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PREVALENCE OF METABOLIC SYNDROME IN THE ELDERLY

PREVALÊNCIA DA SÍNDROME METABÓLICA EM IDOSOS

PREVALENCIA DE LA SÍNDROME METABÓLICA EN LAS PERSONAS MAYORES

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ABSTRACT

Objective: investigating the prevalence of Metabolic Syndrome in the elderly. **Method:** a descriptive, cross-sectional study of a quantitative approach. Participated in the survey 148 lucid elderly of both genders, who attended the Social Center for the Elderly in Teresina/PI. The study had the project approved by the Research Ethics Committee, CAAE 19612713.6.0000.5210. **Results:** it was observed that 52,0% of seniors surveyed were overweight and of these, only 59,46% showed the minimum criteria necessary for evaluation of metabolic syndrome, being 14,77% men and 85,23% women. It was observed prevalence of the syndrome in 45,45% of the elderly; in 12,5% men and 87,5% women and 77,5% of them were overweight and 22,5% eutrophic. The most common risk factors for metabolic syndrome were: hypertension (97,5%), low HDL-cholesterol (95,0%), increased waist circumference (87,5%), elevated triglycerides (45%) and increased fasting plasma glucose (30,0%). **Conclusion:** the low HDL-cholesterol and the increased waist circumference were the most prevalent risk factors for metabolic syndrome. **Descriptors:** Elderly; Nutritional status; Prevalence.

RESUMO

Objetivo: investigar a prevalência de Síndrome Metabólica em idosos. **Método:** estudo descritivo, transversal, com abordagem quantitativa. Participaram 148 idosos lúcidos, de ambos os sexos, que frequentavam o Centro de Convivência para Idosos, em Teresina/PI. O estudo teve o projeto aprovado pelo Comitê de Ética em Pesquisa, CAAE 19612713.6.0000.5210. **Resultados:** observou-se que 52,0% dos idosos pesquisados tinham sobrepeso e destes, somente 59,46% apresentaram os critérios mínimos necessários para avaliação de síndrome metabólica, sendo 14,77% homens e 85,23% mulheres. Observou-se prevalência da síndrome em 45,45% dos idosos, em 12,5% homens e 87,5% mulheres e que 77,5% deles tinham sobrepeso e 22,5% eutrofia. Os fatores de risco mais frequentes para síndrome metabólica foram: hipertensão arterial (97,5%), HDL-colesterol baixo (95,0%), circunferência da cintura aumentada (87,5%), triglicérides elevados (45%) e aumento da glicemia de jejum (30,0%). **Conclusão:** o baixo HDL-colesterol e a circunferência da cintura aumentada foram os fatores de risco mais prevalentes para a síndrome metabólica. **Descritores:** Idoso; Estado Nutricional; Prevalência.

RESUMEN

Objetivo: investigar la prevalencia del Síndrome Metabólico en las personas mayores. **Método:** este es un estudio descriptivo, transversal, con enfoque cuantitativo. Participaron 148 ancianos lúcidos, de ambos sexos, que acudieron al Centro Social de Personas Mayores en Teresina/PI. El estudio tuvo el proyecto aprobado por el Comité de Ética en la Investigación, CAAE 19612713.6.0000.5210. **Resultados:** se observó que el 52,0% de las personas mayores encuestadas tenían sobrepeso y, de ellos, sólo el 59,46% presentaron los criterios mínimos necesarios para la evaluación del síndrome metabólico, siendo 14,77% hombres y 85,23% mujeres. Se observó la prevalencia del síndrome en 45,45% de los idosos, 12,5% de hombres y el 87,5% de mujeres y 77,5% de ellos tenían sobrepeso y el 22,5% eutróficos. Los factores de riesgo más comunes para el síndrome metabólico fueron: hipertensión arterial (97,5%), colesterol HDL bajo (95,0%), aumento de la circunferencia de la cintura (87,5%), triglicéridos elevados (45%) y el aumento de glucosa plasmática en ayunas (30,0%). **Conclusión:** bajo HDL-colesterol y el aumento de la circunferencia de la cintura fueron los factores de riesgo más prevalentes para el síndrome metabólico. **Descriptores:** Ancianos; El estado nutricional; Prevalencia.

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INTRODUCTION

Since 1988 when Reaven introduced the concept of association of metabolic abnormalities linked to insulin resistance, initially referred to as "Syndrome X", the Metabolic Syndrome (MS) awakens the interest of the scientific community.¹

MS is defined as a condition in which the risk factors for cardiovascular disease (CVD) and diabetes mellitus (DM) occur in the same individual, considered the most important problems in public health. Its main components are abdominal obesity, high blood pressure (hypertension), dyslipidemia (hypertriglyceridemia, decreased HDL-cholesterol) and blood glucose disorders (abnormal fasting glucose, impaired glucose tolerance or presence of DM).²

Obesity is considered an epidemic because their rates increase progressively globally, and that because of its scope, definite importance when it comes to public health. The same reasoning can be applied to the MS, for visceral obesity is the cause for the development of insulin resistance.¹

Obesity causes and \ or exacerbates Chronic Degenerative Diseases (DCD), such as cardiovascular disease (CVD), systemic arterial hypertension (SAH), diabetes mellitus (DM), dyslipidemia (low HDL cholesterol) and hypertriglyceridemia, causing Metabolic Syndrome.³

The prevalence of MS in the population is not yet well established, but in the Mexican population, North American and Asian, these values range from 12,4% to 28,5% among men and 10,7% to 40,5% in women.⁴ Studies show that with increasing age, increases the risk of MS due to the trend of higher prevalence of components of the syndrome.⁵ Authors state that the MS increases with age, in men and women, reaching 50% between 60 and 69 years old.⁶

The relevance of the topic justifies the interest in recognizing the prevalence of MS in the elderly, since the age predisposes its appearance and preventive measures and/or therapies should be undertaken, to improve the quality of life in old age.

The present study aims to investigating the prevalence of metabolic syndrome in the elderly.

METHOD

Article drawn from the dissertation << **Prevalence of Metabolic Syndrome in Elderly** >> presented to the Professional Master's Program in Family Health of the University

Center of UNINOVAFAPÍ. Teresina/PI, Brazil. 2014.

It is a descriptive, cross-sectional study with a quantitative approach, performed in a Community Center for the Elderly in the city of Teresina, Piauí. The population in the center is of 300 elderly, with a sample of 148 elderly people, of both genders, aged over 60 years old. For sample calculation it was used the finite population. Inclusion criteria were seniors over 60, lucid, who attended the Community Center and the exclusion criteria, seniors who did not possess conditions of comparing of anthropometric measurements.

Anthropometric assessment was performed with measurement of body weight, height and waist circumference and calculated the body mass index (BMI). For knowledge of biochemical rates it was used as a source pre-existing laboratory tests with a validity of up to six months. They were considered hypertensive, older people who used antihypertensive medication.

To define the occurrence of metabolic syndrome criteria used were the NCEP ATP III (2001) is the presence of three of the following parameters: waist circumference > 102 cm in men and > 88 cm in women; diabetes mellitus type II or fasting glucose $\geq$ 110 mg/dl; HDL-cholesterol < 40 mg/dl in men and < 50 mg/dl in women; $\geq$ 150mg triglycerides/dl; systolic blood pressure $\geq$ 130mmHg and/or diastolic $\geq$ 85 mmHg or use of antihypertensive medications.

It was filled out a form containing the data necessary for the research, from the information collected by the researcher and collaborators, provided by the patient and verified in biochemical tests.

The data were processed using the Statistical Package for Social Sciences (SPSS) using descriptive statistics. The student t test and chi-square and Microsoft Office Excel 2007 program and the results described in tables were used.

The study was conducted according to the guidelines and requirements of Resolution 466/2012 of the National Health Council/Ministry of Health. The study design was approved by the Research Ethics Committee of the University Center UNINOVAFAPÍ - CAAE: 19612713.6.0000.5210. All participants signed the Informed Consent (IC), following the ethical principles contained in Resolution 466/2012 of the National Health Council (CNS).

RESULTS

From a total of 148 elderly, it was observed a higher percentage of females, and the most prevalent nutritional state was overweight, followed by eutrophic and low weight, as can be seen in Table 1.

Table 1. Characterization of the elderly as to sex and the nutritional status in a Community Center for Elderly, Teresina- PI, in November and December 2013, and January 2014.

			Nutritional Status			Total
			Low weight	Eutrophic	Overweight	
Gender	Female	(n)	14	44	58	116
		(%)	12,1%	37,9%	50,0%	78,38%
	Male	(n)	3	10	19	32
		(%)	9,4%	31,2%	59,4%	21,62%
Total		(n)	17	54	77	148
		(%)	11,5%	36,5%	52,0%	100,0%
Chi-square test , p < 0,05						

Of the 148 patients evaluated, 60 patients (40,54%) did not show laboratory tests and/or clinical enough for observation of the Metabolic Syndrome criteria, leaving 88 elderly (59,46%) with the possibility of verification of MS, being 13 (14,77%) males and 75 (85,23%) females.

Of the total of 88 patients who had sufficient tests to diagnose the syndrome it was observed in 40 MS elderly (45,45%), in 35 women (87,5%) and in 5 men (12,5%).

Regarding the nutritional status of 40 elderly people who have metabolic syndrome, it observed that most were overweight, followed by normal weight and no old were underweight. Also it could be observed a higher percentage of elderly women overweight and a lower amount of eutrophic, and that male all seniors showed up overweight, as can be seen in Table 2.

Table 2. Total nutritional status and gender of the elderly with metabolic syndrome in a Community Center for the Elderly, Teresina, PI, November and December of 2013, and January 2014.

		Nutritional Status			Total	
		Low weight	Eutrophic	Overweight		
MS	Total	(n)	0	9	31	40
		(%)	,0%	22,5%	77,5%	100,0%
	Female	(n)	0	9	26	35
		(%)	,0%	25,7%	74,3%	100,0%
	Male	(n)	0	0	5	5
		(%)	,0%	,0%	100,0%	100,0%

Chi-square test, p < 0,05
Legend: MS - Metabolic Syndrome

It was also observed biochemical, anthropometric and clinical changes in the group of older people with MS. It was found that the most common risk factors for MS were, in this order: high blood pressure followed by increased waist circumference, low HDL-cholesterol, hypertriglyceridemia, and impaired fasting glucose or presence of type II diabetes, as can be seen in Table 3.

Table 3. Risk factors for the development of the Metabolic Syndrome in a centre of Coexistence, Teresina, PI, November and December of 2013, and January 2014, according to NCEP ATP III criteria.

Risk factors	n	%	Total
H. A.	39	97,5	40
HDL decreased	38	95,0	40
Increased C. C.	35	87,5	40
Increased TG	18	45,0	40
Increased blood glucose	12	30,0	40

Chi-square test, p < 0,05

Table 4 shows the descriptive analysis (minimum and maximum values, average and standard deviation) age, BMI, waist circumference, blood glucose, HDL-C and triglycerides, drawing attention to triglycerides which shows a significant

standard deviation, whereas a study participant had a very high result in this test.

Table 4. Descriptive analysis of the parameters analyzed in the study, Teresina-PI, November and December of 2013, and January 2014.

	n	Minimum	Maximum	Average	SD
Age	148	60,00	88,00	69,9257	6, 28581
BMI	148	16,60	44,68	27,2082	4,74383
C.C.	148	63,00	120,00	91,1959	11,82048
Blood glucose	98	58,00	321,00	100,4388	32,79146
HDL-c	91	30,00	118,80	53,1626	14,12572
TG	94	55,00	1139,00	145,0000	119,28479

DISCUSSION

A greater number of elderly in the study was observed. This result can be attributed to the fact that it is a Community Center for Senior Citizens, and in general, women are more careful, more concerned about their health and seek more medical care.

Regarding nutritional status, overweight was prevalent in both genders. This finding confirms the current reality that overweight and obesity have become a truly worldwide epidemic.

In population-based study covering the 26 Brazilian capitals and the Federal District, called the Surveillance System of Risk Factors for Chronic Diseases by Telephone Interviews (VIGITEL), led by the Ministry of Health, it was shown that the prevalence of overweight increased from 42,7% in 2006 to 48,5% in 2011, while obesity increased from 11,4% to 15,8% over the same period.⁷

It was also noted that a representative portion of the sample has no recent biochemical tests, basic and fundamental to health care, worrying result, these tests should be performed regularly in this age group. This finding reflects weakness in public health, predisposing the elderly to a greater likelihood of chronic diseases, or the sum of them, such as the metabolic syndrome.

In a study conducted in Turkey, in a geriatric service, the prevalence of MS, and a sample of 1255 subjects aged 65 or over was 24%, and as a criterion NCEP ATP III. In a study with elderly Italians, more than 60 years old, Florence, it was observed a prevalence of 63,1% having as a criterion the revised NCEP and 52,5% by IDF.⁵ Criteria in the international literature, found a wide variation in the prevalence of MS in the elderly, depending on the profile of the population studied and the criteria used.

In national studies, conducted with 177 individuals, in Santa Catarina, aged 18-78 years old, the prevalence of MS was 42,9% by the NCEP ATP III ¹; in another study in the clinic of Rio Grande do Sul Cardiology Institute, Brazil, with 151 individuals, aged

26-84, the overall prevalence of MS in the population studied was 61,5% for all ages, by NCEP ATP III criteria, and 61,2% in the elderly over 62 years old.⁸ Another survey shows prevalence of MS of 54,4% by the NCEP criteria and 63,6% according to the IDF, this research, conducted with 719 patients in the city of São Luis, aged 13 to 96 years old.⁶

As could be observed, the prevalence of metabolic syndrome found in this research is the average prevalence found in other international studies and/or national, highlighting the need for local educational activities about the MS.

Regarding the most prevalent gender in the elderly with metabolic syndrome, there was predominance in females. In international studies, there is differentiation of the prevalence of gender in terms of percentage and gender that MS is more prevalent, as can be observed in the research cited below.

In China, a study of elderly aged 60 or over, with the criterion NCEP ATP III, we observed a prevalence of MS of 39% and 18%, respectively, for male and female. In Colombia, Bogota, with hypertensive patients aged 40 or over, with the discretion the NCEP ATP III, the prevalence of MS was 19% among men and 30% women. The prevalence of MS in a representative study of the French population, using as criteria the NCEP ATP III, was 11,3% in women and 12,5% in men over 70 years old. In Italy, in a population-based cohort study with older people, aged 65 or over, a prevalence of MS of 33% men and 20% was found in women, taking as a criterion the NCEP ATP III.⁵

In national studies, we can mention what took place in Santa Catarina (IDF criteria) with MS results of 21,9% female and 19,4% male; Bahia (rural area of semi-arid), also by the NCEP ATP III, the result was of MS in 38,4% in women and 18,6% men respectively.⁶ In another study, involving 378 elderly in the city of Novo Hamburgo, RS, got MS prevalence of 50,3%, 53,4% and 56,9% by the NCEP ATP III, and revised NCEP ATP III IDF, respectively, with prevalence of the syndrome in women.⁵

The prevalence of MS found in a survey of 100 older adults, aged 19-81 years old was of

63%, predominantly female (63%).⁴ The study conducted in the municipality of Flexeiras, AL, with 300 individuals aged 21-92 years old, hypertensive, found a prevalence of MS of 57,3%, with prevalence of the syndrome in females.⁹ In another study, the prevalence of MS was found to be 54,4% by the criterion of NCEP and 63,6% according to the IDF, this research, carried out with 719 patients in the city of São Luís, MA, aged 13-96. The study showed prevalence of the syndrome in older individuals, with the highest percentage in women.⁶ In another study with hypertensive patients, aged between 21 and 92 years old, the prevalence of MS was of 57,3%, with 77,9% in women and 22,1% in men.⁹

From a review of the national literature, held by the authors of this study, the prevalence of Metabolic Syndrome, using 14 articles published in databases from 2008 to 2012, found the prevalence of metabolic syndrome between 14,9% and 70,8% in adults and elderly, with the occurrence of increase in females.

As we observed, the prevalence of MS was higher in females, which was similar to our study. Regarding the percentages found, the studies varied, but in all studies that determined percentage of MS by gender, the results were lower than the prevalence of MS in women found in this research.

Regarding the most prevalent nutritional status in patients with MS, this study found a higher percentage of elderly overweight, also more present in both genders.

Evidence shows that overweight and obesity predispose the development of insulin resistance, as well as other features of the metabolic syndrome and that epidemiological studies considered as an independent risk factor for the development of MS weight gain, having the central distribution of fat one important role in cardiovascular events.⁸

Research shows the prevalence of MS of 14,9%, higher in females, increasing directly with age, very high in overweight and obesity, reaching almost 70% of individuals with global obesity ($BMI \geq 30 \text{ kg/m}^2$).¹⁰ In another study, the average of BMI was found to be 27,64%, overweight rates of 50% and 21,3% obesity, with more than half of the sample with weight above the healthy.⁽⁸⁾ The results of a another study reports that 28% of patients had normal weight, 31,1% were overweight, 6,8% and 3,4% obesity II and obesity III and the prevalence of MS was higher among overweight patients ($BMI > 25 \text{ kg/m}^2$).⁽¹⁾ Another study, had the average BMI 30 kg/m^2 in the elderly with MS⁵. Research shows that individuals who were

obese were 2,64 times more likely to be with SM.⁹

In all these studies SM prevalent in individuals with overweight, results similar to those in this study. It has actually been shown in the literature that overweight individuals are more exposed to risk factors for the occurrence of SM.

With regard to risk factors for the occurrence of MS, it was found in this study the following order of prevalence: hypertension, followed by low HDL-cholesterol levels, increased waist circumference, hypertriglyceridemia, and impaired fasting glucose or presence of type II diabetes.

In one study the most frequent risk factors were, in this order: decreased HDL-C (98%), altered waist circumference (87%), hypertension (75%), elevated triglycerides (71%) and, less presence, values hyperglycemia (41%)⁽⁴⁾. Other research shows a high prevalence of hypertension (84%), elevated TG (34% of men and 38% in women), hyperglycemia (14% in men and 17% women)⁵. Another study reports prevalence of 26% diabetes and glucose intolerance of 31.9%, hypertension was found in 100% of patients, increased levels of TG and decreased HDL-C were present in 94,6% and 56,1% of individuals, respectively, and increased Abdominal Circumference (AC) 30,8% of subjects.⁸

Another study showed that 53,3% had low HDL-c, the increase in AC was the second most frequent component (52,3%), followed by hypertriglyceridemia (41,3%) and hyperglycemia (19,3%).⁹

As can be observed, the order of the risk factors for determining the metabolic syndrome is variable on each study, but regardless of this sequence, there is an increased risk of cardiovascular diseases and type II diabetes mellitus in these patients.

CONCLUSION

There was a higher percentage of female elderly in this study, showing that women are more concerned about their health, as the survey was conducted in a Community Center for the Elderly; It was also observed a higher percentage of elderly overweight in the elderly of both sexes.

There was a high prevalence of metabolic syndrome in the elderly, predominantly in females and also in overweight elderly. It found that high blood pressure, decreased HDL-cholesterol and increased waist circumference were the most prevalent risk

factors for the occurrence of metabolic syndrome in elderly people surveyed.

We emphasize the importance of health interventions in the prevention and/or treatment of metabolic syndrome, as the risk factors associated increases the chance of cardiovascular events and diabetes, chronic, debilitating disease, high therapeutic cost, which provide increased mortality.

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