL - mg/dl -	< 180 Points: 0	181 - 205 Points: 2	206 - 230 Points: 5	231 - 255 Points: 6	256 - 280 Points: 8	>280 Points: 10
PA SySTOlIC - mm/hg -	110 - 119 Points: 0	120 - 139 Points: 2	140 - 159 Points: 4	160 - 179 Points: 6	180 - 199 Points: 8	>200 Points: 10
DIASTOLIC PA - mm/hg -	< 70 Points: 0	71 - 76 Points: 2	77 - 82 Points: 3	83 - 93 Points: 4	94 - 105 Points: 6	>106 Points: 10
B.M.I. - % -	< 18.5 Points: 0	18.5 - 24.9 Points: 2	25.0 - 29.9 Points: 4	30.0 - 34.9 Points: 6	35.0 - 39.9 Points: 8	> 40 Points: 10

Aiming to reduce and even avoid possible failures, during data collection there was the collaboration of five (5) researchers, all linked to the Group of Interdisciplinary Studies in Collective Health of the Federal University of Rondônia - GEFEU, which preceded the realization of the works were responsible for verifying the conditions of the material to be used with the subjects comprising the sample.

2.2 Statistical analysis of data

In this study, the data were analyzed using the following procedures: a) initially descriptive statistics was performed to characterize the sample; and b) subsequently, to detect in the subjects components of the study groups, GE-1 and GE2, possible significant differences between the scores related to their physical characteristics and study variables, Student's "t" test was used for independent samples. Data were processed and analyzed using version 10 of the computerized statistical package "STATISTICA for windows", from Starsoft Incorporation, seeking a significance of p<0.05.

III. RESULTS AND DISCUSSION

In order to characterize the sample, Table 1 shows the result of the Student "t" test for independent samples (mean values and their respective standard deviations), for the variables: Age (ID), Height (EST) and Body Weight Total (PCT) of EG-1 and EG-2, compared to each other with statistical treatment showing significant differences only in the variable ID (p = 0.000), demonstrating the heterogeneity of the sample.

Table 1. Statistical analysis of the physical characteristics of the sample.

VARIABLES	STUDY GROUPS				t	p
	GE-1		GE-2			
	n	ESCORES	n	ESCORES		
PCT -kg-	10	77,27 ± 9,85	13	80,76 ± 8,14	-0,934	0,360
EST -cm-		170,1 ± 7,47		155,3 ± 16,40	0,990	0,333
AGE -yearsold-		33,6 ± 2,91		42,4 ± 2,53	-7,789	0,000*

* significant at the indicated level.

Table 2 shows the result of Student's "t" test for independent samples (mean values and their respective standard deviations), for the study variables: Body Mass Index (BMI) and Risk for Coronary Disease, for EG-1 and EG-2 compared with each other, with the statistical treatment not showing significant differences of p<0.05 between their scores, having been found for the BMI of EG-1 a p=0.313 and for the risk of coronary artery disease in EG-2 a p=0.236. The mean values of the aforementioned variable (27.4 kg/m ^{2} and 28.7 kg/m ^{2} for GE-1 and GE-2, respectively), are classified as "overweight", since, considering the characteristics of the

subjects components of the sample, these values should not exceed 25 kg/m ^{2} to be bandaged as "normal" (PITANGA, 2005).

Table 2. Statistical analysis of the study variables.

VARIABLES IN STUDY	STUDY GROUPS				t	P
	GE-1		GE-2			
	n	ESCORES	n	ESCORES		
BMI - Kg/m ^{2} -	10	27,4 ± 2,80	13	28,7 ± 2,88	-1,033	0,313
RISK IN CORONARY PATHY - spots -		34,5 ± 7,16		37,6 ± 5,40	-1,219	0,236

When quantified in percentages, it can be seen that 20% of the subjects in EG-1 have a BMI classified as "normal", 60% are "overweight" and 20% are "obese", and in the individuals in EG-2 only 7, 8% have their BMI classified as "normal", 61.5% are "overweight" and 30.7% are "obese". The higher BMI values presented by EG-2 in relation to EG-1 corroborate other studies which state that body fat tends to increase with age, a fact that is associated with high energy intake, ethnicity, system activity sympathetic nervousness, thermal response to food, and the quality and quantity of physical activity performed by the subject, contribute markedly to the decrease in lean mass and increase in intra-abdominal and intramuscular adiposity (NOOIJEM, 2017; NOOIJEM, 2017; SILVEIRA, 2017).

Regarding the risk of coronary artery disease (CR), it appears that in EG-1 70% of the sample has it classified as "high", 10% classified as "low", 10% bandaged as "medium", and 10% as presents as "very high", and in GE-2 no element has the RC classified as "low", 77% is classified as "high", 11.5% as "medium", and 11.5% as "very high" . These results indicate that the combination of different risk behaviors such as smoking, drinking alcohol in excess, having low levels of physical activity and inappropriate dietary behavior increases the probability of overweight and obesity occurring, a fact already reported in previous studies (KNUTH et alli, 2011; REZENDE et alli, 2014; MENEGUCI et alli, 2015; MIELK et alli, 2015; SHAIKN et alli, 2015; CASSIDY et alli, 2017; CHAU et alli, 2017; MELO et alli, 2020).

Nevertheless, even though the high prevalence of physical inactivity in different adult populations has been recurrently proven, the literature has reported a lack of adequate strategies to monitor sedentary behavior in humans, as well as efficient interventions that awaken in them a more active lifestyle (MENEGUCI etalli, 2015;

STREB et alli, 2020). In this regard, it can be assumed that, for a significant increase in population levels of physical activity, intersectoral actions are needed that propose the creation, among other things, of dynamic environments where the choice for physically active behaviors, and in its many dimensions , is motivated by values, and above all by pleasure, as crucial aspects for achieving significant improvements in overweight indicators,

IV. CONCLUSIONS

Probably the results found in this study are due, in large part, to the fact that the subjects in the sample have a daily life that is highly facilitated by the progress of mechanization, and also by other diverse devices that save a great deal of human physical work, which clearly instigate low levels of physical activity in everyday life. This fact, when associated with unhealthy lifestyle habits such as: smoking, drinking alcohol in excess, and inappropriate dietary behavior, increase the probability of overweight and obesity in the subjects, which may increase the primary risk factor for the onset of chronic degenerative diseases in them.

Considering that the population studied here is of adults, and that the negative implications of these attitudes, especially if adopted recurrently over the years, will predominantly be reflected when they become elderly, there are great possibilities of future involution of the general health status of these subjects for multimorbidities, functional incapacity and even early mortality. Thus, like other social classes, it is essential to make them aware of the change in behavior in relation to nutrition education and the practice of regular physical activities as important tools in the fight against overweight and obesity, in order to reduce the risk of development of cardiometabolic diseases,

Given the evidence found here, and the difficult scenario regarding the adoption of healthy habits in adult populations in general, future interventions are suggested that consider lifestyle-related behaviors in an interconnected way, preferably with a multidisciplinary approach in a number higher number of employees of the Judiciary Power, men and women, and with the same labor characteristics analyzed here.

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