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Analysis of the use of drugs in cardiovascular and antidiabetic primary health care according to age

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ABSTRACT. The population of elderly and non-elderly users of a Basic Health Unit (UBS) was interviewed regarding the use of cardiovascular and anti-diabetic medications, as well as the adverse effects that were noted. Hypertension and diabetes mellitus are conditions involving complications and compromise the quality of life of patients. The objective was to build a profile of these users. The cross-sectional study was carried out on patients older than 18 years of age and users of cardiovascular or anti-diabetic drugs in Centro Social Urbano UBS, located in Londrina – PR, Brazil. The result revealed the following statistically significant variables: lower use of beta blockers ($p = 0.012$) and metformin ($p = 0.05$) among the elderly compared to the overall average, and higher acetylsalicylic acid (ASA) ($p = 0.006$) use in people over 64 years of age. Reported adverse symptoms were lower among those over 64 years old ($p = 0.03$). Angiotensin-converting enzyme (ACE) inhibitors are the most used (63.5%), followed by diuretics (54.9%) and beta-blockers (27.7%). Among diabetic patients, 23.2% were using biguanides and 15.9% sulfonylureas; only 6.6% were insulin-dependent. The conclusion is that drug therapies within the sample were mostly in accordance with current guidelines.

Keywords: medicine, adverse effects, hypertension, diabetes *mellitus*, primary health care.

Análise do uso de medicamentos cardiovasculares e antidiabéticos em atenção primária de saúde de acordo com a faixa etária

RESUMO. A população de idosos e não-idosos usuários de uma unidade básica de saúde (UBS) foi entrevistada quanto ao uso de medicamentos cardiovasculares e antidiabéticos e, também, aos efeitos adversos que eram notados pelos próprios entrevistados. A Hipertensão Arterial Sistêmica e o Diabetes Mellitus são afecções relacionadas a complicações e comprometimento da qualidade de vida dos pacientes. O objetivo foi montar o perfil desses usuários. O estudo foi transversal, realizado com pacientes maiores de 18 anos de idade usuários de medicamentos cardiovasculares e ou antidiabéticos da UBS – Centro Social Urbano, em Londrina, Estado do Paraná. O resultado revelou, estatisticamente significativas, as variáveis: uso de betabloqueadores ($p = 0,012$) e de metformina ($p = 0,05$) menor entre os idosos em relação ao total e de ácido acetilsalicílico (AAS) ($p = 0,006$) maior nas pessoas acima de 64 anos. Os sintomas adversos referidos foi estatisticamente menor entre aqueles com mais de 64 anos ($p = 0,03$). Os inibidores da enzima de conversão da angiotensina (IECA) são os mais utilizados (63,5%), seguidos por diuréticos tiazídicos (54,9%) e beta-bloqueadores (27,7%). Entre os pacientes diabéticos, 23,2% utilizam biguanidas e 15,9% sulfanilureias, apenas 6,6% fazem uso de insulina. Conclui-se que as terapias medicamentosas da amostra estavam, em sua maioria, de acordo com as diretrizes atuais.

Palavras-chave: medicamentos, efeitos adversos, hipertensão, diabetes *mellitus*, atenção primária à saúde.

Introduction

Cardiovascular disease represents the main cause of death in Brazil (SILVA et al., 2006). Systemic Arterial Hypertension (SAH) and diabetes mellitus (DM) are the main population risk factors for cardiovascular disease; SAH has a prevalence above 30%, exceeding 50% in individuals over 60 years of age (SBH, 2010), while DM affects close to 8 million Brazilians (SBD, 2007).

In elderly populations, these diseases are even more prevalent. The DM guideline indicates a prevalence of 2.7% in the 30-59 year-old age group, and 17.4% among 60-69 year-olds. With regard to arterial hypertension, the frequency of self-reported hypertension ranged from 7.4% to 15.7% in 25-39 year-olds, 26% to 36.4% in patients between 40 and 59 years of age, and 39% to 59% in elderly patients (60 years or older), according to a home survey

conducted between 2002 and 2003 (PASSOS et al., 2006).

In Brazil, cardiovascular disease is responsible for 33% of known-cause deaths. In addition, these illnesses were the main cause of hospitalization in the public health care system between 1996 and 1999, and accounted for 17% of admissions of people between 40 and 59 years of age and 29% of those 60 and older (PASSOS et al, 2006). These conditions could have been avoided with adequate control of SAH and DM.

A recent study showed that about 60% to 91% of the elderly population makes use of medication, averaging 2 to 4 different drugs. The same works estimate that 40% to 75% do not follow the medication schedule (ACURCIO et al., 2009). Other Brazilian studies have indicated a low control level; however, in places where the Family Health Program (PSF) is present, significantly higher rates of treatment and control were found in comparison with other countries (SBH, 2010). Appropriate use of medication is concern for studies in several countries (FIAVOLÁ et al., 2005).

Thus, the objective of the present study was to analyze the use of anti-diabetic and anti-hypertensive drugs with regard to age group, at the primary health care level.

Material and Methods

This was a cross-sectional study carried out with patients older than 18 years of age, users of cardiovascular and anti-diabetic drugs.

The interviewed patients reside within the coverage area of a Basic Health Unit (UBS) located in the central area of the city of Londrina, Paraná State.

The sample consisted of all individuals who received any type of cardiovascular or anti-diabetic drug in the month of March 2009. In those cases in which there was more than one sampled individual per household, one was selected at random. The data were obtained using a survey featuring structured, semi-structured and open-ended questions, answered by the patients themselves and/or by their caretakers.

The exclusion criteria were inpatients, pregnant women, and those who were not selected by drawing in those households with more than one sampled resident. Cases of death, patients not found after five visits at different times and dates and those who refused to participate in the study were regarded as losses.

The research project was submitted to and approved by the Research Ethics Committee of the State University of Londrina, under number 241/08.

All cardiovascular and anti-diabetic drugs used continuously were analyzed, regardless of where they were obtained. The drugs were grouped according to their main mechanism of action.

In order to analyze the different medications, the groups were stratified to age: up to 64 years, and 65 or older.

The side effects of using the drugs were identified through direct questions with spontaneous answers, and grouped by the interviewers.

The data were stored and analyzed using Epi Info software, version 3.5.1. The use of medications according to age group was compared using the Chi-squared test and Fisher's exact test when necessary. The significance level adopted was an error of 5% ($p < 0.05$).

Results

Among the 397 interviewed subjects, 65.5% were women and 34.5% were men. Mean age was 63.8 years, with higher mean age among females (64.5 years) than males (62.7 years). With regard to marital status, males had a higher percentage of married subjects (73.3%) than females (39.2%). With regard to schooling and income bracket, as analyzed according to criteria set by ABEP, a majority of participants are concentrated within the range of one to four years (44.6) and classes A2, B1, B2, C1 and C2 (71.0%), respectively (Table 1).

Table 1. Distribution of the studied sample according to socioeconomic variables by gender, Londrina, Paraná State, 2009.

Variable	Total		Gender			
			Female		Male	
	n	%	n	%	n	%
Gender	397	100.0	260	65.5	137	34.5
Mean Age (years)	63.8		64.5		62.7	
Schooling						
None	67	16.9	52	20.0	15	10.9
1 to 4 years	177	44.6	122	46.9	55	40.1
5 years or more	153	38.5	86	33.1	67	48.9
Marital Status						
Married	203	51.1	102	39.2	101	73.3
Others	194	48.9	158	60.8	36	26.3
Income Bracket						
A2,B1,B2,C1 and C2	282	71.0	172	66.2	110	80.3
D and E (low)	115	29.0	88	33.8	27	19.7

Of all medications used, 90.1% are anti-hypertensives and 29.5% are anti-diabetics. Angiotensin-converting enzyme inhibitors (ACEI) are the most used drug class for arterial hypertension (63.5%), followed by thiazide diuretics (54.9%) and

beta blockers (27.7%). Among diabetic interviewed subjects, 23.2% made use of biguanides, 15.9% used sulfonylureas, and only 6.6% used insulin (Table 2).

Table 2. Cardiovascular and anti-diabetic drugs used.

Drugs used	Total = 397	
	n	%
Anti-hypertensives	361	90.1
Angiotensin-converting enzyme inhibitors	252	63.5
Thiazide diuretics	218	54.9
Beta blockers	110	27.7
Calcium channel blockers	58	14.6
Spironolactone	26	6.5
Furosemide	24	6.0
Angiotensin receptor blockers (ARB)	23	5.8
Alpha-methyldopa	4	1.0
Clonidine	1	0.3
Hydralazine	1	0.3
Anti-diabetics	117	29.5
Biguanides (metformin)	92	23.2
Sulfonylureas	63	15.9
Insulins	26	6.6
Others	185	46.6
Acetylsalicylic acid (ASA)	101	25.4
Statins	46	11.6
Digitoxins (digoxin)	9	2.3
Nitrates	7	1.8
Antiarrhythmics (Amiodarone)	7	1.8
Fibrates	6	1.5
Warfarin	5	1.3
Clopidogrel	4	1.0

The survey analyzed drug distribution according to age of the studied population, with the following stratifications: up to 64 years, and 65 years or older. Three of the analyzed variables were statistically significant: use of beta blockers ($p = 0.012$) and metformin ($p = 0.05$), which were lower among the elderly than overall, and use of acetylsalicylic acid (ASA) ($p = 0.006$), which was greater in people older than 64 years. The other drugs did not show a statistically significant occurrence between the elderly and the rest of the sample (Table 3).

Table 3. Use of cardiovascular and anti-diabetic drugs by age group.

Variable	Total (n = 397)		≤64 years (n=182)		>64 years (n = 215)		P value
	n	%	n	%	n	%	
Anti-hypertensive	361	90.9	165	90.6	196	91.2	Ns
Beta blocker	110	27.8	62	34.0	48	22.3	0.012
Calcium blocker	58	14.6	22	12.0	36	16.7	Ns
ACEI	252	63.5	112	61.5	140	65.1	Ns
Thiazides	218	54.9	100	54.9	118	54.9	Ns
Furosemide	24	6.04	12	6.59	12	5.58	Ns
ARB	23	5.80	10	5.49	13	6.05	Ns
Spironolactone	26	6.55	11	6.04	15	6.98	Ns
Anti-diabetics	117	29.5	53	64.2	64	29.8	Ns
Sulfonylureas	63	15.9	27	14.8	36	16.7	Ns
Metformin	92	23.2	50	50.5	42	19.5	0.05
Insulin	26	6.55	12	14.2	14	6.51	Ns
ASA	101	25.4	34	18.7	67	31.2	0.006
Statins	46	11.6	17	9.34	29	13.5	Ns

Ns: non-significant.

The present study also evaluated the association of reported side effects according to age group in the sampling. Statistically lower levels of complaints of signs and symptoms were observed among subjects older than 64 years ($p = 0.03$). The other analyzed variables did show any relationship with the age distribution used (Table 4).

Table 4. Distribution of the main side effects of cardiovascular and anti-diabetic drugs as mentioned by users according to age group.

	Total		≤64 years		>64 years		P value
	n	%	n	%	n	%	
No side effects	290	73.0	123	67.6	167	77.7	0.03
Polyuria	16	4.0	10	5.5	6	2.8	0.26
Diarrhea	12	3.0	7	3.8	5	2.3	0.55
Headache	3	0.8	1	0.5	2	0.9	0.88
Insomnia	3	0.8	1	0.5	2	0.9	0.56
Cramping	2	0.5	1	0.5	1	0.5	1.00
Muscle pain	2	0.5	1	0.5	1	0.5	1.00
Dry mouth	2	0.5	2	1.0	0	0	
Bloating	1	0.3	1	0.5	0	0	

Discussion

This study aimed to outline a profile of medication use among primary care users at a basic health unit located in Londrina, Paraná State, Brazil. An interesting fact is that the sample used in this study showed socio-demographic heterogeneity, which could allow the data to be extrapolated to other populations.

The results found in the study showed that the population assisted at that locality consist mostly users of ACEI and thiazide diuretic drugs. Moreover, the mean age is 63.8 years; therefore, it can be inferred that this population consists mainly of elderly subjects. Studies that also evaluated the therapeutic conduct in these patients indicated ACEI as the most used anti-hypertensives, followed by thiazide diuretics and beta blockers (OBRELI NETO et al., 2009). Analyses in other studies show thiazide diuretics among the most used cardiovascular system drugs, followed by those that act on the renin-angiotensin system (MARIN et al., 2008; LOYOLA FILHO et al., 2006).

Combined therapy was the most commonly found anti-hypertensive therapeutic protocol. The results showed a 63.5% occurrence rate for ACEI, followed by thiazide diuretics with 54.9%. Thus, there are suggestions of simultaneous use of ACEI and thiazide diuretics or another class. Therapy in the elderly must follow the principle of using the lowest possible dose that provides the best result, due to an expected group of different medications that the elderly patient uses, in order to reduce the adverse effect of the drug. In addition, the importance of complying with the treatment and knowing available drug options is emphasized, in order to seek a simpler therapeutic protocol (ACURCIO et al., 2009; LOPES, 2006).

Whenever there is associated diabetes mellitus, there are benefits to RAAS blocking combined with the use of Ca channel blockers. The combination between ACEI and ARB II reduces proteinuria and stops the progression of kidney and cardiovascular disease (SBH, 2010). In our study, a high percentage of these drugs were observed, which may mean than medical prescriptions in that field are in accordance with the best available therapies according to current guidelines. However, the present study did not analyze the presence of the aforementioned combination.

Because the sample consisted mostly of elderly subjects, it should be highlighted that use of the medications may be linked to greater concern with the adverse effects possibly related to the quality of life of the elderly (LOPES, 2006; SECOLI, 2010). Even though this association has been proven, when elderly subjects are inquired on the adverse effects, they tend not to recognize them, according to the literature and corroborated in our study (SECOLI, 2010).

The highest rate of complaints regarding adverse effects came from younger patients. The study design did not make it possible to identify the reasons for the higher complaint rate in that age group; however, it is possible that these side effects are more noticeable among individuals needing more intense professional activities. Additionally, the elderly tend to perceive the effects as something related to senility, and therefore do not acknowledge the effects observed by medication use when asked about it. Complaints of adverse signs and symptoms were statistically lower among those older than 64 years ($p = 0.03$). This study had a limitation that should be highlighted: drugs and their effects were only reported to the interviewer, without proper medical confirmation.

The main adverse effects are reported in Table 4. With regard to patient perception, an important number observed was the absence of adverse effects (73%), reaching 77% among the elderly. Some studies report that in European surveys there was up to a 20% occurrence of requests for health assistance due to adverse effects in the elderly (SECOLI, 2010).

Conclusion

This study shed some light on the reality of primary health care assistance in the city of Londrina. It was possible to observe that the drug therapies of the sample were, in their majority, in accordance with current guidelines. However, efficient comorbidity control for these patients should be supplemented by non-medication forms of treatment, which although not discussed in this study are recommended by the Brazilian Hypertension Society.

In the population evaluated in the present study, the elderly did not show differences with regard to certain drugs; this should serve as a basis for the development or primary health care attention programs. By prescribing a given therapeutic conduct to a population, it is necessary to know individual limitations, community availabilities and treatment compliance conditions, in order to positively interfere in the quality of life of patients.

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