



Use of medicinal plants by people with hypertension

Uso de plantas medicinais por pessoas com hipertensão

Uso de plantas medicinales por personas con hipertensión

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Objective: to describe the use of medicinal plants in the treatment of high blood pressure for people with hypertension enrolled in the Family Health Program in a city in Pernambuco State. **Methods:** a descriptive study, whose data were obtained through semi-structured interview script applied to 172 patients. **Results:** the use of medicinal plants for hypertension control was reported by 39.5%, of which 57.4% used only one medicinal plant. Among the species cited, there was predominant use of chayote [*Sechium edule* (Jacq.) Sw.-34.8%]. **Conclusion:** medicinal plants constitute an adjunctive therapy in the treatment of hypertension. However, there is need for monitoring of handling and listed species.

Descriptors: Hypertension; Plants, Medicinal; Phytotherapy; Ethnobotany.

Objetivo: descrever o uso de plantas medicinais no tratamento da hipertensão arterial por pessoas com hipertensão, cadastradas no Programa Saúde da Família em um município do interior de Pernambuco. **Métodos:** estudo descritivo, cujos dados foram obtidos através de roteiro de entrevistas semiestruturado aplicado a 172 pacientes. **Resultados:** o uso de plantas medicinais para controle de hipertensão foi relatado por 39,5%, dentre os quais 57,4% usavam apenas uma planta medicinal. Entre as espécies citadas predominou uso do chuchu [*Sechium edule* (Jacq.) Sw.-34,8%]. **Conclusão:** plantas medicinais constituem terapia adjuvante no tratamento de hipertensão, entretanto exigem monitorização do manuseio e espécies elencadas.

Descritores: Hipertensão; Plantas Medicinais; Fitoterapia; Etnobotânica.

Objetivo: describir el uso de plantas medicinales en el tratamiento de la hipertensión arterial por personas con hipertensión inscritas en el Programa de Salud Familiar en una ciudad del interior de Pernambuco. **Métodos:** estudio descriptivo, cuyos datos se obtuvieron a través de guía de entrevistas semiestructuradas aplicada a 172 pacientes. **Resultados:** el uso de plantas medicinales para el control de la hipertensión fue informado por 39,5%, de los cuales 57,4% utiliza sólo una planta medicinal. Entre las especies citadas predominó el uso de chayote [*Sechium edule* (Jacq.) Sw.-34,8%]. **Conclusión:** plantas medicinales constituyen terapia coadyuvante en el tratamiento de hipertensión, sin embargo requiere monitoreo del manejo y de las especies seleccionadas.

Descritores: Hipertensión; Plantas Medicinales; Fitoterapia; Etnobotánica.

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Introduction

Brazil has a rich history of use of medicinal plants in the treatment of the population's health problems. This use is built based on popular experience and is transmitted through generations⁽¹⁾. Soothing and anti-hypertensive properties of certain plants favor their use to control hypertension. As an example, there are the shell ginger (*Alpinia zerumbet* - Pers), which contains active ingredients that are anti-hypertensive and appear to inhibit the influx of calcium through calcium channels operated by receptors and voltage⁽²⁾; the lemon balm (*Melissa officinalis* L.), which has proven effective for being a powerful calming and soothing antispasmodic, also showing analgesic activity with low toxicity⁽³⁾; the lemon grass (*Cymbopogon citratus* (DC) Stapf), that is antihypertensive and diuretic⁽⁴⁾; the passion fruit (*Passiflora* sp.) which has depressant action of the central nervous system and is a muscle relaxing, which probably results in a decrease in systemic hypertension, when its increase is caused by nervous system disorders such as anxiety and nervousness⁽²⁾.

In Brazil, from the 1980s, several herbal therapy actions and programs were implemented in public health. In 2006 it was established the National Policy on Integrative and Complementary Practices in the National Health System to stimulate the use of herbal medicine for disease prevention through effective and safe technologies⁽⁵⁾. It was also implemented in Brazil the National Policy of Medicinal Plants and Herbal Medicines, which establishes guidelines and priority areas for the development of actions towards common goals aimed at ensuring secure access and rational use of medicinal plants and herbal medicines in our country⁽⁶⁾.

In 2010, it was published the Ordinance No. 886 of the Ministry of Health, establishing, under the National Health System, the *Farmácia Viva* (Live Pharmacy). This program in the context of the National Pharmaceutical Assistance Policy will hold all stages, from cultivation, collection, processing, storage of

medicinal plants to handling and dispensation of magisterial preparations and workshops on medicinal plants and herbal medicines⁽⁷⁾.

The toxicity profile of most herbal and medicinal plants currently used for self-medication or by medical prescription is not known⁽⁸⁾ and from a scientific point of view, many plants have aggressive substances and therefore should be used by respecting their toxicological risks.

Health professionals such as doctors and nurses who have the intention of transforming the use of medicinal plants in a concrete practice to be applied in the Family Health Strategy should have incorporated this knowledge in an attempt to delimit the practice of care, including based on experiences about the ethical and legal implications of the applicability of plants in health care. However, for this to happen, local and state governments must invest in this area, providing training to professionals, as well as investment of basic, physical, and structural support to implement maintenance of such practices⁽⁹⁾. In addition, the nurse may be an expert in herbal medicine, as envisaged in the Federal Nursing Council Resolution 197/1997, which establishes and acknowledges Alternative Therapies as a specialty and / or qualification of nursing professionals⁽¹⁰⁾.

The objective of this study is to describe the use of medicinal plants in the treatment of high blood pressure for hypertensive patients registered in the Family Health Program in a city in the Pernambuco State.

Method

This is a descriptive study, which took place in a city in the Pernambuco State from January to April 2011. The study population consisted of 172 hypertensive patients, users of the National Health System, served in two Family Health Units, located in Pirituba district. Inclusion criteria were: being hypertensive registered at the Family Health Unit, and being able to answer the survey instrument. People

with diabetes were excluded.

To identify patients, it was conducted a survey of users and then home visits and interviews were conducted, using a semi-structured script, containing sociodemographic information, and also regarding use or non-use of medicinal plants, medicinal plants used, knowledge of the plant used, form of preparation and use, source of acquisition and source of indication.

Data were processed using Epi Info 6.04 program, with frequency distribution, mean \pm standard deviation and proportions.

The study was approved by the Research Ethics Committee of the Health Sciences Center of the Federal University of Pernambuco, Protocol 424/10.

Results

There was prevalence of participants older than 60 years (59.9%); 36% were male and 64% were

female, with higher mean age among women (62.03 ± 14.99 vs. 59.71 ± 15.62 years old, with $p > 0.05$).

Regarding the time of hypertension, 36.6% had been living with the disease for more than ten years with high practice of healthy habits of life, such as engaging in physical activity (58.7%), abstaining from smoking (80, 8%), no alcohol consumption (86.0%), salt restriction (93.6%) and fat restriction (67.7%) in the diet.

The survey revealed that the use of medicinal plants for control of hypertension was reported by 39.5% of respondents (predominantly women, 70.6%), of which 57.4% were using a single medicinal plant as adjunctive to the antihypertensive allopathic treatment. A total of 112 medicinal plants were reported by 68 patients, of whom 38 were using a single species. Among the 30 individuals using herbal associations, 74 citations were observed at a rate of about 2.46 medicinal plants per patient.

Table 1 - Characterization of medicinal plants with reports of hypotensive activity used by hypertensive patients

Family	Scientific name	Popular name	(%)*	References confirming anti-hypertensive action
Cucurbitaceae	<i>Sechium edule</i> (Jacq.) Sw	Chayote	34.8	Costa ⁽¹¹⁾
Labiatae	<i>Mentha</i> sp.	Mint	21.4	Battisti et al ⁽¹²⁾
Poaceae	<i>Cymbopogon citratus</i> (DC.) Stapf	Lemon grass	16.0	Maynard et al ⁽¹³⁾
Verbenaceae Lamiaceae	<i>Lippia alba</i> (Mill.) N. E. Br; <i>Melissa officinalis</i> L.	#Lemon balm	6.2	Cunha et al ⁽²⁾
Cucurbitaceae	<i>Cucumis sativus</i> L.	Cucumber	4.4	Jezler et al ⁽¹⁴⁾
Passifloraceae	<i>Passiflora edulis</i> Sims	Passion fruit	1.7	Cunha et al ⁽²⁾ ; Maynard et al ⁽¹³⁾
Rutaceae	<i>Citrus sinensis</i> (L.) Osbeck	Sweet orange	1.7	-
Zingiberaceae	<i>Alpinia zerumbet</i> (Pers.) B.L.Burt & R.M.Sm.	Shell ginger	1.1	Jezler et al ⁽¹⁴⁾ ; Gorzalczany et al ⁽¹⁵⁾
Asteraceae (Compositae)	<i>Artemisia vulgaris</i> L.	#Mugwort	0.8	Brito et al ⁽¹⁶⁾
Acanthaceae	<i>Justicia pectoralis</i> Jacq			

*Percentage considering amounts of prescription items, where 38 citations were to single therapy and 74 to combination of medicinal plants (30 patients).

#Absence of herbarium specimens or inconclusive herbarium specimens in the definition of genre and species

Among the species cited, there was predominance of use of chayote (*Sechium edule* (Jacq.) Sw, 34.8%), followed by squaw mint (*Mentha pulegium* L., 21.4%) and lemon grass (*Cymbopogon citratus* (DC.) Stapf, 16.1%), (Table 1). As monotherapy, there was prevalence of the use of chayote (*Sechium edule* (Jacq.) Sw., 47.4%), followed by lemon grass (*Cymbopogon citratus* (DC.) Stapf, 18.40%) and squaw mint (*Mentha pulegium* L., 18.4%). Among patients using associations, the most prevalent combination occurred between chayote and squaw mint (23.3%), whose use was simultaneous, in combined and/or separate preparations.

Table 2 - Characterization of use of medicinal plants with reports of hypotensive activity used by hypertensive patients

Characterisation of the medicinal plants	Use of single plant n(%)	Use of combination of plants (%)
Prevalent species		
Chayote	82(47.4)	49(28.4)
Mint	32(18.4)	40(23.0)
Lemon grass	32(18.4)	26(14.9)
Shell ginger	10(5.3)	14(8.1)
Source		
Cultivated	91(52.6)	65(37.8)
Acquired	82(47.4)	107(62.2)
Part used		
Leaf	63(36.8)	102(59.5)
Fruit (pulp)	32(18.4)	12(6.8)
Peel	45(26.3)	19(10.8)
Fruit with shell	-	30(17.6)
Source of indication		
Health professional	163(94.7)	33(18.9)
Friend / acquaintance	10(5.3)	42(24.3)
Healers	-	91(52.6)
Method of preparation		
Infused	50(28.9)	61(35.6)
Decoction	104(60.5)	68(39.7)
Macerated	10(5.3)	3(1.4)
Feed	-	3(1.4)
Storage		
Preparation at time of use	82(47.4)	63(36.5)
Use up to 24 hours after preparation	91(52.6)	109(63.5)
Conservation		
Refrigerator	41(23.7)	60(35.1)
Room temperature	131(76.3)	112(64.9)

The main form of acquisition of medicinal plants was by extraction or cultivation (52.6%) among individuals who used only a single medicinal species, whereas among those who combined herbs, there was prevalence of obtaining them from other people (62.2%). The leaves were parts of the plants most mentioned in the extemporaneous preparation of formulations, whose indication of use varied between the predominance of health professionals in the orientation of use of a single species (94.7%) or indicated by healers (52.7%) among those patients who chose combinations of medicinal herbs. The preparation by decoction prevailed between the two groups, whose prevalent way of conservation of the preparations was at room temperature, for a period of up to 24 hours - Table 2.

It was observed frequency of 44.74% in the preparation of chayote by decoction, followed by the full fruit juice (28.9%), whereas decoction was also the prevalent form of preparation for the holy grass (72.2%), shell ginger (75.0%) and lemon balm (57.1%). Only the squaw mint had the infusion as a predominant way of preparation (75.0%).

The use of whole fruit of chayote (53.8%) prevailed in the use of this product for treatment of hypertension, followed by pulp (20.5%), peel (17.9%) and leaves (7.6%). Among the patients who used the shell ginger, there was prevalence by leaves (87.5%), as well as the use of cucumber pulp (60.0%), use of the lemongrass leaves (94.4%), squaw mint leaves (75.0%) and lemon balm leaves (100.0%).

The decoction was the prevalent method of preparation of the leaves (27.9%) and peels (9.9%) of fruits such as chayote, whereas the preparation of juices (9.0%) predominated with full fruit, composed of pulp and peel.

The restricted use of medicinal plants to control hypertension was reported by 14.7% of patients. Among those patients using medicinal plants as a complementary therapy to antihypertensive agents in monotherapy, there was prevalence of concurrent uses of chayote and captopril (30.8%) and chayote

and hydrochlorothiazide (29.4%). Association of anti-hypertensive agents together with medicinal plants was prevalent with chayote, hydrochlorothiazide and captopril (19.1%).

In the present study it was also observed the lack of hygiene in the cultivation of medicinal plants, whose planting occurred in contaminated sites, near toilets, laundries, drains and without protection of surrounds.

Discussion

Hypertension is a condition with low rates of control and is among the highest rate of morbidity with low adherence to treatment, despite the rich therapeutic arsenal available in the market⁽¹⁷⁾. The high number of patients aged over 60 years is characteristic of people suffering from hypertension, a fact corroborated by the VI Brazilian Guidelines on Hypertension, which suggests a relationship between elevated blood pressure and age, with a prevalence of systemic hypertension of more than 60. 0% among those aged over 65⁽¹⁸⁾.

The number of women using medicinal plants in the sample (70.0%) is justified because these are holders of this knowledge and have specific function in the transmission process. Usually, between genders, women are the ones that tend to dominate more knowledge regarding the use of medicinal plants, whereas men, due to their distance to home because of work activities, are holders of the knowledge of other types of medicinal plants⁽⁸⁾.

The antihypertensive action of chayote (*Sechium edule*) was described by a study conducted in Minas Gerais⁽¹¹⁾. In preclinical testing, the pulp and peel of fruits led to a decrease in blood pressure. This provides evidence that may explain its popular use for this purpose, whose hypotensive effect seems to be associated with the vasorelaxant effect obtained from the hydroalcoholic extract of the root of this plant⁽¹⁹⁾.

Several studies confirm the use of the shell ginger (*Alpinia zerumbet*) as hypotensive⁽¹⁴⁻¹⁵⁾. The

acute hypotensive effect of the essential oil of *A. zerumbet* has been described by some authors⁽¹⁵⁾, who determined the antihypertensive and vasodilator activity as well as the clinical toxicology of *A. zerumbet*, by administering extracts of the species in the form of powdered and encapsulated dry leaves in patients with essential hypertension, stage I (mild) or II (moderate). The activity is justified by the presence of flavonoids in the leaf extract of *A. zerumbet* that contribute to anti-hypertensive activity. In addition, the antihypertensive effect of the hydroalcoholic extract of *A. zerumbet*, observed in folk medicine, is due to vasodilation with subsequent decrease in peripheral vascular resistance⁽¹⁵⁾.

The lemongrass (*Cymbopogon citratus*)^(9,20) has antihypertensive and diuretic action⁽¹³⁾. Some studies already suggest the antihypertensive action of lemongrass, however the use of decoction of the leaves only had diuretic effect when administered orally, which seemed to occur for independent events of the direct action on the vessels or cardiac depression^(14,20). The proven soothing, mild spasmolytic and diuretic action of *Cymbopogon citratus* is assigned to the citral present in the essential oil and may contribute to its antihypertensive effect⁽²⁰⁾.

The medicinal plant called mugwort but the study population does not have compatible features with *Justicia pectoralis* Jacq., but with *Artemisia vulgaris* L. A study shows that aqueous extracts of *A. vulgaris* have antihypertensive activity in rats⁽¹³⁾.

The species *Lippia alba* (lemon balm) was also cited in a study that shows that lemon balm promotes a relaxing effect on vessels, similar to calcium blockage in the cardiovascular system⁽²⁾.

There were no scientific findings on the use of canary grass (*Phalaris canariensis*), cucumber (*Cucumis sativus*), anise (*Pimpinella anisum*) and sweet orange (*Citrus sinensis*) in hypertension.

It was found lack of criteria in the cultivation of medicinal plants in this study. Therefore, it is extremely important that health professionals promote a systematized monitoring and the organization of

meetings with the community aimed at the proper use of medicinal plants, as well as clarification of the benefits of planting in appropriate areas, that is, away from polluted sites as garbage, sewage, road, pens, protected from the access of animals and without pesticides.

Conclusion

The study has limitations that should be taken into account in interpreting the results. That is because this was a cross-sectional study in which cause and effect relationship cannot be determined; the population was very homogeneous in the ethnic point of view, although the sample has been carefully selected to exclude confounding factors in the analysis; the fact that the interviews were conducted in homes demanded more time for collections, causing operational difficulties in obtaining the sample.

The applicability of results of this study refers to information for planning the creation of new public policies, linked to Hiperdia Program and disclosure of the rational use of medicinal plants for health professionals in an attempt to delimit the practice of care.

It was found a higher prevalence of women using the medicinal plants as adjuvant treatment of hypertension. Of the nine listed plants, chayote, mint, lemongrass and shell ginger had its most prevalent use, with antihypertensive properties described in the literature.

Herbal medicine is one of the most known complementary health practices and used in public services in Brazil. In some Brazilian cities, it is observed growing interest of health professionals to be trained in the area, as a way of acquiring new tools, such as herbal medicine, in order to strengthen their ties with users and their families and community, to expand the extent of their prescription and to help developing local projects and programs for the invention and innovation in health care.

The ethnobotanical knowledge is paramount

to subsidize experimental studies to clarify the therapeutic potential/toxicity profile of these medicinal plants and thus expand the therapeutic options for treating high blood pressure, which is disease of high prevalence in the world population.

The correct use of medicinal plants combined with responsibility for sustainable cultivation and species recognition for successful application and handling are necessary for successful treatment and, in this context, health professionals need to be engaged, especially those tied to primary health care services.

Collaborations

Nunes MGS and Martins RD contributed to the design, data collection, analysis, data interpretation, article writing and final approval of the version to be published. Bernardino AO contributed to writing the article and final approval of the version to be published.

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