EPIDEMIOLOGICAL PROFILE OF PATIENTS REGISTERED IN THE HIPER-DIA PROGRAM OF A BASIC HEALTH UNIT FROM IPATINGA, MINAS GERAIS, BRAZIL, IN 2012

NAYANDRA SOUZA E **SILVA**[1*], VERONICA MARQUES **MATOS**[1], FLÁVIO MENDONÇA **PINTO**[3]

1. Ungraduated Student of Medicine, IMES; **2**. Doctor, Professor of the Medicine Course at the IMES.

* Paraná Street, 120, Ap. 01, Lourdes, Governador Valadares,Minas Gerais, Brazil.CEP: 35030-420 nayassouza@hotmail.com

Received: 05/13/2015; **Accepted:** 05/27/2015

ABSTRACT

The association between hypertension and diabetes mellitus has been described since the 1970s. Diabetic patients have a prevalence two to three times more hypertension. In 2002 it was created a Reorganization Plan of Attention to SAH and DM, known as Hiper-Dia, with the main objective to globally monitor the patients treated. The purpose of this article is to know the epidemiological profile of patients registered in Hiper-Dia of a health unit in the city of Ipatinga / MG. We evaluated 506 patients, all suffering from hypertension. Of these, 415 are hypertensive and diabetic patients (82%). Patients were predominantly by females (63.2%). The frequency of overweight (38.5%) and obesity (39.7%) was increased among patients. It was also observed an average of 3 drug use among subjects. Among the antihypertensive drugs most commonly used class were diuretics. The prevalence of chronic kidney disease found was high (41.9%). Diabetes mellitus and hypertension are independent risk factors and synergistic effects on cardiovascular disease. We noticed that the evaluated patients do not present a good standard lipid profile and also have a high rate of overweight. The glycemic control assessed by glycohemoglobin reflects deregulation in maintaining euglycemia in diabetic patients.

KEYWORDS: Hiper-Dia program. Diabetes *Mellitus*, arterial hypertension, chronic kidney disease.

1. INTRODUCTION

Systemic Arterial Hypertension (SAH) is defined as systolic blood pressure greater than or equal to 140 mmHg and / or 90 mmHg for diastolic blood pressure, measured in at least two different situations[1]. It is the most common disease among chronic diseases[2].

The SAH often associates itself to functional and / or structural changes in target organs such as the heart, brain, blood vessels and kidneys and also the metabolic changes, with consequent increased risk of fatal and non-fatal cardiovascular events (myocardial infarction, stroke and heart failure)[3,4,5].

Diabetes Mellitus (DM) comprises a heterogeneous group of metabolic disorders has in common hyperglycemia, which results from defects in insulin action, insulin secretion or both mechanisms. Around 90-95% of cases this way is of type 2 diabetes, which is characterized by defects in action and secretion of insulin[6]. It is an important and growing public health problem with increasing incidence and prevalence worldwide, reaching epidemic proportions[7].

The diagnosis of DM type 2 is accomplished by measurement of fasting glucose $\geqslant$ 126 mg/ dL in two strengths, and/ or blood glucose $\geqslant$ 200 mg/ dL after overload with 75 g of dextrose, and/ or random blood glucose $\geqslant$ 200 mg/ dL in the presence of clear symptoms of diabetes (unexplained weight loss, polydipsia and polyuria)[1,6].

Diabetes Mellitus and Hypertension

The association between hypertension and DM has been described since the 1970s, observed in both sexes and age. Diabetic patients have a prevalence two to three times higher SAH when compared to the general population and around 70% of diabetics are hypertensive[1,7].

The prevalence of diabetes and hypertension in Bra-

zil are high and continue to grow and its prevention and monitoring are indicated as top priorities by the Ministry of Health[8]. Both are important causes of heart and kidney disease and even in the case of DM, various types of disability and blindness and amputations[8].

Thus, treatment of hypertension in diabetic patients is particularly important both for the prevention of cardiovascular disease and to minimize the progression of renal disease and diabetic retinopathy[6].

The seventh reporto f the "Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure" (JNC7) recommends that hypertensive patients without diabetes should keep blood pressure levels in values below 140/ 90 mmHg, while that for diabetics that goal lies in values below 130/ 90 mmHg [6,9].

In 2002 it created a Reorganization Plan of Attention to SAH and DM, known as Hiper-Dia. This was developed with the main objective to allow the monitoring of treated and patients registered in the outpatient network of the Unified Health System (SUS), generating information for purchasing, dispensing and distribution of medicines, systematically, to these patients[10].

The program aims also by reorganizing the health care work units of the basic network of health services, set goals and guidelines to expand prevention, diagnosis, treatment and control of these diseases [11,12].

We note that there are few scientific studies involving the profile of the population registered in Hiper-Dia system, therefore, the aim of our study was to know the profile of patients registered in Hiper-Dia/ Ministry of Health, in a Basic Health Unit (UBS), the Ipatinga, through laboratory and clinical analysis. We seek also to identify the prevalence of chronic kidney disease in hypertensive group and diabetic.

2. MATERIAL AND METHODS

Population and period of study

Have been used the master data of Hiper-Dia patients treated in the year 2012, from a Basic Health Unit (BHU), the Canaan neighborhood in the city of Ipatinga, MG. The universe of patients registered in that year, the UBS Canaan, totaled 2452 adults. Considering this population, for a confidence level of 99%, an 80% detection power and an accuracy of 5%, it estimated a total sample of 523 patients.

Inclusion and exclusion criteria

Were included in the registered individuals in Hiper-Dia research program of the Canaan neighborhood UBS, Ipatinga-MG who held consultations and laboratory tests in 2012. We excluded the patients in the registry Hiper-Dia program, had incomplete data regarding measures anthropometric and / or laboratory.

Statistical analysis

Descriptive analyzes were conducted through distribution tables of frequencies and measures of central tendency and variability.

Chronic kidney disease research was carried out through serum creatinine with subsequent calculation of their clearance by the formula of Cockroft and Gault.

To evaluate possible associations chi-square tests were used Pearson, Student's t or Mann-Whitney. In all analyzes, it was considered a 5% significance level.It used the SPSS statistical software (Statistical Package for Social Science) version 15.0 in carrying out analysis.

3. RESULTS

We evaluated a total of 506 patients registered in Hiper-Dia of a health center in the city of Ipatinga - MG. All 506 participants are hypertensive and 415 are hypertensive and diabetic patients (82%). Most (63.2%) are female and the average age was approximately 63 years. About half of patients (45.8%) are registered in the program over five years (Table 1).

The most frequently used oral hypoglycemic medication (54.2%), followed by simvastatin (46.0%). There was the average use of three drugs, with minimum of 0 and a maximum of 9. The prevalence of overweight in patients analyzed was 38.5% and 39.7% were obese (Table 1).

There was a significant difference between the group of hypertensive patients only and composed of hypertension and diabetes in relation to the use of oral hypoglycemic drugs, simvastatin, AT1 blocker, ACE inhibitor, antiplatelet, NPH insulin and centrally acting hypotensive. All medications except ACE inhibitor were used most frequently by the group of hypertensive and diabetic. Thus, there were also significant differences between the groups regarding the number of medicines used, for hypertensive and diabetic group had higher median medication used (3) that the group only hypertensive (median 2) (Table 1. There is a difference significant among hypertensive and diabetic hypertensive x, p-value <0.05).

Table 2 presented the results described tives of biochemical data. There were differences means tive among hypertensive group and diabetic and hypertensive only to glucose, glycohemoglobin and microalbuminuria. For the three variables, the highest rates were observed in the group of hypertensive and diabetic.

Prevalence of Chronic Kidney Disease (CKD) among patients was 41.9%. In hypertensive individuals this figure reached 42.9% and 41.6% hypertensive and diabetic.

Table 1. Profile of the studied population.

	Total		Diabetic and Hypertense			
	n	%	n	%	ı	%
Gender						
Male	186	36.8	146	35.2	40	44.0
Female	320	63,2	269	64.8	51	56.0
Age						
Mean ± SD	62.8 ± 11.6		62.9±10.7	!±14.9		
Median (Min - Max)	63 (21 – 96)		63 (28-89)	65 (21-96)		
abiding in the program						
< 5 years	274	54.2	222	53.5	52	57.1
> 5 years	232	45,8	193	46.5	39	42.9
Main drugs used						
ORAL ANTIDIABETIC *	274	54.2	261	62.9	13	14.3
SIMVASTATIN *	233	46.0	203	48.9	30	33.0
AT1 BLOCKER *	222	43.9	191	46.0	31	34.1
Ca^{+2} CHANNEL BLOCKER	186	36.8	158	38.1	28	30.8
THIAZIDE DIURETIC	147	29.1	128	30.8	19	20.9
ACE INBIDOR*	145	28.7	105	25.3	40	44.0
ANTIPLATELET*	134	26.5	126	30.4	8	8.8
INSULIN NPH*	102	20.2	94	22.7	8	8.8
BETA BLOCKER	76	15	66	15.9	10	11.0
HANDLE DIURETIC	63	12.5	49	11.8	14	15.4
SAVER K^+ DIURETIC	34	6,7	26	6,3	8	8,8
HYPOTENSIVES OF CENTRAL ACTION *	28	5,5	27	6,5	1	1,1
REGULAR INSULIN	24	4.7	21	5.1	3	3.3
FIBRATES	5	1	4	1.0	1	1.1
Number of drugs used*						
Mean ± SD	3.3 ± 1,8		3.5±1,9	2.3 ±1.3		
Median (Min - Max)	3 (0 – 9)		3 (0 - 9)	2 (0 – 6)		
BMI Classification						
LOW WEIGHT	4	0,8	4			1,0
NORMAL	105	20.8	83			20.0 22 24.2
OVERWEIGHT	195	38.5	153			36.9 42 46.2
OBESE	202	39.9	175			42.2 27 29.7

4. DISCUSSION

From data obtained from DATASUS, in 2012 in the state of Minas Gerais most patients registered in Hiperdia system were suffering only from hypertension (62 796 against 19 437 diabetic and hypertensive). Given this different from that found in our study where we observed a higher prevalence of diabetes and associated hypertension (415 patients with diabetes and hypertension and 91 patients with SAH). However, this finding corroborates with the findings by Borges (2009), since when it evaluates the patients registered in Hiper-Dia program of Dourados (MS) he observed a higher frequency of DM and hypertension (53.48%) on the only carriers of hypertension (44.18%)[1].

Among the patients studied, there was a predominance of females (63.2%), a finding that is consistent with that of other authors[10,13,14]. This difference found can be attributed to increased demand and use of health services by women[10].

Regarding age, it is estimated that hypertension is present in 65% of seniors in and around 15-20% of the adult population 15. In our study, the profile of patients was similar to that found by Carvalho *et al.* (2012) in which the elderly remains the dominant public. In our patients belonging to the group of hypertensive perceives a higher prevalence of females, a finding quecondiz with the Minas Gerais state data displayed by DATASUS in 2012 and other authors[16,17].

The average consumption of medicine found among the patients was 3.3 drugs, this finding is in line with findings by the authors Pereira *et al*., 2013[18].

According to the Ministry of Health, on the basis of the data Hiper-Dia program in 2012 in the state of Minas Gerais, the main drugs used for DM treatment were oral hypoglycemic agents, followed by insulin. This is in line with those found in our study, in which 62.9% of diabetic patients make use of oral hypoglycemic agents. Bortolini, Junior and Beltrame (2010) also describe a higher prevalence of use of oral hypoglycemic agents for their patients evaluated[19].

The treatment of hypertension in diabetic patients with the use of small doses of thiazide diuretics have been effective in regard to cardiovascular protection[6]. A reduction in morbidity and mortality found in truly hypertensive patients diuretics[4]. The use of angiotensin II antagonists has shown benefits in terms of renoprotection with its use in type 2 diabetic patients with nefropatia6, in this study,

[1] Consultation held on 9,10 and 11 November 2014. In: <http://hiperdia.datasus.gov.br/relatorio.asp>.

46% of patients hypertension and diabetes were using this drug class.

Table 2. Descriptive analysis of biochemical data

		Mean	Median	SD	Min	Max
Total	Total Cholesterol	204.7	200,0	44,3	100.0	374.0
	LDL	116.0	110.0	35.5	27.0	321.0
	HDL	49.7	46.0	13.3	20.0	151.0
	Triglycerides	198.6	179.5	99.4	34.0	901.0
	Glucose*	136.4	117.0	59.1	55.0	382.0
	Glycohemoglobin *	7.2	6.8	2.1	4.0	15.8
	Creatinine	1.2	1.0	0,5	0.5	4.0
	Microalbuminuria *	529.4	29.9	1,068.1	2.4	4,590.0
Hypertense and Diabetic	Total Cholesterol	205.0	200.0	47.0	89.0	374,0
	LDL	115.9	109.0	37.8	27.0	321.0
	HDL	49.6	47.0	12.5	20.0	151.0
	Triglycerides	198.1	178.0	103.9	21.0	901.0
	Glucose*	145.9	125.0	59.2	55.0	382.0
	Glycohemoglobin*	7.6	7.2	2.1	4.0	15.8
	Creatinine	1.2	1.0	1.2	0.5	22.8
	Microalbuminúria*	597.5	30.0	1,126.2	2.4	4,590.0
Hypertenses	Total Cholesterol	202.0	200.0	31.6	135.0	323.0
	LDL	116.7	112.0	22.5	34.0	190.0
	HDL	50.6	44.0	16.7	30.0	91.0
	Triglycerides	198.4	188.0	78.5	65.0	645.0
	Glucose*	93.3	89.0	34.3	60.0	349.0
	Glycohemoglobin*	5.5	5.0	1.1	4.0	11.3
	Creatinina	1.2	1.1	0.5	0.5	3.0
	Microalbuminúria*	218.7	23.0	669.1	2.6	4,587.0

* There are significant differences between hypertensive and diabetic hypertensive x (p-value <0.05)

Pereira *et al.* (2012) when evaluating patients with hypertension and / or diabetes who have purchased drugs through units of Minas Pharmacy Network notes that in relation to drugs used to treat cardiovascular diseases diuretics (18.7%) were among the most widely prescribed classes of agents followed system acting on the renin-angiotensin-aldosterone system (RAAS) (17%), beta blockers (7.4%) and calcium channel blockers (4.5%)[18].

Among the total patients evaluated in our study the major antihypertensive drugs used were the agents acting on the RAAS (72.65), followed by diuretics (48.3%) and calcium channel blockers (36.85).

According Tomazoni & Siviero (2009) the major classes of antihypertensive agents used (in descending order) by hypertensive patients were the thiazide diuretic, inhibitors of angiotensin converting enzyme, beta-blockers and calcium channel blockers. However, from our hypertensive patients, the most commonly used classes in order of prevalence include inhibitors of angiotensin converting enzyme, the angiotensin II receptor antagonists, calcium channel blockers and thiazide diuretic lastly[20].

The Body Mass Index (BMI) is one of the most widely used methods in the anthropometric assessment of body composition. The association between excess weight, obesity and increased risk of developing hypertension may explain about 20 to 30% of cases of hypertension[21]. The global epidemic of excess weight, is overweight or obese is also described by Garden *et al.* (2007) because of the patients 38.5% were overweight and 39.9% were obese.

Contrary to the findings of Lima *et al.* (2011), which demonstrated a higher prevalence of overweight in the group of hypertensive and diabetic patients, our study found that this group most patients were obese, however, compared to only hypertensive patients these data converge because in both jobs the highest prevalence was overweight patients[22].

Chronic kidney disease (CKD) is considered a worldwide public health problem, and in Brazil the incidence and prevalence are increasing[23,24]. The CKD is defined by lesions of the renal parenchyma (with normal renal function) and/ or the renal functional impairment (FG <60 mL/ min/ 1.73 m^2) present for a period less than three months[23, 24, 25].

The DM is the most frequent cause of CKD in the world, however, the SAH also appears as a frequent cause[23]. Both diseases have increased susceptibility to CKD and are risk group for the disease[24].

The prevalence of CKD found in our study was 42.9% in the group of hypertensive patients and 41.6% in the group of hypertensive and diabetic. Santos & Moreira (2012) observed a much lower number than found in our study, about 0.9% of hypertensive alone or hypertensive and diabetic patients had kidney disease[26].

All of the antihypertensive classes are effective in controlling blood pressure in patients with CKD, however, has been perceived angiotensin converting enzyme inhibitors and angiotensin receptor blockers are more effective than the other classes, especially in diabetic nephropathy, but also in non-diabetic hypertensive[27]. An

important aspect to be considered in relation to the early diagnosis and treatment of CKD is that this has a significant share in the increased risk of cardiovascular disease development[28].

The recommended values for HDL, LDL, total cholesterol (TC) and triglycerides (TG) by VI Hypertension Guideline, are respectively HDL> 40 mg/ dL, LDL <100 mg/ dL, CT <200 mg/ dL and TG <150 mg/ dL. In the present study, the mean LDL, TC and TG levels were found above their normal values, with which only the HDL average value kept within the desired patterns[29, 31, 31, 32].

In a study by Cabral *et al.* (2012) in which the authors evaluated the patients Hiper-Dia group of two health facilities in the municipality of São Luís (MA), they observe a patient profile similar to ours, in which the CT (68.8%) and LDL (83.9%) remained above the expected level and HDL in 77.3% of patients met with values greater than 40 mg/ dL[29, 31, 31, 32].

Glycohemoglobin testing (HbA1c) reflects the average blood glucose past the last two to four months and a good glycemic control is considered when their levels are less than 7% [6]. Diabetic patients evaluated for HbA1c showed a poor glycemic control , obtaining an average of 7.6% .Cabral et al. (2012) describes that 23.5% of the evaluated patients had a higher HbA1c to 7%[29, 31, 31, 32].

5. CONCLUSION

Based on the data analyzed we can draw a more complete profile of our patients. Uncontrolled lipid levels, known as dyslipidemia, especially in diabetic patients raises the patient's cardiovascular risk and consequently the risk of developing myocardial infarction and stroke.

The data on the measurement of glycohemoglobin demonstrated poor glycemic control the diabetic population has shown. As the DM and hypertension independent and synergistic risk factors related to cardiovascular disease, it is necessary to know and follow-up of patients that present and of individuals at risk of developing.

Chronic kidney disease in its early stages is asymptomatic should always be suspected in these patients, once the Diabetes Mellitus is seen as the main cause.

Regular monitoring of these patients ultimately develop the relationship of health professionals and the patient, favoring compliance. Accession this important to reduce the complications of both diseases.

REFERENCES

[1] Alessi A, *et al.* I Posicionamento Brasileiro em Hipertensão Arterial e Diabetes Mellitus. Arquivos Brasileiros de Cardiologia. 2013; 100(6):491-501.

[2] Rosário TM, *et al.* Prevalência, Controle e Tratamento da Hipertensão Arterial Sistêmica em Nobres – MT. Arquivos Brasileiros de Cardiologia. 2009; 93(6):672-8.

[3] Schmidt MI, *et al.* Prevalência de diabetes e hipertensão no Brasil baseada
em inquérito de morbidadeauto-referida, Brasil, 2006. Revista Saúde Pública. 2009; 43(2):74-82.

[4] Sociedade Brasileira de Cardiologia; Sociedade Brasileira De Hipertensão; Sociedade Brasileira de Nefrologia. VI Diretrizes Brasileiras de Hipertensão. Arquivos Brasileiros de Cardiologia. 2010; 95(1).

[5] Belletti DA, Zacker C, Wogen J. Effect of cardiometabolic risk factors on hypertension management: a cross-sectional study among 28 physician practices in the United States. Cardiovascular Diabetology. 2010; 9(7).

[6] Sociedade Brasileira de Diabetes. Diretrizes da Sociedade Brasileira de Diabetes: 2013-2014/Sociedade Brasileira de Diabetes; José Egidio Paulo de Oliveira, Sérgio Vencio – Organização. São Paulo: AC Farmacêutica. 2014.

[7] Silva, T.R. et al.Controle de diabetes mellitus e hipertensão arterial com grupos de intervenção educacional e terapêutica em seguimento ambulatorial de uma unidade básica de saúde. Saúde e Sociedade. 2006; 15(3):180-9.

[8] Banco Mundial. Documento do Banco Mundial. Brasil: Enfrentando o desafio das doenças não-transmissíveis no Brasil. Relatório Nº 32576BR. 15 de novembro de 2005.

[9] Cooper-Dehoff RM, *et al.* Tight blood pressure control and cardiovascular outcomes among hypertensive patients with diabetes and coronary artery disease. Journal of the American Medical Association. 2010; 304(1).

[10] Ferreira CLRA, Ferreira MG. Características epidemiológicas de pacientes diabéticos da redepública de saúde – análise a partir do sistema HiperDia. Arquivos Brasileiros de Endocrinologia Metabólica. 2009; 53(1).

[11] Lima AS, Gaia ESM, Ferreira MA. A importância do programa hiperdia em uma unidade de saúde da família do município de serra talhada - PE, para adesão dos hipertensos e diabéticos ao tratamento medicamentoso e dietético. Saúde Coletiva em Debate. 2012; 2(1).

[12] Brasil. Ministério da Saúde. Hiperdia – Sistema de Cadastramento e Acompanhamento de Hipertensos e Diabéticos – Manual de Operação. Rio de Janeiro. 2002.

[13] Carvalho ALM, *et al.* Adesão ao tratamento medicamentoso em usuários cadastrados no programa Hiperdia no município de teresina (PI). Ciência & Saúde Coletiva. 2012; 17(7):1885-92.

[14] Dallacosta FM, Dallacosta H, Nunes AD. Perfil de hipertensos cadastrados no programa Hiperdia de uma unidade básica de saúde. Unoesc & Ciência. 2010; 1(1):45-52.

[15] Paiva DCP, Bersusa AAS, Escuder MM. Avaliação da assistência ao paciente com diabetes e/ou hipertensão pelo Programa Saúde da Família do Município de Francisco Morato, São Paulo, Brasil. Caderno de Saúde Pública. 2006; 22(2):377-85.

[16] Foletto KC. Perfil epidemiológico, estado nutricional e fatores associados à hipertensão e diabetes mellitus em

idosos cadastrados no Hiperdia no município de caixias do sul (RS). 2009. 46f. Dissertação (Especialista em Saúde Pública) – Universidade Federal do Rio Grande do Sul. Porto Alegre. 2009.

[17] Gomes TJO, Silva MVR, Santos AA. Controle da pressão arterial em pacientes atendidos pelo programa Hiperdia em uma unidade de saúde da família. Revista Brasileira de Hipertensão. 2010; 17(3):132-39.

[18] Pereira HN, *et al*. Perfil do uso de medicamentos por idosos assistidos pelo programa Hiperdia de campina grande – PB. In:III Congresso Internacional De Envelhecimento Humano. 2013, Campina Grande, PA. Editora Realize. 2013.

[19] Bortolini ETT, *et al*. Perfil epidemiológico dos diabéticos no município de água doce, SC. Evidência. 2010; 10(1-2):131-8.

[20] Tomazoni T, Siviero J. Consumo de potássio de idosos hipertensos participantes do programa Hiperdia do município de caxias do sul, RS. Revista Brasileira de Hipertensão. 2009; 16(4):246-50.

[21] Barbosa LS, Scala LCN, Ferreira MG. Associação entre marcadores antropométricos de adiposidade corporal e hipertensão arterial na população adulta de cuiabá, mato grosso. Revista Brasileira de Epidemiologia. 2009; 12(2):237-47.

[22] Lima LM, *et al.* Perfil dos usuários do Hiperdia de três unidades básicas de saúde do sul do brasil. Revista Gaúcha de Enfermagem. 2011; 32(2):323-9.

[23] Bastos MG, Bregman R, Kirsztajn GM. Doença renal crônica: frequente e grave, mas também prevenível e tratável. Revista da Associação Médica Brasileira. 2010; 56(2):248-53.

[24] Kirsztajn GM, *et al*. Doença Renal Crônica (Pré-terapia Renal Substitutiva): Diagnóstico. Projeto diretrizes. 2011.

[25] Bastos MG, Kirsztajn GM. Doença renal crônica: importância do diagnóstico precoce, encaminhamento imediato e abordagem interdisciplinar estruturada para melhora do desfecho em pacientes ainda não submetidos à diálise. Jornal Brasileiro de Nefrologia. 2011; 33(1):93-108.

[26] Santos JC, Moreira TMM. Fatores de risco e complicações em hipertensos/diabéticos de uma regional sanitária do nordeste brasileiro. Revista da Escola de Enfermagem da USP. 2012; 46(5):1125-32.

[27] Bortolotto LA. Hipertensão arterial e insuficiência renal crônica. Revista Brasileira de Hipertensão. 2008; 15(3): 152-5.

[28] Kirsztajn GM, Bastos MG, Andriolo A. Proteinúria e creatinina sérica: testes essenciais para diagnóstico de doença renal crônica. Jornal Brasileiro de Patologia e Medicina Laboratorial. 2011; 47(2).

[29] Cabral NAL, *et al.* Cintura hipertrigliceridêmica e risco cardiometabólico em mulheres hipertensas. Revista da Associação Médica Brasileira. 2012; 58(5):568-73.

[30] Jardim PCBV, *et al.* Hipertensão Arterial e Alguns Fatores de Risco em uma Capital Brasileira. Arquivos Brasileiros de Cardiologia. 2007; 88(4):452-7.

[31] Borges BLC. Comprometimento da função renal em pacientes cadastrados no programa Hiperdia do município de dourados, mato grosso do sul – brasil, 2009. 2009. 74f. Dissertação (Mestrado em Ciências da Saúde) – Universidade de Brasília, Brasília. 2009.

[32] Pereira VOM, *et al.* Perfil de utilização de medicamentos por indivíduos com hipertensão arterial e diabetes mellitus em municípios da rede farmácia de Minas. Caderno de Saúde Pública. 2012; 28(8):1546-8.