20 - OVERWEIGHT, ABDOMINAL OBESITY AND THE EXCESSIVE FAT RELATING TO THE BODY MASS OF THE MEMBERS OF YMCA

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INTRODUCTION

Jon Brower Minnoch (*1941 †1983) from Washington State (USA) had being his weight as is 178 kg on aged 22 years old and had increased to 442 in 1976. In the year 1978, when he was hospitalized it was necessary twelve firemen and one stretcher for moving him from his house to the hospital where had being put on two beds tied together. For moving him from the stretcher to the bed it was necessary thirteen people. Sixteen months later, in July, 1979, Minnoch who was entered to the Guinness Book of 1978 as the weightier man of the world, reduced his weight to approximately from 635 to 216 kg, a record of losing weight of 419 kg. In October of the 1981 had had to return to the hospital in this time with more 89 kg on his weight increased just on seven days. Two years later, he died with only 42 years old. In Brazil, Josefina da Silva, (*1959 †1996) from Itaperuna - RJ entered to the Guinness Book as the weightier person of the country in the first November of 1993 with the weight such as 406 kg. Victim of many health diseases was summated to the medical treatment and to the controlled diet. In July, 1995 her weight was reduced to 142 kg, a record of reducing of weight of 264 kg. One year later, she died aged just 37 years old. Another case which had gotten the attention was of Walter Hudson (*1944 †1991) from New York (USA) who entered to the referred book as the most waist which had being registered. Measuring 3,02 m of waist and weighting 545 kg. Victim of many health diseases he died with just 47 years old (GUINNESS BOOK, 1997).

In the United States, the obesity consist of the second main agent of foresee deaths 325.000 deaths a year in the decade of 1990 (ALLISSON et al. 1999), with the amount spend average on 45,8 billions dollars (WOLF and COLDIYZ,1996). In Brazil, according to the last average, approximately 43% of the young people, of twenty years old or a little older, have a obesity degree (BRASIL, 2007), it is still known that approximately 66.3% between all death agents come through by chronicle non-communicable disease (SCHRAMM et al., 2004) instead relating to the obesity degree. According to the global recently averages from The World Health Organization (WHO, 2004), more than two billions of people with fifteen years older are suffering from this evil.

Actually, the obesity is classified as a chronicle disease (OMS, 2008) as a result of many factors as well as a risk factor for many others diseases. Environment factors, inadequate feed behavior, sedentary, improve a preponderant role in the occurrence of this disease although the genetic factors actuate as co-factors (WHO, 2004).

Realizing that the identification and monitoring of risk factors for health are important to interventionist actions that may be suggested or taken in order to conserve and improve the health status of individual and collective, the purpose of this average was to analyze the overweight; the abdominal obesity and the excessive body fat relating to the body mass of the YMCA.

METHODOLOGY PROCEDURES

On elaborating this research average were used the collected informations comprise of the database from Professor José Carlos de Almeida Kinanthrometri Laboratory from the College of Physical Education of The Yong Men's Christian Association from Sorocaba The International Coalition of YMCA Universities. The sample of 648 individuals had been chosen and divided by 341 feminine gender and 307 masculine gender.

In order to be more accurate of the formation of the age groups , the chronologic age was took as a centesimal division according that established by ARAÚJO (1978), who observed a maximum mistake on the method of 43 hours (P = 0,005), getting as a reference of the database the individual born date. To the formation of the age groups, the lower age was considered of 0,50 and the higher age as 0,49, with the central point of the intermediary as the complete age. The age groups had been formed by the decades excepting to those with sixty years old or older, as following: from 9,50 up to 19,49 (10 20); from 19,50 up to 29,49 (20 30); from 29,50 up to 39,49 (30 40); from 39,50 up to 49,49 (40 50); from 49,50 up to 59,49 (50 60) ; >59,50 (>60).The distribution of the sample according to the age and to the gender must be observed through the table number one (Table 1).

Table 1 Distribution of the sample according to the age and gender group.

Age Groups (years)	Genders		Total
	Feminine	Masculine	
10 20	45	69	114
20 30	113	109	222
30 40	48	51	99
40 50	56	35	91
50 60	39	27	66
> 60	40	16	56
Total	341	307	648

At the beginning was obtained the variety age, the body mass, the stature, the waist circumference and the cutaneous increase showed by the literatures (LOHMAN; ROCHE; MARTOREL, 1988; GUEDES and GUEDES, 1991). After the information collects, the body mass index (BMI) was calculated and the relative body fat (%G) of adults had been averaged by the quotation by Siri (1961), when adding the values of body density developed by Guedes and Guedes (1991). Even so, to determine the values of the relative body fat was used the quotations by Slaughter et al (1988) for children and teenagers an the quotation by Weltman et al. (1987, 1988) for obesity individuals, but adults, whose values were higher than 40,0 mm on the some cutaneous areas or measuring of their waist circumference higher than 88,0 or 102,0 cm for both genders.

As the focus of the research, was realized the operation definition to the overweight, the abdominal obesity and the relative body fat according to the suggestion of the literature. The operation definition to the overweight was considerate as the BMI higher than 25,0 kg/m² to the adults (WHO, 2004; NIHLBI, 1998), for children and teenagers (COLE et al., 2000), based on epidemiologic models. However, to the children and teenagers the cutoff points that theoretically represent the BMI higher than 25,0 kg/m², it is specific to the age and gender. The operating definition to the abdominal obesity was determinate on adults with

the waist circumference from the values of the 80,0 cm and 94,0 cm to the respective gender (WHO, 2004), based on the epidemiologic models. To the children and teenagers the operating definition was specific for gender, age and race (FREEDMAN et al, 1999), based on statistic models. At last, the operating definition of the excessive body fat was considerate to the masculine gender as the body mass as the values as 15,0% of the body mass and to the feminine gender from 25,0% (NIDDK, 1993), based on epidemiologic models. To the excessive body fat, also to children and teenagers were divided by genders; and to the feminine it was considered the values as 30,0% and to the masculine the values as 20,0% (DWYER and BLIZZARD, 1996) based on epidemiologic models.

The informations were analyzed through the frequency table (%) in order to verify the quantity of people suffering from the overweight, the abdominal obesity and the excessive body fat relating to the body mass, with a reliance intermission as 95% ($IC_{95\%}$) calculated through the method as Mid-P exact in order to identify the frequency spread.

Discussion and Results

The Obesity Society (ALLISSON et al, 2008) had being concept definite obesity as being as the excessive accumulation of body fat, could being from the total body fat, as determinate storage of fat ,or even so from adiposity morphologic functions. For many contexts the BMI = 30,0 kg/m² is useful as the operational definition to the obesity, but not should be used as the concept definition. The excessive body fat denotes a sufficient quantity of fat which cause the reduce of the health or to the longevity. This health reduce should not be perceptible of all cases according to the operational definition which had being used, but there will be the risk from reducing the health in the future.

According to the international statistics classification of diseases and troubles relating to the health CID-10, the obesity is a disease classified of four category under the code E65 (storage adiposity), E66 (obesity with more five under categories), E67 (high nourishment with more five under categories) and E68 (results of the hiper nourishment), even another more under categories (OMS, 2008). This proposal, nevertheless does not mention the sedentary the factor causally from this disease however the proposal as The Obesity Society considering as even so (ALLISSON et al., 2008).

To supply answers to the obesity as a disease Heshka and Allison (2001) consulted many dictionaries; general and medicals; and extract four common points to the mayor disease definition: a) a condition and/or alteration of the body, body parts, organs or system; b) Occurring from infections, parasites, nourishment, environment, genetic other causes; c) With a specific characteristic, identified and that could be showed or a symptom and signals; d) Abnormally structure or abnormally function (seldom mentioned as abnormally structure or function; incorrect function; implicate of the normally state; interruption. perturbation, interruption of organs or body functions.

The concept of the excessive accumulation of fat as a disease had being powered with the confirmation of the adiposity cells are not considered only as a protection and sustained structure, but as a truth organ endowed with intense activity endocrine paracrine, autocrine and metabolic (KERSHAW and FLIER, 2004; ZAHORSKA-MARKIEWICZ, 2006). However of this concept main new, in 1987, Sitteri had already identified the adiposity cell as a product of hormones. The adipokines, emitted factors to the adiposity cells, represent the link between the obesity, chronicle diseases non-transmittable and premature deaths. From among them being detached the factor of the tumoral-alfa necrose (TNF-a lipolytic, stimulate the energetic swallow up and reducing the sensibility of the insulin), the interleukin-6 (IL-6 pro-inflammatory, lipolytic, reduces sensitivity to insulin), of the plasminogen inhibitor-1 (PAI-1 - inhibits the activation of plasminogen, blocks fibrinolysis), the Leptin (SNC on the signals the body stores energy, regulation of the immune system, respiratory and reproductive), the resistin (increases insulin resistance), the estrogen (produced by the action of aromatase, the main source estrogen in men and women after menopause), among others.

To admit the obesity as a disease, it is not difficult considering that a great number of diseases product from the obesity. In worldwide more than one billon of people suffer with the overweight/obesity (WHO, 2004), with direct and indirect costs of the 2 to 7% of the health budget of a country (ROUX and DONALDSON, 2004). In Brazil, 43% of the adult population, approximately 81 millions of people, are on overweight/obesity (BRASIL, 2007), increasing the direct costs on 4,3% of the health budget of the country, which are equivalent to US$ 36 millions of dollars (SICHIERI; NASCIMENTO; COUTINHO, 2007).

Usually, the method to determine obesity is the body mass index (BMI), it occurs because of being an excellent clinical and epidemiologic indicator in the control of the body mass (weight). When we reviewed the published criteria for the classification of BMI in adults it appears that the cutoff points are similar, however, the proposal of the NHLBI (1998) is composed of six categories low weight (< 18,5 kg/m²), normal weight (18,5 24,9 kg/m²), overweight (25,0 29,9 kg/m²), obesity I (30,0 34,9 kg/m²), obesity II (35,0 39,9 kg/m²) and extreme obesity III (> 40,0 kg/m²) while the proposal by the World Health Organization (WHO, 2004) is composed of three categories and four subcategories - low weight (< 18,5 kg/m²), normal weight (18,5 24,9 kg/m²) and overweight [= 25,0 kg/m², divided into: pre-obesity (25,0 29,9 kg/m²); obesity class I (30,0 34,9 kg/m²); obesity class II (35,0 39,9 kg/m²); obesity class III (= 40,0 kg/m²)]. In this research, we consider both proposals, however, to the categorization of overweight, following the classification of the WHO (2004). Thus, all of the adults members of YMCA who present the BMI higher than 24,9 kg/m² were classified as overweight, independent of which belonged subcategory.

The international BMI cutoff points for children and teenagers were based on issue, that on age adults, define the risk of the morbimortality, that is, an BMI = 25,0 kg/m². Cole et al. (2000) established until 18 years old this critical value and analysis of retrospective regression with the polynomial function to model the correspondent points to the BMI of 25,0 kg/m², specific for gender and age. For this, were profit the collect database from six countries, relating to almost 200 thousand children and teenager of both genders.

Although these cutoff points, either is, operational definitions marking increase of the risk of morbimortality, others researchs should that these section points can be dislocated to low or high according to the analyzed population and their variable, such as: glucose, lipid profile, blood pressure or mortality (RAZAK et al., 2007; CALLE et al., 1999).

The overweight frequency presented an increase tendency and values each to both gender and also all database group. For the feminine gender the lower observed frequency was 13,3% to the age group from 10 20 and the higher frequency was of 77,5% to the age group > 60 years old. To the masculine gender the lower frequency was of 18,8%to the age group from 10 20 years old and the higher frequency was of 81,5% to the age group from 50 60 years old. To the database group for both genders the observed lower frequency was of 16,7% to the age group from 10 20 years old and the higher frequency was of 73,2% to the age group > 60 years old. Considering all of age groups, the frequency of overweight was of 34,0% to the feminine gender, and to masculine gender 42,0% and 37,8% for all of sample, as following as on Table 2.

Independent of the total content of fat the abdominal obesity represents a risk factor to the health. The circumference of waist is positively correlated with the content of visceral fat and therefore there is greater association of several diseases especially for the metabolic syndrome - which in relation to BMI (NHLBI, 1998; WHO, 2004), however, there is no cutoff points accepted worldwide (WHO, 2004).

Table 2 Analysis of frequencies (%) of overweight, abdominal obesity and excessive fat relating to the body mass among the genders and age groups.

Age group (years)	Gender				Total	
	Feminine		Masculine			
	%	$IC_{95\%}$	%	$IC_{95\%}$	%	$IC_{95\%}$
Overweight						
10 20	13,3	5,6 - 25,7	18,8	10,9 - 29,3	16,7	10,6 - 24,4
20 30	15,9	10,0 - 23,6	25,7	18,1 - 34,5	20,7	15,8 - 26,4
30 40	29,2	17,7 - 43,1	58,8	45,0 - 71,7	44,4	34,9 - 54,3
40 50	42,9	30,4 - 56,0	74,3	58,0 - 86,7	54,9	44,6 - 64,9
50 60	59,0	43,2 - 73,5	81,5	63,6 - 92,3	65,2	53,1 - 75,9
> 60	77,5	62,7 - 88,4	62,5	37,6 - 83,2	73,2	60,5 - 53,5
Total	34,0	29,1 - 39,2	42,0	36,6 - 47,6	37,8	34,1 - 41,6
Abdominal Obesity						
10 20	4,4	0,7 - 13,9	2,9	0,5 - 9,2	3,5	1,1 - 8,2
20 30	12,4	7,2 - 19,5	7,3	3,5 - 13,5	9,9	6,5 - 14,4
30 40	41,7	28,4 - 55,9	21,6	11,9 - 34,4	31,3	22,8 - 40,9
40 50	53,6	40,5 - 66,3	45,7	30,0 - 62,2	50,5	40,3 - 60,7
50 60	61,5	45,7 - 75,7	48,1	30,0 - 66,7	56,1	43,9 - 67,6
> 60	85,0	71,4 - 93,7	50,0	26,6 - 73,4	75,0	62,5 - 85,0
Total	36,4	31,4 - 41,6	18,9	14,8 - 23,6	28,1	24,7 - 31,6
Excessive Fat Relating to the Body Mass						
10 20	33,3	20,8 - 48,0	36,4	25,6 - 48,0	35,1	26,7 - 44,2
20 30	70,8	61,9 - 78,6	56,0	46,5 - 65,1	63,5	57,2 - 69,6
30 40	89,6	78,4 - 96,1	88,2	77,1 - 95,1	88,9	81,5 - 94,0
40 50	87,5	76,8 - 94,4	100	91,8 - 100	92,3	85,4 - 96,6
50 60	87,2	73,8 - 95,1	92,6	77,6 - 98,7	89,4	80,1 - 95,2
> 60	92,5	80,9 - 98,1	93,8	72,8 - 99,7	92,9	83,7 - 97,7
Total	76,2	71,5 - 80,5	67,1	61,7 - 72,2	71,6	68,0 - 75,0

The abdominal obesity presented a tendency for increasing values on each decade for both genders and for all databases group. Among the feminine gender the lower observed frequency was 4,4% to the age group from 10 20 years old and the higher frequency was 85,0% to the age group > 60 years old. Among the masculine gender the lower observed frequency was 2,9% to the age group from 10 20 years old and the higher frequency was 50,0% to the age group > 60 years old. For both database gender and age group the lower frequency observed was 3,5% to the age group from 10 20 years old and higher frequency was 75,0% to the age group > 60 years old. Considering all age groups there was an abdominal obesity frequency of 36,4% among the feminine gender, 28,1% among the masculine gender and 28,1% for all of sample (Table 2).

Concerning to the excessive fat relating to the body mass was observed tendencies for increasing values for each decade up to the age group of 30 40 year old for both gender and for all databases group which had been fixed further. To the feminine gender the lower frequency observed was 33,3% to the age group from 10 20 years old and the higher frequency was 92,5% to the age group > 60 years old. To the masculine gender the lower frequency was 36,4% to the age group from 10 20 years old and the higher frequency was 100% to the age group from 40 50 years old. For both gender the lower frequency observed was 35,1% to the age group from 10 20 years old and the higher was 92,9% to the age group > 60 years old. Considering all age groups there was a frequency of excessive fat relating to the body mass of the 76,2% among the feminine gender, 67,1% among the masculine gender and of 71,6% for all sample, as following as on Table 2.

The obesity became a worldwide pandemic and had been studied respect of genetic as an action gene-gene and gene-environment on arising this disease. According to the genetic obesity map (RANKINEN et al., 2005), the number of places with traces to obesity, from genome-wide scans, it is about 253, which are relating different phenotypes of obesity. There are still, 127 candidate genes with 426 positive results associated with obesity phenotypes. Esteeming that the hereditary phenotypes reported to the obesity varies of 6 to 85% for different population, but, this value can comprise a large number of false-positive association, where 20 to 30% of the genetic associations will be real and with a modest effect on arising of the diseases. That suggests the major influences for the emergence of the obesity are environment and behavior. This was very well demonstrated by Christakis and Fowler (2007) on analyzing from 32 years the disseminating of obesity in a large social network of more than 12 thousand people. They verified an increase in the risk of obesity of 57% on friendship without to percept of the same gender, 71% between friends of same-sex and 171% on mutual friendships, but, among the relatives the risk was from 27 to 55%.

Considering the evidence presented, as well as the frequencies observed in this study, especially to the excessive fat relating to the body mass, interventionist actions must be taken with the aim of conserving and/or improve the state of health of the individual and collective of the members of YMCA. Moreover, the operational definitions for obesity should be better studied.

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OVERWEIGHT, ABDOMINAL OBESITY AND THE EXCESSIVE FAT RELATING TO THE BODY MASS OF THE MEMBERS OF YMCA

ABSTRACT

The aim was this studied examine the frequencies of overweight, abdominal obesity and the excessive fat relating to the body mass of the members of YMCA. The sample consisted of 648 subjects, of which were 341 of feminine gender and 307 masculine gender, with the age to 10 between 87 years old. The frequency overweight, analyzed by the body mass index, was 34,0% ($IC_{95\%}$ =29,1 - 39,2) to the feminine gender and 42,0% ($IC_{95\%}$ = 36,6 47,6) to the masculine gender. The frequency abdominal obesity, analyzed by the waist circumference, was 36,4% ($IC_{95\%}$ = 31,4 41,6) to the feminine gender and 18,9% ($IC_{95\%}$ = 14,8 23,6) to the masculine gender. The frequency excessive fat relating to the body mass, analyzed by the percent body fat, was 76,2% ($IC_{95\%}$ = 71,5 80,5) to the feminine gender and 67,1% ($IC_{95\%}$ = 61,7 - 72,2) to the masculine gender. Considering the evidence presented, as well as the frequencies observed in this study, especially to the excessive fat relating to the body mass, interventionist actions must be taken with the aim of conserving and/or improve the state of health of the individual and collective of the members of YMCA. Moreover, the operational definitions for obesity should be better studied.

SURPOIDS, L'OBÉSITÉ ABDOMINALE ET L'EXCÈS DE GRAISSE CORPORELLE DANS MEMBRES DE UCJG

RÉSUMÉ

L'objectif de cette étude était d'examiner la fréquence des surpoids, l'obésité abdominale et l'excès de graisse sur la masse corporelle des membres de l'UCJG. L'échantillon était constitué de 648 sujets, 341 femmes et 307 hommes, âgés entre 10 et 87 ans. Le surpoids, considéré par l'indice de masse corporelle, présentant une fréquence de 34,0% ($IC_{95\%}$ = 29,1 39,2) de femmes et 42,0% ($IC_{95\%}$ = 36,6 47,6) des hommes. L'obésité abdominale, considéré par la circonférence de taille, présentant une fréquence de 36,4% ($IC_{95\%}$ = 31,4 41,6) de femmes et 18,9% ($IC_{95\%}$ = 14,8 23,6) des hommes. L'excès de graisse corporelle, considéré par le puorcentage de matières grasses, présentant une fréquence de 76,2% ($IC_{95\%}$ = 71,5 80,5) de femmes et 67,1% ($IC_{95\%}$ = 61,7 72,2) des hommes. Considérant les éléments de preuve présentés, ainsi que les fréquences observées dans cette étude, en particulier pour les excès de graisse corporelle, interventionniste mesures doivent être prises dans le but de conserver et/ou améliorer l'état de santé de l'individu et collectif de les membres du UCJG. En outre, les définitions opérationnelles de l'obésité devrait être mieux étudié.

Mots-clés: Obésité; Définitions opérationnelles; UCJG Unions Chrétiennes de Jeunes Gens.

SOBREPESO, OBESIDAD ABDOMINAL Y EXCESO DE GRASA RELATIVA A LA MASA CORPORAL DE LOS

MIEMBROS DE LA ACJ

RESUMEN

El objetivo de lo estudio fue analizar la frecuencia del sobrepeso, de la obesidad abdominal y el exceso de grasa relativa a la masa corporal de los miembros de la ACJ. La muestra fue constituida por 648 personas divididas en 341 del sexo femenino y 307 del sexo masculino con edad entre los 10 y los 87 años. El sobrepeso, analizado por el índice de la masa corporal, presento una frecuencia de 34,0% ($IC_{95\%}$ = 29,1 39,2) entre las personas del sexo femenino y de 42,0% ($IC_{95\%}$ = 36,6 47,6) entre las personas del sexo masculino. La Obesidad Abdominal, analizada en la circunferencia de la cintura, presento una frecuencia de 36,4% ($IC_{35\%}$ = 31,4 41,6) para las personas del sexo femenino y de 18,9% ($IC_{95\%}$ = 14,8 23,6) para el sexo masculino. El exceso de grasa relativa a la masa corporal, analizado por la grasa corporal relativa, presento frecuencia de 76,2 ($IC_{95\%}$ = 68,0 75,0) para el sexo femenino y frecuencia de 67,1%($IC_{95\%}$ = 61,7 72,2) para el sexo masculino. Considerándose las frecuencias observadas, especialmente para el exceso de grasa relativa a la masa corporal, algunas acciones intervencionistas se hacen necesarias para que se preserve o para perfeccionarse el estado de salude individual y colectivos de los miembros de la ACJ. Además, las definiciones operativas para la obesidad deben ser más bien estudiadas.

Palabras-clave: Obesidad; Definiciones operativas; ACJ Asociación Cristianas de Jóvenes.

SOBREPESO, OBESIDADE ABDOMINAL E EXCESSO DE GORDURA RELATIVA À MASSA CORPORAL EM ACEMISTAS

RESUMO

O objetivo do estudo foi analisar a freqüência de sobrepeso, obesidade abdominal e excesso de gordura relativa à massa corporal em Acemistas. A amostra foi constituída por 648 indivíduos, sendo 341 mulheres e 307 homens, com idades entre 10 e 87 anos. O sobrepeso, analisado pelo índice de massa corporal, apresentou freqüência de 34,0% ($IC_{95\%}$ = 29,1 - 39,2) das mulheres e 42,0% ($IC_{95\%}$ = 36,6 - 47,6) dos homens. A obesidade abdominal, analisada pela circunferência de cintura, apresentou freqüência de 36,4% ($IC_{95\%}$ = 31,4 - 41,6) das mulheres e 18,9% ($IC_{95\%}$ = 14,8 - 23,6) dos homens. O excesso de gordura relativa à massa corporal, analisado pela gordura corporal relativa, apresentou freqüência de 76,2% ($IC_{95\%}$ = 71,5 - 80,5) das mulheres e 67,1% ($IC_{95\%}$ = 61,7 - 72,2) dos homens. Considerando as evidências apresentadas, bem como as freqüências observadas no presente estudo, especialmente para o excesso de gordura relativa à massa corporal, ações intervencionistas devem ser tomadas com o intuito de conservar e/ou aprimorar o estado de saúde individual e coletivo dos Acemistas. Além disso, as definições operacionais para a obesidade devem ser mais bem estudadas.

Palavras-chave: Obesidade; Definições operacionais; ACM Associação Cristã de Moços.