Survey and frequency of use of medicinal plants by hypertensive and diabetic patients

Levantamento e frequência de uso de plantas medicinais por pacientes hipertensos e diabéticos

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ABSTRACT

In addition to drug treatment, many patients use medicinal plants to treat hypertension and diabetes, often without knowledge of efficacy and safety. Thus, this research investigated the prevalence of the use of medicinal plants by diabetic and hypertensive patients and analyzed its association with sociodemographic variables. An epidemiological, descriptive and cross-sectional study was carried out with 300 hypertensive and diabetic patients attended by the Ouro Branco health unit, in Umuarama-PR, who answered a sociodemographic questionnaire and on the use of medicinal plants. Most patients were women, with low education and family income. Regarding the use of medicinal plants, 27 species were mentioned, but only 7.7% patients used them in a recommended manner. Hypertensive and diabetic patients make use of medicinal plants without knowledge of the correct preparation and the potential of these species to cause adverse effects.

Keywords: Antihypertensive. Chronic disease. Ethnopharmacology. Health promotion. Phytotherapy. Hypoglycemic.

RESUMO

Além do tratamento medicamentoso, muitos pacientes utilizam plantas medicinais para o tratamento da hipertensão e do diabetes, muitas vezes sem o conhecimento sobre a eficácia e a segurança. Assim, esta pesquisa investigou a prevalência do uso de plantas medicinais por pacientes diabéticos e hipertensos analisou sua associação com variáveis sociodemográficas. Foi realizado um estudo epidemiológico, descritivo e transversal com 300 pacientes hipertensos e diabéticos atendidos pela Unidade de Saúde Ouro Branco, em Umuarama-PR, que responderam a um questionário sociodemográfico e sobre o uso de plantas medicinais. A maioria dos pacientes eram mulheres, com baixa escolarização e renda mensal. Em relação ao uso de plantas medicinais, foram citadas 27 espécies, mas apenas 7,7% dos pacientes as utilizavam de maneira preconizada. Pacientes hipertensos e diabéticos fazem uso de plantas medicinais sem o conhecimento da forma correta de preparo e da potencialidade dessas espécies em causar efeitos adversos.

Palavras-chave: Anti-hipertensivo. Doença crônica. Etnofarmacologia. Fitoterapia. Hipoglicemiante. Promoção da Saúde.

INTRODUCTION

Systemic arterial hypertension (SAH) is one of the most common chronic non-communicable diseases worldwide, constituting an important risk factor for cardiovascular, cerebrovascular and renal diseases. Worldwide, SAH affects about 1 billion people and is responsible for more than 10 million deaths[1]. In Brazil, epidemiological studies indicate that the incidence of the disease reaches 32.5% (36 million) adult individuals and more than 60% of the elderly[2]. Still, directly or indirectly, SAH contributes to 50% deaths from CVD and in the ranking of causes of death, in the state of Paraná, CVD comes in the first place[3,4].

Another important risk factor for CVD is diabetes mellitus (DM), whose global prevalence in the adult population has almost doubled in recent decades, from 108 million cases in 1980 to 422 million cases in 2014, with estimates of 471 million people affected in 2035[5,6]. In Brazil, it is estimated that DM reaches 9.4% (14.3 million) people. However, this number can be even more worrying, since about 50% patients have not yet been diagnosed[7]. Still, between 2005 and 2015, DM rose from 7th to 5th place as one of the main causes of death in Brazil[8].

Together, DM and SAH are the leading causes of mortality and hospitalizations in the Unified Health System (SUS)[8]. The high morbidity and mortality related to SAH can be associated with the fact that the disease is often asymptomatic and silent, which hinders the initial diagnosis and leads to low adherence to treatment by the patient[9]. In fact, 33% hypertensive patients are unaware of their condition and among those who know it, only 56% are undergoing treatment. In addition to the problem that worldwide only 28% hypertensive patients have their blood pressure controlled[10]. Still, approximately 50% diabetic patients are unaware that they have the disease, which, in addition to low glycemic control, adverse effects and costs of drug therapy, difficulty in accessing the health system and lifestyle changes, make it difficult to control the disease[11-13].

Another point that should be highlighted is that, due to challenges for the control of SAH and DM, hypertensive and diabetic patients use medicinal plants for the treatment of these diseases[14]. In fact, the use of medicinal plants by the population is quite common in Brazil, given the high biodiversity and cultural plurality, which together have great knowledge related to the use of medicinal plants[15]. However, with the increasing use of medicinal plants, the number of adverse effects has also increased, as the plants are not free from toxicity and/or adverse reactions[16-18]. Still, because it is a mixture of active ingredients, medicinal plants can have several mechanisms of action and, when administered concomitantly with medications, they can interact and alter the efficacy and safety of drugs[19]. Given the above, the objective of this study was to verify the prevalence of the use of medicinal plants by diabetic and hypertensive patients as well as to analyze the association of the use of medicinal plants and sociodemographic variables.

For the presentation of this research, presentation of methods and results, as well as discussion of the data, an initiative called Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) was followed, which presents recommendations on what should be included in in a more accurate range of observational studies[20].

METHODOLOGY

STUDY AREA AND DESIGN

The survey was carried out in Umuarama, state of Paraná, southern Brazil, located at 430 meters above sea level, latitude 23° 47 '55 South and longitude 53° 18' 48 West. The municipality has an estimated population of 111,557 people, a demographic density of 81.67 inhabitants/km², a human development index (HDI) of 0.761 and 23 health units. At the Ouro Branco Health Unit, which serves 9 neighborhoods and assists 4,500 patients, an epidemiological, descriptive and cross-sectional study was carried out with all hypertensive and diabetic patients (300 individuals) who are attended by the Health Unit. The Ouro Branco Health Unit was chosen for this study

because it is the only one in the municipality that has 100% hypertensive and diabetic patients stratified in the area covered by the Family Health Strategy team. The study was approved by the Research Ethics Committee Involving Human Beings (CAAE 00821118.5.0000.0109) and was carried out after the clarification and signature of the Informed Consent Form delivered to each patient.

PATIENTS

Routine patients ($n = 300$), adult men and women, already diagnosed and undergoing drug therapy for diabetes and / or hypertension were selected. We included all hypertensive and / or diabetic patients monitored by the family health strategy, assisted by the municipal program of chronic non-communicable diseases, where risk stratification and monitoring of these patients are carried out.

RESEARCH TOOLS

Initially, patients were interviewed and answered an epidemiological questionnaire with sociodemographic variables in order to obtain relevant information about living conditions, as well as to draw a profile of diabetic and hypertensive patients who use medicinal plants in Umuarama. The questionnaire was mixed, with open and closed questions and included information about age, place of residence, family composition, education, profession, patient's income and physical activity, according to previously described data[21]. Then, patients were asked about the medications they use to treat diabetes and hypertension and about the use of medicinal plants as treatment and/or adjuvant therapy for these diseases. Questions related to medicinal plants addressed the place where the plant was obtained, which part was used, and how they are prepared and consumed. Information was collected during the consultation by the nurse at the Health Unit and during home visits by community health agents, by questioning the patients. Training for completing the questionnaires was carried out by the nurse at the health unit.

STATISTICAL ANALYSIS

Descriptive statistical analyses were carried out to distribute frequencies in the different quantitative variables analyzed, followed by the confidence interval (95% CI). After estimating the prevalence of use of medicinal plants, the strength of association was measured using the odds ratio (OR) and 95% confidence interval (CI) the independent variables (sociodemographic variables), considering the Pearson's chi-square test, for 2x2 tables. To analyze the effect of explanatory variables on the occurrence of use of medicinal plants, binary logistic regression analysis was applied. For this purpose, independent variables that presented a p-value <0.20 in the bivariate analysis were initially selected. Such variables were tested separately to calculate the gross OR. Subsequently, they were ordered according to their significance, entering the model using the forward stepwise selection method, considering the criterion for their retention or deletion, the changes suffered by the OR and the likelihood ratio. For statistical analysis, the specific software IBM Statistical Package for the Social Science (SPSS) version 25.0 (Windows; Chicago, IL, USA) was used. The statistical significance adopted was 5%.

RESULTS

EPIDEMIOLOGICAL PROFILE OF PATIENTS

The sociodemographic conditions of the patients are listed in Table 1. Of the 300 patients surveyed, the majority were women and were aged between 50 and 79 years. The most frequent marital status was married, followed by widower. As for color, most patients were white, followed by brown and black. The level of education indicated low schooling, since 88.8% patients had not completed high school; incomplete elementary school was the most frequent. It was also observed that 80.3% patients have a monthly income between 1 and 2 minimum wages. Most patients were hypertensive (68.3%), followed by hypertensive and diabetic (27.6%) and diabetics only (4%). Finally, in relation to the use of medicinal plants, most patients did not use it.

Table 1. Analysis of the sociodemographic conditions of diabetic and/or hypertensive patients treated at the Unified Health System at the Ouro Branco Health Unit, 2018, Umuarama, state of Paraná

(To be continued)

Factors	Women n (%)	Men n (%)	Total n (%)	95% CI
Age (years)				
<30	1 (0.33)	1 (0.33)	2 (0.66)	–
30-39	3 (1.00)	2 (0.66)	5 (1.66)	–
40-49	25 (8.35)	12 (4.00)	37 (12.35)	8.6 – 16.1
50-59	47 (15.68)	17 (5.66)	64 (21.34)	16.7 – 26.0
60-69	75 (25.00)	24 (8.00)	99 (33.00)	27.7 – 38.3
70-79	37 (12.34)	36 (12.01)	73 (24.35)	19.5 – 29.2
80-89	8 (2.66)	8 (2.66)	16 (5.32)	2.8 – 7.9
90-99	2 (0.66)	2 (0.66)	4 (1.32)	–
Marital status				
Living with a partner	3 (1.00)	1 (0.33)	4 (1.33)	–
Single	12 (4.00)	7 (2.33)	19 (6.33)	3.6 – 9.1
Married	116 (38.68)	73 (24.34)	189 (63.02)	57.5 – 68.5
Divorced	21 (7.00)	7 (2.33)	28 (9.33)	6.0 – 12.6
Widowed	46 (15.33)	14 (4.66)	60 (19.99)	15.5 – 24.5
Collor				
White	105 (35.00)	54 (18.00)	159 (53.00)	47.4 – 58.6
Black	7 (2.33)	5 (1.66)	12 (3.99)	1.8 – 6.2
Brown	86 (28.66)	43 (14.35)	129 (43.01)	37.4 – 48.6
Children				
0	6 (2.00)	8 (2.66)	14 (4.66)	2.3 – 7.1
1-2	70 (23.35)	33 (11.00)	103 (34.35)	29.0 – 39.7
3-4	76 (25.33)	35 (11.66)	111 (36.99)	31.5 – 42.5
5-6	24 (8.00)	12 (4.00)	36 (12.00)	8.3 – 15.7
7-8	9 (3.00)	6 (2.00)	15 (5.00)	2.5 – 7.5
> 8	13 (4.34)	8 (2.66)	21 (7.00)	4.1 – 9.9
Education				
Illiterate	24 (8.00)	6 (2.00)	30 (10.00)	6.6 – 13.4
Incomplete elementary school	124 (41.35)	76 (25.33)	200 (66.68)	61.3 – 72.0
Complete elementary school	21 (7.00)	12 (4.00)	33 (11.00)	7.5 – 14.5
Incomplete high school	2 (0.66)	2 (0.66)	4 (1.32)	–
Complete high school	20 (6.67)	6 (2.00)	26 (8.67)	5.5 – 11.9
Higher education	7 (2.33)	0 (0.00)	7 (2.33)	0.6 – 4.0

(Conclusion)

Factors	Women n (%)	Men n (%)	Total n (%)	95% CI
Income				
≤ 1	46 (15.34)	15 (5.00)	61 (20.34)	15.8 – 24.9
1-2	117 (39.00)	63 (21.00)	180 (60.00)	54.5 – 65.5
2-3	25 (8.35)	18 (6.00)	43 (14.35)	10.4 – 18.3
3-4	8 (2.66)	4 (1.33)	12 (3.99)	1.8 – 6.2
4-5	1 (0.33)	1 (0.33)	2 (0.66)	–
5-6	0 (0.00)	1 (0.33)	1 (0.33)	–
> de 6	1 (0.33)	0 (0.00)	1 (0.33)	–
Diseases				
Diabetes	6 (2.00)	6 (2.00)	12 (4.00)	1.8 – 6.2
Hypertension	135 (45.00)	70 (23.33)	205 (68.33)	63.1 – 73.6
Diabetes and hypertension	57 (19.00)	26 (8.67)	83 (27.67)	22.6 – 32.7
Use of medicinal plant				
Yes	78 (26.00)	22 (7.34)	100 (33.34)	28.0 – 38.7
No	120 (40.00)	80 (26.66)	200 (66.66)	61.3 – 72.0

CI: confidence interval.

n = 300 patients.

MEDICINAL PLANTS USED BY PATIENTS AND EDUCATIONAL TOOLS

Twenty-seven medicinal plants were cited by the interviewed patients. For the treatment of SAH, 13 species were mentionedabacate, alecrim, alho, amora, café de bugre, camomila, carqueja, chuchu, erva-cidreira, erva-doce, hortelã, melissa e urucum. No caso do DM, apareceram nove: alpiste, figueira, jambolão, jurubeba, losna, melão-de-São Caetano, neem, pau-tenente e pata de vaca. For the treatment of SAH and DM, 5 species were mentioned: alcachofra, capim-limão, graviola, limão e pitanga. Of the 27 plants mentioned, 48% are present in the National List of Medicinal Plants of Interest to the Unified Health System (RENISUS).

Regarding the origin, 71 medicinal plants were purchased in the backyard, 45 in stores, 14 on the street and one on the farm. The most used parts of the plants were the leaves, clove, flowers, seeds and fruits. The most common mode of preparation was infusion, followed by decoction and maceration. Re-garding the way patients use the plants, there were many ways, ranging from sporadic use to the consumption of 1 liter of tea per day, depending on the type of plant used (Table 2).

In order to determine whether the way patients prepared and used medicinal species was correct, all information about medicinal plants used by patients was compared with data from 81 scientific articles. Regarding the preparation of medicinal plants, it was observed that 56.66% patients prepared the plant correctly. Regarding use, 7.7% patients used the plant as recommended.

Table 2. Medicinal plants used by diabetic and / or hypertensive patients treated at the Unified Health System at the Ouro Branco Health Unit, 2018, Umuarama, state of Paraná

(To be continued)

Popular name	Scientific name	Origin of the plant	Purpose of use	Parts used	Preparation	Form of use	Number of citations
Abacate	*Persea Americana* Mill.	Street	SAH	Leaves	Infusion	When PA increases; 2 to 3 times a day	1
Alcachofra	*Cynara scolymus* L.	Market; Backyard	DM; SAH	Leaves; Powder	Infusion; Maceration	2 to 3 times a day	2
Alecrim	*Rosmarinus officinalis* L.	Backyard	SAH	Leaves	Infusion; Maceration	When PA increases; 1 to 3 times a day	6
Alho	*Allium sativum* L.	Market	SAH	Bulb or clove	Decoction; Infusion; Maceration	When PA increases; 1 to 3 times a day	7
Alpiste	*Phalaris canariensis* L.	Market	DM	Seeds	Infusion; Maceration	1 time a day	3
Amora	*Morus nigra* L.	Backyard	SAH	Leaves	Infusion	1 liter per day	2
Café de bugre	*Cordia ecalyculata* Vell.	Backyard	SAH	Leaves	Infusion	1 to 3 times a day	1
Camomila	*Chamomilla recutita* L.	Market	SAH	Flowers; Leaves; sachet	Decoction; Infusion	When PA increases; 1 liter per day; at night	8
Capim-limão	*Cymbopogon citratus* (DC.) Stapf	Backyard; street; farm	DM; SAH	Leaves and root	Decoction; Infusion; Maceration	When PA increases; 1 to 4 times a day	11
Carqueja	*Baccharis trimera* (Less.) DC.	Backyard	SAH	Leaves	Infusion	1 to 3 times per week	1
Chuchu	*Sechium edule (Jacq.) Sw.*	Market; Backyard	SAH	Leaves; fruit	Decoction; Infusion; Maceration	When PA increases; 1 to 3 times a day	6
Erva-cidreira	*Lippia alba* (Mill.) N.E.Br. ex Britton e P.Wilson	Market; Backyard; street	SAH	Leaves; Stalks	Decoction; Infusion; Maceration	When PA increases; 1 liter per day; before sleep	28
Erva-doce	*Pimpinella anisum* L.	Market; Backyard	SAH	Flowers; Leaves; seeds	Decoction; Infusion	Daytime; in the afternoon and at night	3
Figueira	*Ficus carica* L.	Backyard	DM	Leaves	Infusion	Sporadic	1
Graviola	*Annona muricata* L.	Market; Backyard; street	DM; SAH	Leaves	Decoction; Infusion	Daytime; in the morning	5
Hortelã	*Mentha spicata* L.	Market; Backyard	SAH	Leaves	Infusion	When PA increases; at night, in the morning	4
Jambolão	*Syzygium cumini* (L.) Skeels	Backyard; street	DM	Leaves	Decoction; Infusion	Daytime; after lunch; 1 to 4 times a day	5
Jurubeba	*Solanum paniculatum* L.	Market	DM	Fruit	Decoction	Daytime	1

(Conclusion)

Popular name	Scientific name	Origin of the plant	Purpose of use	Parts used	Preparation	Form of use	Number of citations
Limão	*Citrus limon*(L) Osbeck	Market; farm	DM; SAH	Fruit	Infusion; Maceration	1 to 2 times a day	3
Losna	*Artemisia absinthium L.*	Backyard	DM	Leaves	Maceration	In the morning	1
Melão-de-São Caetano	*Momordica charantia* L.	Street	DM	Leaves	Infusion	2 times a day	1
Melissa	*Melissa officinalis* L.	Backyard	SAH	Leaves	Infusion	1 to 2 times a day; 1 liter per day	3
Neem	*Azadirachta indica A. Juss.*	Backyard	DM	Leaves	Maceration	Sporadic	1
Pau Tenente	*Quassia amara* L.	Market; Backyard; street	DM	Bark	Decoction; Infusion; Maceration	At night; in the morning; sporadic	6
Pitanga	*Eugenia uniflora L.*	Backyard; street; farm	DM; SAH	Leaves	Decoction; Infusion	In fasting; 1 to 3 times a day; sporadic	7
Urucum	*Bixa orellana* L.	Backyard	SAH	Leaves	Infusion	Daytime	1
Pata de Vaca	*Bauhinia forficata* Link	Market	DM	Leaves	Infusion	At night	1

DM: diabetes mellitus; SAH: systemic arterial hypertension; SBP: systolic blood pressure.

A binary logistic regression was performed to verify whether the independent variables are predictive of the use of medicinal plants. According to the inclusion criterion, the variables age, number of children, sex and presence of disease were tested ($p < 0.20$) (Table 3). The variables age and number of children remained non-significant in the model ($p > 0.05$), so they were removed. Thus, the prevalence of sex and the presence of disease were associated with the use of medicinal plants. The prevalence found was higher in women ($p = 0.002$) and in those who had two or more diseases ($p = 0.018$). This association remained statistically significant when submitted to the logistic regression analysis.

Table 3. Use of medicinal plants related to sociodemographic variables of hypertensive and diabetic patients at the Ouro Branco Health Unit, 2018, Umuarama, state of Paraná

Variables	Use of medicinal plants				
	N	%	$\chi^2_{\text{p-value}}$	OR	95% CI
Age					
< 60 years (n = 108)	29	26.85		1	
≥ 60 years (n = 192)	71	36.97	0.075	1.598	0.953 – 2.680
Gender					
Male (n = 102)	22	21.56		1	
Female (n = 198)	78	39.39	0.002*	2.364	1.362 – 4.102
Msrital status					
With a partner (n = 193)	60	31.08		1	
No partner (n = 107)	40	37.38	0.268	1.323	0.806 – 2.174
Children					
No (n = 14)	2	14.28		1	
Yes (n = 286)	98	34.26	0.160	2.852	0.620 – 13.121
Education					
Some schooling (n = 270)	89	32.96		1	
Illiterate (n = 30)	11	36.66	0.683	1.177	0.537 – 2.581
Income					
Greater than a minimum wage (n = 239)	77	32.21		1	
Up to a minimum wage (n = 61)	23	37.70	0.358	1.316	0.732 – 2.366
Disease					
One disease (n = 217)	54	24.88		1	
Two or more (n = 83)	46	55.42	0.018*	1.810	1.106 – 2.963

CI: confidence interval; N: number of patients; OR: Odds ratio. * P <0.05.

In Table 4, when compared to individuals who do not use medicinal plants, there was a higher probability of use among women (OR = 2.364 [95% CI: 1.359, 4.333]) when compared to men, as well as among those with the presence of two or more diseases (OR = 1.810 [95% IC: 1.100 – 2.999]) when compared to those who had at least one disease. However, the combination of women and the presence of two or more diseases, despite remaining significant in the logistic regression model (x^2 = 15.473; p = 0.0001; R^2 = 0.07), did not maximize the probability for the use of plants.

Table 4. Logistic regression of factors associated with the use of medicinal plants by hypertensive and diabetic patients at the Ouro Branco Health Unit, 2018, Umuarama-PR

Variable	Use of plants				
	N	%	OR$_{raw}$	OR$_{Adjusted}$	95% CI
Gender					
Men (n = 102)	22	21.56	1	1	
Women (n = 198)	78	39.39	2,364	2,370	1,359 – 4,133
Disease					
One (n = 217)	54	24.88	1	1	
Two or more (n = 83)	46	55.42	1,810	1,816	1,100 – 2,999

CI: confidence interval; N: number of patients; OR: Odds ratio

DISCUSSION

This study investigated the sociodemographic profile and the use of medicinal plants by 300 hypertensive and / or diabetic patients at a Basic Health Unit in Umuarama, state of Paraná. Most patients were women, aged between 50 and 79 years, married, with low education and monthly income between 1 and 2 minimum wages. Most patients were hypertensive. Regarding the use of medicinal plants, 27 species were mentioned. However, 56.66% patients prepared the plant correctly and only 7.7% patients used the plant as recommended for the control of systemic arterial hypertension and diabetes mellitus, chronic non-communicable diseases that most commonly affect elderly people and have linearly increasing incidence according to age[22]. Along with pharmacological treatment, medicinal plants are used by the population as an auxiliary therapy for the control of these diseases. While there is popular knowledge, it is important to note that even though they are natural, few people know the therapeutic and / or toxic effects that medicinal plants can have on the body[23]. In fact, about 91% patients who use medicinal plants believe that medicinal plants do not cause adverse effects, since they are natural products, and are unaware of the occurrence of interaction with synthetic drugs or other medicinal plants, showing the lack of more in-depth knowledge[23].

Since 1978, the World Health Organization (WHO), through the Alma-Ata Declaration, has been in favor of the use of medicinal plants by the world population[15]. In Brazil, in 2006, the National Policy for Integrative and Complementary Practices in the Unified Health System (PNPIC) was approved, whose objective is to encourage the use of natural resources, such as medicinal plants, for example, for disease prevention and recovery of health through safe and efficient technologies[15]. In 2009, the Ministry of Health prepared the National List of Medicinal Plants of Interest to the Unified Health System (RENISUS), with 71 medicinal plants with therapeutic potential to guide the production and research development[24]. However, with the increasing use of medicinal plants the cases of adverse effects have also increased, as the plants are not free of toxicity and / or adverse reactions and can interact with other medications used concomitantly[16-18].

Family income and schooling are factors that drive the use of medicinal plants for the cure and/or prevention of diseases. Traditional medicine has remained the most accessible source of treatment for poor populations and the primary health care system, especially for resource-poor communities, where the use of medicinal plants is the only means of treatment[25]. Still, studies show that individuals with less formal education make more use of medicinal plants[26]. According to these data, of the participants

in this research, just over 80% had low monthly income, not exceeding 2 minimum wages, suggesting that greater familiarity with the medicinal plants by people with low income and low level of education may be related to low purchasing power and search for alternative treatments.

In addition to the influence of family income and schooling, another factor that interferes with the use of plant species is gender. Data in this research largely reflects the gender divisions related to the use of medicinal plants, since women were 2.3 times more likely to use plants than men. In fact, historically, gender divisions of labor predominate across communities. Men are often more involved in work outside the home, while women are generally more committed to managing local resources, such as gardens and home gardens[27].

In this research, patients use medicinal plants without adequate control of the origin and form of processing and use of the plant. This is a worrying because depending on the origin, contamination of the plant by heavy metals, microorganisms or pesticides may occur[28-30]. Regarding the purchase of the medicinal plant, it is noteworthy that the supplier often has difficulties in correctly identifying the species and many plants are commercialized without describing their pharmacological and toxicological properties[31]. In addition, the form of preparation of the medicinal plant is an important factor, since inadequate preparation can decrease the therapeutic potential and increase the risk of developing acute or chronic toxic effects[30].

In addition to these factors, to ensure the safe use of medicinal plants, it is important that the user carefully choose the part of the plant to be used, since there are different concentrations of biologically active metabolites in each part of the plant, with different degrees of therapeutic and toxic activity. Still, the form of preparation should be considered since many metabolites are thermosensitive and should not be subjected to a decoction process. In this way, guidance to the patient on all these pillars that support the safe use of medicinal plants minimizes the risk of undesirable effects[28,31].

In this way, health education, especially on the use of medicinal plants, is essential. Health education groups aim to promote health, where the patient, through educational actions, associates the concept of health and independence. This study found that women and those affected by more than one disease are the groups that use medicinal plants most frequently. Education, especially for groups of individuals with a greater habit of using medicinal plants, is the form of excellence in health promotion and reflects one of the most effective ways to build knowledge, since it is the moment of joining scientific knowledge with the popular knowledge involved in the socio-cultural scenario[32].

It is also noteworthy that many patients do not report to the physician that they use medicinal plants, which can contribute to the occurrence of drug interactions[33,34]. Having knowledge about the wide use of medicinal plants by this special population of patients, the physician can make a direct approach to the patient about the use of medicinal plants with antihypertensive and hypoglycemic purposes, which contributes to a safer and more effective treatment. Thus, aiming at the guidance of health professionals, the use of a Practical Guide on medicinal plants used by hypertensive and/or diabetic patients can be an excellent tool for education[35]. This material can significantly contribute to updating and training health professionals assisting hypertensive and diabetic patients and who may be able to prescribe these plant species as adjuvant therapy.

To reduce mortality and morbidity and to improve quality of life, the active participation of the patient, family and professionals working in health programs is necessary[9]. Health education is seen as a relationship between health professionals and patients that makes it possible to build knowledge and encourage people's autonomy in caring for their health[8]. Bearing in mind that the control of SAH and DM is a great challenge, health education generates changes in users and thus improves the patient's health condition[36]. Through group meetings, lectures, educational actions, and management of chronic illness, through the intervention of health education,

the Family Health Strategy (FHS) is the main responsible for changes in patients' attitudes[36]. The use of an Instructional Primer on the indications, forms of use, precautions, and indications of medicinal plants for hypertensive and diabetic patients can assist in this health education process[37].

This study carried out a survey of medicinal plants used by all hypertensive and diabetic patients in a Basic Health Unit in Umuarama, state of Paraná. The sociodemographic characteristics of these patients were identified and many of them use the plants incorrectly, highlighting the need for greater attention from health professionals on this behavior, since adverse effects and/or drug interactions with the drugs used for the treatment may occur. control of these chronic non-communicable diseases. However, despite the large sample of this study, for the knowledge of medicinal plants used by hypertensive and diabetic patients, it would be necessary to include patients from other health units in this study.

CONCLUSION

Hypertensive and diabetic patients at the Ouro Branco Health Unit use 27 medicinal plants without knowing the correct way to prepare these species and their potential to cause adverse effects.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest in this work.

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