QUALITY OF ANTHROPOMETRIC DATA OF HYPERTENSIVE USERS SEEN AT THE FAMILY HEALTH PROGRAM AND ITS CORRELATION WITH RISK FACTORS[1]

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ABSTRACT: The purpose of this study was to analyze and compare the quality of anthropometric data, obesity and other risk factors of hypertensive patients seen at the Family Health Program in the city of João Pessoa, Brazil. It is a study of cohort to examine registration data, records and personal interviews retrospectively. The study investigated the quality of data through the imputation of missing records in hypertensive patients enrolled, whose comparison of indicators constructed before and after was done by the t'Student test, besides calculating the *odds ratio*, the logistic regression, in order to establish a possible association between these variables and the dependent variable. There was a significant correlation $p< 0.001$ between the anthropometric measurements of waist circumference and waist-hip ratio with those obese subjects with hypertension. Additionally, there was found to be a significant correlation $p<0.01$ between patients with hypertension and their age. The results suggest an increased prevalence of high blood pressure with age and associated anthropometric indicators.

DESCRIPTORS: Blood pressure. Obesity. Prevalence.

QUALIDADE DOS DADOS ANTROPOMÉTRICOS DOS USUÁRIOS HIPERTENSOS ATENDIDOS NO PROGRAMA DE SAÚDE DA FAMÍLIA E SUA ASSOCIAÇÃO COM FATORES DE RISCO

RESUMO: O objetivo deste trabalho foi analisar a qualidade dos dados antropométricos dos hipertensos, no Programa de Saúde da Família, e sua associação com obesidade e demais fatores de risco. Trata-se de um estudo de coorte em que foram investigados os dados cadastrais, prontuários e entrevistas dos usuários no município de João Pessoa-PB. Investigou-se a qualidade dos dados, pela imputação dos registros faltantes nos hipertensos, cuja comparação dos indicadores construídos antes e depois foi feita pelo teste t´Student, além de calcular a razão de chances, pela regressão logística, com a finalidade de estabelecer uma possível associação destas variáveis com a variável dependente. Observou-se uma associação significativa entre a obesidade dos hipertensos, com circunferência da cintura e razão cintura quadril ($p<0,001$). Evidenciou-se, também, uma associação significativa dos níveis de hipertensão e idade ($p<0,01$). Os resultados sugerem aumento da prevalência da pressão arterial com a idade e sua associação com os indicadores antropométricos.

DESCRITORES: Pressão arterial. Obesidade. Prevalência.

CUALIDAD DE LOS DATOS ANTROPOMÉTRICOS DE LOS USUARIOS HIPERTENSOS ATENDIDOS EN EL PROGRAMA DE SALUD DE LA FAMILIA Y SU ASOCIACIÓN CON FACTORES DE RIESGO

RESUMEN: El objetivo de este trabajo consistió en analizar la cualidad de los datos antropométricos de los hipertensos atendidos en el Programa de Salud de la Familia y su asociación con la obesidad y demás factores de riesgo. Se trata de un estudio de cohorte donde fueron investigados los datos catastrales, prontuarios y las entrevistas de los usuarios en el municipio de João Pessoa-PB, Brasil Se investigó la cualidad de los datos a través de la imputación de los registros faltantes en los hipertensos catastrados, cuya comparación de los indicadores construidos antes y después fue hecha por la prueba *t* de Student, además el cálculo de la razón de posibilidades, la regresión logística, con el fin de establecer una posible asociación entre estas variables y la variable dependiente. Se observó una asociación significativa entre la obesidad de los hipertensos con circunferencia de la cintura y razón cintura cuadril con $p<0,001$. Se evidenció también una asociación significativa de los niveles de hipertensión y con edad con $p<0,01$. Los resultados sugieren aumento de la prevalencia de la presión arterial con la edad, y su asociación con los indicadores antropométricos.

DESCRIPTORES: Presión arterial. Obesidad. Prevalencia.

INTRODUCTION

In the world setting, chronic degenerative diseases are the main cause of morbimortality, especially cardiovascular diseases. Risk factors such as hypertension, Diabetes *Mellitus,* smoking, inadequate eating habits, sedentary lifestyle, overweight and obesity favor these diseases.[1]

The probability of cardiovascular risk is well known to increase or decrease due to inappropriate loss and intake of calories.[2] Studies demonstrate an association of obesity with arterial pressure measures, emphasizing bad food habits and the lack of physical activities as susceptible factors for increasing arterial pressure, suggesting authorities should take action against this problem.[3] Despite the increasing number of occurrences of cardiovascular diseases throughout the years, the government has not favored a specific and interventionist policy to socially articulate treatment for hypertensive patients.[4]

In addition to this lack of incentive, approximately 40% of patients with hypertension problems have difficulties in controlling it, whereas in Brazil, this number reaches more than 70%, with the greatest difficulty being the compliance to treatment, visits to the physician and appropriate change of habits.[5-7]

Early identification and access to the service facilitate control for hypertensive patients, who can find the main entrance for follow-up in the primary health care system, which is also responsible for sending all the specific information to the Ministry of Health, through an information system.[8]

Health information systems are tools that help the development of actions and services in the health area. Actions and services include all activities performed with people, both individually and collectively, aimed to promote, prevent, diagnose, treat, and rehabilitate complications and diseases. Services are provided in outpatient clinics, hospital, diagnostic and therapeutic support units managed by the government (municipal, state and federal), in addition to other locations, particularly the home of patients.[9]

Among the systems implemented by the Ministry of Health, one refers to diabetes and hypertensive treatments, known as *Hiperdia.* It was created in partnership with many institutions, in 2001, with the primordial purpose of constructing a system that would reorganize the information on the services and carriers of these diseases. This instrument is used to monitor follow-up in consultations, the use of medications and the control of influencing factors for compliance, revealing it as an essential tool for the evolution of care and patients.[10] The variables in the *Hiperdia* registration file (arterial pressure, blood glucose, weight, height and waist circumference) add to the classified risk factors (sedentary lifestyle, obesity, systolic and diastolic blood pressure) and help health professionals in the search for mechanisms of reduction and monitoring these groups.[11]

In addition to these systems (Primary Health Care Information System – SIAB, as per its acronym in Portuguese, *Hiperdia*), the Family Health Strategy (FHS) enhances its activities based on the family history inserted in the family medical file. It is presented as a deciding element for planning, programming, and evaluating family members' needs. Its consistency and reliability are extremely important to know the real health conditions of patients, enabling more effective interventions, and making them key-elements inside the FHS.[12]

An enormous gap is observed in researches reporting the quality of information recorded by the *Hiperdia* program, aimed at the nutritional state of the patient, despite its great relevance in the predisposition of risk factors for hypertension. These investigations refer to cross-sectional studies to control the hypertension of registered patients, difficulties in dealing with the system, and compliance to the program by municipalities.

Regarding the morbidities in question, a study developed in São Carlos-SP suggests the need for professional training in the care and registration of hypertensive and diabetic patients, as well as the inclusion of important information on their health condition.[13]

This need is extended to the entire country, particularly the northeast region, where studies on hypertension are scarce and practically non-existing in medium cities as the case of João Pessoa, capital of the state of Paraíba.

In this context, the purpose of this study was to analyze the quality of anthropometric data from hypertensive patients in the *Hiperdia* program, in the primary health care units of the city of João Pessoa, and to investigate the association between these measures and risk factors for hypertension.

METHOD

This is a retrospective cohort study in which the following items were investigated: the pa-

tients' files used by the *Hiperdia* program, in the period between 2006 and 2007, the medical files of these patients in 2008, and an interview with them in 2009.

The study was performed in the city of João Pessoa, capital of the state of Paraíba and located in the northeast region of Brazil, with a population of 723,515 inhabitants.[14] The city has 180 health teams in primary health care, distributed into five sanitary districts, and also high and medium complexity specialized services.

It was developed within the Family Health Strategy units, which consist of multiprofessional teams developing actions of health protection and promotion and disease prevention by means of embracing and humanized services in the territory in question. Among these activities, there are specific programs for providing services to the population, for instance the care of hypertensive and diabetic patients inserted in the *Hiperdia* program.

The data spreadsheet used in this study was produced based on a project entitled "*Avaliação da efetividade no controle da hipertensão arterial sistêmica e associação com fatores de risco, comparando a atenção do Programa de Saúde da Família e de Unidades Básicas de Saúde de municípios do nordeste do Brasil*" (Evaluation of effectiveness in the control of systemic hypertension and association with risk factors comparing the care in the Family Health Program and in Primary Health Care Units in cities in the northeast of Brazil)".*

Random selections were performed from all hypertensive patients recorded in the *Hiperdia* program, starting from a probability sample of hypertensive patients who were older than 20 years, in the period between 2006 and 2007, from the 180 health teams registered in SIAB, composing 343 patients.

The total sample size, for the selection of individuals, was based on the simple random sampling, considering the parameter of p success (obtained from the total number of hypertensive patients, divided by the total number of individuals who used the FHS service in 2008); in which "n" was the total of hypertensive patients obtained by the normal standard, with value of 1.96, confidence level at 95% and maximum error margin of e=0.035.

From these considerations, a sample of 327 hypertensive patients was obtained for João Pessoa. The sample received 33 individuals due to an adjustment needed to even the selected teams, therefore, ten hypertensive patients were designated per team or unit of random selection, and each one of them was identified by name and address in the research.

The first step consisted of a systematic self-weighting sample of 20% of the FHS team (as clusters) as from a list provided by SIAB, resulting in 36 clusters for João Pessoa.

The second step was composed by two stages. In the first stage, a probability selection of one team per each district was performed, among those selected in step 1, and in which all individuals registered in 2006 and 2007 as hypertensive had their medical files and records in *Hiperdia* consulted. Information of interest was transcribed into a form. Thus, it was possible to learn the proportion of hypertensive patients. In the second stage, the number of patients in 2008 was randomly selected with a probability proportional to the size of the cluster.

Aimed at ordering data collection, the study was comprised of three phases: 1) observation of *Hiperdia* files to verify the registered patients in the period between 2006 and 2007, and data collection; 2) medical files of patients for analysis of the number of consultations and to fill out the measures inserted in this study, in 2008; and 3) agreement with patients and the health team to perform the interview in 2009, using a form specifically built and validated for this study.

Patients who were diabetic, deceased, presented cognitive deficit and had moved from the FHS covering area were excluded. Such exclusion was performed in the period the records were researched in the unit, and patients were therefore automatically substituted in the research, through a random selection.

Obesity was considered a dependent variable; and the following socioeconomic variables were considered independent: gender, age, education and family income, and anthropometric measures such as weight, height, waist circumference (WC) and hip circumference (HC).

Each patient, at the time of the interview in 2009, was weighed in orthostatic position, with

* Paes NA. Project: *Avaliação da efetividade no controle da hipertensão arterial sistêmica e associação com fatores de risco comparando a atenção do Programa de Saúde da Família e de Unidades Básicas de Saúde de municípios do nordeste do Brasil*. João Pessoa (PB): UFPB; 2008.

arms straight along the body, wearing no shoes and light clothes. Patients were weighed using a LIDER® scale, model P200, approved by INMETRO, and provided by the State Health Department of Paraíba, with a maximum capacity for 200kg and accuracy of 100g.

The height variable was measured using a SECA® stadiometer, model 206 with accuracy of 0.1cm. The height measure was taken with the adult/elderly patient barefoot, with no head ornaments, standing in the middle of the equipment, with his/her torso erect, arms along straight along the body, head held straight and ankles, shoulders and buttocks against the wall, with both feet joined in a straight angle to the legs.

Obesity and overweight were evaluated by calculating the body mass index (BMI), which is obtained by dividing the weight in kilograms by the height in meters, elevated to the square. The classification of individuals was performed with the usual cutting levels of BMI, disregardless of the gender. These values were corresponding, respectively, to adults: less than 18.5 kg/m^2 – low weight; equal or more than 18.5 and less than 25 kg/m^2 - appropriate or eutrophic; equal or higher than 25 and less than 30kg/m^2 – overweight; more than 30 Kg/m^2 – obese; and for elderly patients, equal or less than 22 kg/m^2 – low weight, more than 22 and less than 27 kg/m^2 – appropriate or eutrophic; and equal or higher than 27 kg/m^2 – overweight.

Fat accumulation was estimated through the following indicators: WC and Hip-to-Waist Ratio (W/H).

Waist and hip circumferences were measured by a non-extensible metric tape; following the guidelines of the SISVAN Manual.[15] The WC was measured with the tape placed around the normal waist, or the smaller curve, located between the last rib and the iliac crest, with no compression to the tissues. Readings were performed between expiration and inspiration. The hip circumference was measured by placing the tape around the hip area, over the largest part, with no compression to the tissue.

The *Hiperdia* file presented no hip measure. This variable, along with the waist measure provided the W/H measure, which established an important indicator of body fat location.

The WC was analyzed by using the suggested cut spots by the World Health Organization (WHO). Women who presented values of WC higher than 80cm and men higher than 94 cm were classified as having abdominal fat accumulation, which is considered a risk associated to the development of diseases related to obesity, with an increased risk for women with WC>88 cm and WC> 102 in men.

For the identification of the type of fat distribution, according to the W/H, cut-off levels of cardiovascular diseases were used, considering the W/H above the recommended, in women W/H≥0.85; and in men, W/H≥1.00.[16]

The classification of the arterial pressure measure was classified according to individuals with Systolic Arterial Pressure (SAP) less than 120 mmHg and Diastolic Arterial Pressure (DAP) less than 80 mmHg – normal; SBP 120-139 mmHg and DBP 80-89 mmHg – pre-hypertensive. Systemic Arterial Hypertension (SAH) is observed over these values.[17]

Two measures of arterial pressure were performed, in the beginning of the interview, when patients were seated; and after five minutes of rest. The mean of these measures were admitted. The measure of AP in mmHg was obtained using a sphygmomanometer with a mercury column, model DS44 and brand Welch Allyn®. The equipment was periodically monitored to verify its accuracy.

Due to the absence of data in the measures studied, the authors recurred to the imputation techniques in the 2006/2007 records and to the interviews in 2009 to find out if these losses could have interfered in the quality of data. In order to compare the influence of these losses in the sample, the imputation of anthropometric measures and arterial pressure measures were performed to fill out the missing data, use the mode of these measures as base, or determine the missing data for the BMI and WC, through the W/H ratio.

General guidelines may be defined to choose imputation methods, according to the proportion of missing data in some of the variables;[18] a) proportion≤0.05, in this case, the single imputation can be used, or only complete data were analyzed; b) proportion between 0.05 and 0.15, a single imputation can be used with no further problems, however, the use of multiple imputation is indicated; and c) proportion>0.15, multiple imputations.

Analyses according to gender were performed with the purpose of investigating its influence on anthropometric and hypertension indicators. An investigation of the dependent variable, with the other variables in the study, was performed, using Pearson's chi-square test, in

addition to calculating the adjusted odds ratio, by logistic regression, with the purpose of establishing a possible association of these variables with a dependent variable with significance ($p<0.05$).

Being an epidemiologic study, the cohort analysis of retrospective data was chosen to analyze the association of variables based on the adjusted odds ratio, which leads to indicators of the strength of this association between the factor in this study and the outcome, also allowing a judgment on the causality relation.

The present study complied with the resolution 196/96 of the National Health Council for studies involving human beings, which guarantees the secrecy of information, privacy and the free and informed consent. The research proposal was presented and approved by the Research Ethics Committee of the Medical School of Nova Esperança, in its 8th extraordinary meeting, performed on September 10th, 2009, protocol REC FACENE/FAMENE 174/2009, CAAE No. 5001.0.000.351-09.

RESULTS AND DISCUSSION

In the sample of 343 participants, 75.6% were women. Factors that may explain the situation include better female longevity in comparison to men; higher concern about the health condition, in addition to being the ones who sought for the health units more often.[20-21]

The mean values of SAPs, DAPs and the anthropometric data (weight, height, waist, and hip) from patients were compared, by using the records in *Hiperdia*, the medical file and the interview (Table 1).

Table 1 - Statistical data of anthropometric variables and arterial pressure in patients. João Pessoa-PB (2006/2007, 2008, 2009)

Hiperdia Project		Valid	Loss	Mean	Standard deviation	Minimum	Maximum	Total	%
Records (2006/2007)	SAP	333	10	140.4	19.57	100	200	343	97.1
	DAP	333	10	88.41	11.79	60	140	343	97.1
	Weight (kg)	330	13	70.59	14.66	35	142	343	96.2
	Height (cm)	327	16	155.61	8.41	135	187	343	95.3
	Waist (cm)	319	24	94.69	14.38	44	150	343	93.0
	Hip (cm)	0	343	0	0	0	0	343	0
Medical file 2008	SAP	111	232	136.78	21.18	80	240	343	32.4
	DAP	111	232	85.92	12.77	50	140	343	32.4
	Weight (kg)	22	321	71.33	10.95	55	101	343	6.4
	Height (cm)	3	340	156.33	7.23	148	161	343	0.9
	Waist (cm)	3	340	98.33	4.04	94	102	343	0.9
	Hip (cm)	0	343	0	0	0	0	343	0
Interview 2009	SAP	334	9	143.99	24.08	90	230	343	97.4
	DAP	333	10	85.68	14.25	50	140	343	97.1
	Weight (kg)	341	2	70.14	14.44	35.8	116	343	99.4
	Height (cm)	340	3	154.27	9.38	63.5	180	343	99.1
	Waist (cm)	342	1	98.79	12.36	53	136	343	99.7
	Hip (cm)	326	17	102.44	12.10	55	146	343	95.0

Regarding the medical file in 2008, there was a great loss of information from the individuals in the research. The record was found, however, there was no follow up or data was not input in the medical file. The measure of arterial pressure stands out, as this is a fundamental requirement in the medical routine to start analyzing pertinent information to the health condition of patients, and this information was missing in most medical files. The loss of data affects the evolution of analysis in the three moments of the study.

According to the data from the records and from the interview in 2009, few losses in anthropometric measures were observed, all under 5%, except for the waist measure in *Hiperdia*, with 24 losses in a universe of 343, corresponding to 7%.

Despite the low rate of losses in the study, imputation was performed. The technique was adopted to enable working with all data in case of losses throughout the study.

A study confirms that the researcher has a considerable gain in results when inputting missing data, instead of analyzing the research restricted to the complete cases.[22] Comparisons among the mean of measures were done by using Student's t test, as shown in table 2.

Table 2 - Imputation of anthropometric indicators and arterial pressure for filling out missing data in the records and at the time of the interview. João Pessoa-PB, 2009

		Before imputation		After imputation			
	Measures	**Mean**	**Standard deviation**	**Mean**	**Standard deviation**	***t***	**p***
Records (2006/2007)	**BMI**	29.2	2.0	29.3	2.2	0.392	0.35
	WC	94.7	14.3	95.1	13.9	0.219	0.41
	SAP	140.4	19.5	140.4	19.3	-0.008	0.50
	DAP	88.4	11.8	88.2	11.7	-0.271	0.39
Interview 2009	**BMI**	29.3	5.5	29.3	5.5	-0.121	0.45
	WC	98.8	12.4	98.8	12.3	0.001	0.50
	SAP	144.0	24.1	143.9	23.8	-0.057	0.48
	DAP	85.7	14.2	85.5	14.1	-0.152	0.44

* Student's t test.

Regarding the anthropometric indicators and the arterial pressure, results show no significant differences of mean values of BMI, WC, SAP and DAP, before and after imputation. This is justified by the low percentage of losses in both sources of data, which may dismiss, in this case, the imputation of measures since there was no evidence of statistically significant differences. Nevertheless, for the purpose of this study, further analyses were performed using the imputed values, which means working with all hypertensive patients from the original sample. Table 3 demonstrates the comparison of mean values from the *Hiperdia* records, with the research data imputed by BMI, WC, SAP, DAP indicators, according to gender.

Table 3 - Anthropometric and arterial pressure distribution, according to gender. João Pessoa-PB, 2009

Measures	**Female**					**Male**				
	n	**Mean**	**Standard deviation**	**t**	**p***	**n**	**Mean**	**Standard deviation**	**t**	**p***
BMI - records	253	29.6	6.1	-	-	90	28.8	10.5	-	-
BMI - interview	253	29.7	5.8	-0.607	0.257	90	28.1	4.2	0.643	0.261
WC - records	253	93.9	14.0			90	97.8	13.5		
WC - interview	253	99.0	12.2	-6.559	0.001	90	98.2	12.8	-0.306	0.380
SAP - records	253	140.0	19.7			90	141.6	18.2		
SAP - interview	253	143.3	23.2	-2.234	0.013	90	145.6	25.3	-1.297	0.099
DAP - records	253	87.8	12.0	-	-	90	89.1	10.8	-	-
DAP - interview	253	85.7	13.9	2.224	0.014	90	85.1	14.7	2.391	0.010

* Student's t test.

Although the BMI showed no significant evidence to the level of 5%, there was an increase in values for women, and a reduction for men, at the time of the interview, when *Hiperdia* and records were compared. Similar results were obtained in a study with adults, in surveys regarding risk factors and non-transmissible diseases.[23]

Analysis demonstrated differences among the means from the *Hiperdia* data and the study questionnaire for WC, SAP, DAP in women, and DAP in men, to a significance level of 5%.

Considering the isolated waist classified as an associated risk to the development of diseases related to obesity, a similar study showed evidence that obesity would be significantly present, in a higher degree, in women, than in men (p<0.005).[24]

A study emphasized that a greater concentration of abdominal fat, in women, is found in association with the number of pregnancies, mainly in women who had four or more pregnancies, in addition to the loss of estrogen due to aging.[23]

Regarding the decrease of DAP, the occurrence may be related to the age range or to the way the professional measured the arterial pressure, as diastolic pressure is considered the last auscultation to be verified, which makes it difficult to be acknowledged by some professionals.

Table 4 shows the association of obesity with the independent categorical variables, using the data from the interview in 2009.

Table 4 - Association of obesity with independent variables category at the time of the interview. João Pessoa-PB, 2009

Variables	Obesity (BMI)				Adjusted odds ratio ($CI_{95\%}$)	p*
	No		Yes			
	n	%	n	%		
Gender						
Women	52	72.2	201	74.2	1	
Men	20	27.8	70	25.8	0.905 (0.505-1.622)	0.369
Age						
< 60	30	41.7	133	49.1	1	
> or equal to 60	42	58.3	138	50.9	0.741 (0.438-1.254)	0.13
Waist circumference						
Normal	30	41.7	38	14.0	1	
Risk	42	58.3	233	86.0	4.380 (2.451-7.827)	0.0001
Waist/hip ratio						
Normal	25	34.7	37	13.7	1	
Risk	47	65.3	234	86.3	3.364 (1.853-6.107)	0.0001
SAH						
No	15	20.1	47	17.3	1	
Yes	57	79.2	224	82.7	1.254 (0.655-2.402)	0.247
Sedentary lifestyle						
No	52	73.2	192	71.1	1	
Yes	19	26.8	78	28.9	1.112 (0.618-2.001)	0.362

* Chi-square.

In the bivariate analysis, there was a significant association between obesity and WC, and W/H ratio with p<0.0001. The difference points to the need for introducing, in the routine of health care services, the measures of waist and hip as risk factors for circulatory diseases.

According to the adjusted odds ratio, people in the risk category for waist circumference presented 4.38 times more chances for obesity, with a confidence interval at 95% between 2.541 and 7.827, indicating a strong association of these variables. When using the waist/hip ratio index,

individuals who had values above normal, according to the odds, would have 4.36 more chances of being classified as obese, with a confidence interval at 95% of 1.85 to 6.10, also representing a strong association. It is important to emphasize that the odds ratio calculation implicates no cause/effect, only suggesting the association.

Researchers, evaluating individuals older than 40 years of age, found that around 50% of the elderly were obese. Moreover, the altered waist circumference was superior to 50% in women and 40% in men.[25]

Other studies verified that both the BMI and the WC, isolated, are strong predicting factors for comorbidities related to obesity. Nevertheless, when they were both analyzed as a compound, only WC had a positive and significant association to these comorbidities. Thus, the authors suggest WC is the best anthropometric parameter, and that a better stratification is needed for its cut-off points.[26] BMI does not demonstrates which specific part of the body is altered.[27]

In a similar study in patients from the Family Health Program, 84% of the individuals presented increased W/H ratio, with these individuals presenting 2.5 times more chances of presenting overweight. This study reveals a possible negative progression in the health condition of patients as they start follow-up in the service.[28]

Therefore, after verifying the association of measures of WC and W/H with obesity, the next stage was to investigate whether these measures would compromise arterial pressure levels in patients from this present study.

Table 5 demonstrates the association of anthropometric measures with hypertension. A significant association of hypertension with age was observed to the level of 1%, and of hypertension with WC and W/H ratio to a level of 5%.

Table 5 - Association of anthropometric measures with hypertension at the time of the interview. João Pessoa-PB, 2009

Variables	Hypertensive patient				Adjusted odds ratio ($CI_{95\%}$)	p*
	No		Yes			
	n	%	n	%		
Gender						
Women	46	74.2	207	73.7	1	
Men	16	25.8	74	26.3	1.028 (0.549-1.925)	0.932
Age						
< 60	39	62.9	124	44.1	1	
> or equal to 60	23	37.1	157	55.9	2.147 (1.218-3.783)	0.007
Waist circumference						
Normal	18	29.0	50	17.8	1	
Risk	44	71.0	231	82.2	1.890 (1.009-3.541)	0.045
Waist/Hip ratio						
Normal	17	27.4	44	15.7	1	
Risk	45	72.6	237	84.3	2.035 (1.069-3.875)	0.028
Obesity						
No	15	24.2	57	20.3	1	
Yes	47	75.8	224	79.7	1.254 (0.655-2.402)	0.494
Sedentary lifestyle						
No	45	72.6	199	71.3	1	
Yes	17	27.4	80	28.7	1.064 (0.575-1.969)	0.843

* Chi-square.

People at the age of 60 or older were observed to present more than twice the chances of being hypertensive individuals. The same occurred to the waist/hip ratio. Studies demonstrate the relation of increased arterial pressure to the age.[29] Table 5 also demonstrated an association of waist circumference and waist/hip ratio to hypertension pressure. Some authors mention that the abdominal circumference is more associated to hypertension than to obesity.[30] A similar study points to an increased association of abdominal circumference with hypertension.[11]

Recently, studies have demonstrated the severe characteristic of an increased abdominal circumference, as it represents a risk for the development of chronic non-transmissible diseases, among which cardiovascular diseases stand out.[31-32]

Regarding sedentary lifestyle, this variable was expected to present some association with obesity or hypertension, however, as it regards a subjective item, in other words, patients only answered if they practiced or not some physical activity, it was not possible to verify this information or measure it, nor the frequency in which patients practiced these activities.

CONCLUSION

The analysis of the quality of data from patients in the *Hiperdia* program, as well as a possible association of anthropometric indicators with obesity and hypertension revealed a great amount of information loss from the medical files and a lack of records of the W/H ratio in the *Hiperdia* records. The most concerning issue is that, as it regards a follow-up in the evolution of a specific program for hypertensive patients, most medical files did not provide the measure of arterial pressure.

The importance of using the medical file as a hypertension control tool must be emphasized, and filling out the arterial pressure information and anthropometric measures is fundamental. Difficulties were found in the absence of records in the medical files for the analysis of how these patients are followed up.

Regarding anthropometric indicators, the logistic regression analysis showed a significant association between obesity and WC, and W/H ratio. The difference points to the need for introducing the measures of waist and hip as risk factors for diseases in the circulatory system in the routine of health services.

In addition, there was also a significant association between hypertension and age, between hypertension with WC, and with the W/H ratio.

The results found in this study are consistent with national and international publications regarding the association of anthropometric measures with arterial pressure levels, demonstrating a strong influence on obesity, as the most evident factor for coronary diseases.

Moreover, fragilities were found in the mechanisms to fight risk factors, as the weight and arterial pressure presented an increase. These data contribute to reflect on the policies implemented by the Ministry of Health to the cities, without the appropriate training of the involved professionals, who only reinforce, in educational guidelines, the use of medication.

The authors suggest not only the implementation of the medication therapy, but also understanding the family routine of those dealing with the disease, so that the care and weight control, by means of food habits education and physical activities, may be motivating situations, including in planning meetings for these activities.

The continuous supervision of data from hypertensive patients must be emphasized as for its importance, since the lack of precise information may lead to an epidemiologic underdimensioning in the population, compromising the planning of actions aimed at the prevention and control of these diseases.

Although difficulties resulting from the applicability in the field show limitations, such as the preparation of the team for field practice, patients' compliance to treatment and coherence of answers, studies on this theme are essential, as they are increasingly more present in the routine of health services provided to the hypertensive population.

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