Original Article

Traditional use of medicinal plants by elderly

Uso tradicional de plantas medicinais por idosos

Alexandre Rocha Alves Pereira[1], Ana Paula Machado Velho[2], Diógenes Aparício Garcia Cortez[2], Laura Ligiana Dias Szerwieski[2], Lucia Elaine Ranieri Cortez[2]

Objective: identify the traditional use of medicinal plants by the elderly. **Methods:** exploratory and descriptive study conducted in the Intermunicipal Consortium on Health. Three hundred and fifty-one questionnaires were applied to the elderly to survey socio-demographic information and issues related to plants. **Results:** the use of plants was reported by 78.4% of the elderly, and these were collected in backyards. The most often cited plants were mint, boldo, fennel, lemongrass and chamomile. Regarding the reason for use, 33.3% participants said that "it's not harmful to health", 61.8% usually indicate the use to other people. Most elderly make use of plants in a safe manner, and these are present in the daily lives of these people as a therapeutic method. **Conclusion:** the elderly make use of medicinal plants as an important therapeutic resource.
Descriptors: Plants, Medicinal; Aged; Health of the Elderly; Nursing.

Objetivo: identificar o uso tradicional de plantas medicinais por idosos. **Métodos:** estudo exploratório-descritivo realizado em Consórcio Intermunicipal de Saúde. Foram aplicados 351 questionários aos idosos, contendo informações sociodemográficas e questões relacionadas às plantas. **Resultados:** foi relatado o uso de plantas por 78,4% dos idosos, estas adquiridas em quintais. As mais citadas: hortelã, boldo, erva doce, capim limão e camomila. Com relação ao motivo de uso, 33,3% afirmaram "não fazer mal à saúde", 61,8% indicavam o uso para outras pessoas. A maioria dos idosos utiliza-se das plantas de forma segura, estando presentes no cotidiano destas pessoas como uma forma terapêutica. **Conclusão:** os idosos fazem uso das plantas medicinais, como um importante recurso terapêutico.
Descritores: Plantas Medicinais; Idoso; Saúde do Idoso; Enfermagem.

¹Universidade Norte do Paraná. Arapongas, PR, Brazil.
²Centro Universitário Cesumar. Maringá, PR, Brazil.

Corresponding author: Laura Ligiana Dias Szerwieski
Avenida Guedner, 1610, Jardim Aclimação, CEP: 87050-900. Maringá, PR, Brazil, E-mail: laura.enfer@gmail.com

Introduction

The use of medicinal plants dates back to the earliest times of humanity. There are reports of the use of plants for therapeutic purposes around 2000 BC, many plants used at that time are used the same way today. In the Western civilizations, the first records are from 1500 BC in the Egyptian manuscript "*Ebers Papyrus*" Through which the old world became aware of an Egyptian Pharmacopoeia containing various plant species[1].

Through observation and experimentation, therapeutic properties of certain plants were discovered and propagated as part of popular culture in primitive peoples. In Brazil, the knowledge brought by the Jesuits associated with the knowledge of indigenous people helped in controlling epidemics that afflict them, and this made that a series of native plants started to be used and incorporated into our culture[2].

The use of medicinal plants is an important resource for treatment, cure and prevention of numerous diseases and is often guided by the accumulated body of knowledge arising from the direct relationship between individuals and the environment. Ethnobotany is the science responsible for the study of the relationship between medicinal plants and men; it is as an interdisciplinary science whose complexity and performance involves different areas of knowledge[3].

The guidance to users of medicinal plants is a common practice in many professions, and nursing is one of the most active areas in this context. Long ago the use of herbal and natural therapies has inspired the work of nurses and this fact that led to the recognition of this practice by the Nursing Federal Council under Opinion nº 004/95 of the Resolution 197/97 and of the Integrative and Policy on Complementary Practices in Health[4].

It is important to note that the implementation of the National Policy on Integrative and Complementary Practices encourages and predict the research on medicinal plants and seeks to promote, in a safe way, the provision of services within the herbal medicine in public health by qualified health professionals[4].

In Brazil, the use of medicinal plants is common among a significant part of the population. It was found that 80.0% of the Brazilian population uses, or has already used before, medicinal plants in their daily lives and of this total, most consist of people aged at 60 or older. There are gaps to be filled with regard to the use of medicinal plants, due to contraindications, overdose and/or drug interactions or even the overvaluation of plants and lack of knowledge about toxic effects. Thus, this study is justified because it has become necessary to know how these medicinal plants are used, as it is fact that the Brazilian population has undergone an accelerated aging process in recent decades[5].

Thus, this study aimed to identify the traditional use of medicinal plants by the elderly.

Methods

Descriptive and exploratory study that relied on the voluntary participation of elderly regularly attending the Intermunicipal Public Consortium on Health of the North of Paraná that has the aim to seek joint solutions to health problems, encompassing 30 municipalities of the Association of Municipalities of the North of Paraná.

The sample size calculation assumed a confidence level of 95.0%, margin of error of 5.0%, and was based on calculations made in the *Statdisk* software Version 8.4. The sample size was 351 elderly ≥ 60 years.

The researchers identified the elderly that attend the Intermunicipal Public Consortium on Health of the North of Paraná, made an initial approach explaining the research goals and made an invitation to join. In case of acceptance, the consent form was signed and a semi-structured questionnaire applied to survey demographic information (gender, age, education level, monthly income) and issues related to

the consumption of medicinal plants (plant part used, way of use and why to make use of it, where the plant is collected and if they indicate the medicinal plants to other people). The research went to in this way until the sample size proposed by statistical calculation was reached.

Elderly who were accompanied by a person who previously advised on case of dementia, unstable clinical situation, cognitive fluctuations and the level of awareness of the elderly, were excluded from the study.

Data were statistically analyzed with the help of the software Statistica 8.0. Evaluation of means and standard deviations for quantitative variables was performed. As for the qualitative variables, frequency tables were used for percentage, and contingency tables using Chi-square test were used to verify possible significant associations between the variables of interest. The significance level was 5.0%, that is, associations were considered significant when $p<0.05$.

The study complied with the formal require-ments contained in the national and international regulatory standards for research involving human beings.

Results

This study shows the prevalence of women in the use of medicinal plants 206 (58.7%), but there was no statistically significant difference between genders ($p<0.001*$). As for the level of education, 191 (54.4%) of the elderly had complete or incomplete elementary school, 68 (19.4%) were illiterate, 30 (8.5%) had completed high school and only 8 (2.2%) had completed higher education. Regarding the monthly income of the respondents, 291 (65.5%) were retired, of which 208 (59.3%) earned one minimum wage, and 46 (13.1%) earned two minimum wages (Table 1).

Table 1 - Relationship between the use of medicinal plants and sociodemographic data

Profile	Medicinal plants		p
	Yes n (%)	No n (%)	
Gender	206 (58.7)	41 (11.7)	
Women	69 (19.7)	35 (10.0)	<0.001*
Men			
Age (years)	160 (45.6)	48 (13.7)	
60-69	97 (27.6)	24 (6.8)	
70-79	16 (4.6)	4 (1.1)	0.784
80-89	2 (0.6)	0 (0.0)	
90-99			
Level of education	48 (13.7)	20 (5.7)	
Illiterate	153 (43.6)	38 (10.8)	
Incomplete elementary school	44 (12.5)	10 (2.8)	0.116
Complete elementary school	26 (7.4)	4 (1.1)	
High school	4 (1.1)	4 (1.1)	
Superior education	206 (58.7)	41 (11.7)	
Retired			
Yes	284 (80.9)	7 (2.0)	0.224
No	60 (17.1)	-	
Monthly income (minimum wages)**			
< 1	6 (1.7)	3 (0.9)	
1	208 (59.3)	50 (14.2)	
2	46 (13.1)	13 (3.7)	
3	4 (1.1)	2 (0.6)	0.317
4	2 (0.6)	1 (0.3)	
5	1 (0.3)	2 (0.6)	
6	1 (0.3)	1 (0.3)	
No income	7 (2.0)	4 (1.1)	

*Chi-square test considering the significance level of 5%; ** R$ 678.00 equivalent to 332,35 USD at the time of the study

The analysis of the use of these plants by sex showed statistically significant differences between men and women in the use of certain medicinal plants such as arnica, which were cited by 25 women (7.1%) and 21 men (6.0%), p=0, 01068, eggplant cited by 29 women (8.3%) and 5 men (1.4%), p=0.04493, carqueja cited by 25 women (7.1%) and 19 men (5.4%), p=0.03529, lemongrass cited by 94 women (26.8%) and 24 men (6.8%), p=0.00667, and mint cited by 121 women (34.5%) and 33 men (9.4%), p = 0.00293 (Table 2).

Table 2 - Relation between medicinal plants and the gender of respondents

| Medicinal plants | Gender | | p* |
	Women n(%)	Men n(%)	
Arnica	25 (7.1)	21 (6.0)	0.010*
Common Rue	35 (10.0)	17 (4.8)	0.600
Boldo	95 (27.1)	51 (14.5)	0.066
Melissa	57 (16.2)	20 (5.7)	0.426
Carqueja	25 (7.1)	19 (5.4)	0.035*
Chayote	24 (6.8)	4 (1.1)	0.063
Elderberry	16 (4.6)	10 (2.8)	0.305
Espinheira Santa (Maytenus)	27 (7.7)	8 (2.3)	0.355
Guaco	58 (16.5)	23 (6.6)	0.781
Seed of anise	98 (27.9)	30 (8.5)	0.064
Lemongrass	94 (26.8)	24 (6.8)	0.006*
Mentha	121 (34.5)	33 (9.4)	0.002*
Rosemary	52 (14.8)	18 (5.1)	0.422
Chamomile	85 (24.2)	26 (7.4)	0.083
Eggplant	29 (8.3)	5 (1.4)	0.044*

*Chi-square test considering the significance level of 5%

With regard to where medicinal plants are acquired, most respondents report they collect them on the backyard 239 (68.1%), and on a smaller scale, with the neighbors 45 (12.8%), at the grocery/health food stores 42 (12.0%), pharmacy 11 (3.1%) and from healers 5 (1.4%). These data demonstrate the influence of the economic factor in the acquisition of medicinal plants, because the fact that many of them are grown in backyards makes them accessible to much of the population.

When asked about the reason why they use medicinal plants, this proved to be related to two main issues: because they prefer medicinal plants and because of the association to the concept of natural product, that is, a product free of side effects, as 117 (33.3%) respondents claimed to use medicinal plants because they "are not harmful to health".

The other most cited reasons for the use of medicinal plants expressed were "I like them more" 118 (33.6%), because "I think it is more efficient to heal" 85 (24.2%) and "it's cheaper" 43 (12.3%).

For many elderly, the use of medicinal plants is seen as an alternative to the use of synthetic drugs, because they are considered less harmful to health, cheaper and easily acquired. Among respondents, 267 (76.1%) use to ingest preparations of medicinal plants.

Regarding the indication of medicinal plants for others, 214 (61.8%) said they indicate, perhaps because of their high level of satisfaction 254 (72.4%) and low rate of unwanted effects 19 (5.4%).

Regarding the form of preparation, the most often mentioned was infusion, since leaves are the part used, justifying this form of correct use.

As regards the knowledge of the investigated elderly on the therapeutic indications and parts of the plant used, it was shown that 217 (61.8%) of respondents use to indicate the use of medicinal plants for others. Regarding the part of the plant and how the use is made, most of respondents cited the right way. Among the 15 species cited, 14 were correctly used with respect to the part of the plant (Figure 1).

Among the 14 species of plants, the mostly cited (43.9%, n=154) was mint, whose leaves are used against worms, stomachache and against flu in the form of infusion.

The boldo was the second most cited plant (41.6%, n=146), being mainly used for liver problems, activating the salivary secretion and gastric juice, used in cases of hypoacidity and dyspepsia. Fennel, whose fruits are used for infusion, was cited by 36.4% (n=128) of the elderly and is mainly used as tranquilizer and digestive.

The fourth most cited plant was lemongrass (33.6%, n=118). The fifth plant was chamomile (31.6%, n=111) with calming and antispasmodic actions as cited by respondents. The sixth was leaves of guaco, cited by 23.1% (n=81) of respondents. These are used for breathing problems such as colds and bronchitis, in the form of infusion. The seventh plant was Melissa (21.9%, n=77), whose leaves are used for infusion as tranquilizer and for diarrhea. Other plants were also mentioned by the elderly, including rosemary, rue, arnica, carqueja, "espinheira santa", eggplant, chayote and elderberry, but in smaller frequency than the above mentioned ones.

Medicinal plant	Scientific name	Use mentioned in the literature	Most cited uses according to research participants	Plant part
Arnica	*Arnica Montana* L.	Anti-inflammatory	Anti-inflammatory	Leaves
Common Rue	*Ruta graveolens* L.	Carminative, antispasmodic	Antispasmódic	Leaves
Boldo	*Peumus boldus Molina*	Disorders of the liver and Stomach	Digestive, malaise	Leaves
Carqueja	*Baccharis trimera* (Less) *DC*	Diseases of the liver, stomach and intestines	Digestive	Whole plant
Chamomile	*Matricaria chamomilla L.*	Anxiety, insomnia, dyspepsia, flatulence	Anxiolytic	Flowers
Chayote	*Sechium edule* (Jacq.) S	Hypertension	High blood pressure	Leaves
Eggplant	*Solanum melongena L.*	Hypercholesterolemia	Cholesterol reduction	Fruits
Elderberry	*Sambucus nigra L.*	Colds, fever, rheumatism, asthma	Flus, colds	Whole plant
Espinheira Santa (Maytenus)	*Maytenus ilicifolia Mart.ex Reissek*	Ulcers, heartburn, gastralgia, gastric ulcer	Ulcer, analgesic	Leaves
Seed of anise	*Foeniculum vulgare Mill*	Bronchitis, cough, digestive disorders, dyspepsia, flatulence	Flatulence, digestive problems	Fruits
Guaco	*Mikania glomerata Spreng*	Prevention and treatment of asthma, bronchodilating, airway antiseptic	Flu, bronchitis	Leaves
Mentha	*Mentha piperita L.*	Stimulant on the digestive tract, and antiseptic properties	Anthelmintic, flu, digestive	Leaves
Rosemary	*Rosmarinus officinalis L.*	Intestinal disorders	Digestive	Leaves
Lemongrass	*Cymbopogon citratus*	Antispasmodic, anxiolytic and mild sedative	Anxiolytic	Leaves
Melissa	*Melissa officinalis*	Antispasmodic, anxiolytic and mild sedative	Calming, diarrhea	Leaves

Source: Anvisa[6]

Figure 1 - Main species mentioned for medicinal purposes by the elderly and its activity according to the literature

Discussion

The study showed that women are the ones who use medicinal plants more frequently. This result is expected, as it is a fact that in several houses or even in some communities, women take on the role of caregivers, using almost exclusively medicinal plants to take care of sick family members[7].

As for level of education and income, we highlight that respondents have mostly 3-4 years of schooling. These data show that the vast majority of herbal users have low level of secular education and this is similar to findings of another study[8]. Regarding income, about 60.0% are retired and earn one to two minimum wages, corroborating studies that show the low income population is the one that makes most use of medicinal plants. Similar data were found in a study that evaluated the use of medicinal plants by people with diabetes and hypertension treated at a clinic in Passo Fundo, Rio Grande do Sul, Brazil[9].

The use of medicinal plants is linked to the female component of families and this corroborates studies that show women as the main holders of knowledge about the use of medicinal plants. This reminds a historical fact, as the use of medicinal herbs dates back to primitive tribes where women were in charge of extracting the active principles of plants to use them in curing diseases[10].

When we analyzed the reason why respondents use the plants, it was reported that they believe that these "are not harmful to health", and also reported that they "prefer", or "think that they are more efficient to heal" and "are cheaper." These data are similar to those found in other studies that point as the main reason for the use of medicinal plants that they "are not harmful to health", and that people are unaware of

the adverse reactions that can be triggered[11].

Study participants do not associate the use of medicinal plants to the toxic effects that they can cause. However, some studies warn about the toxic potential of some medicinal plants used by the population, with the need to make cautious use and under the guidance of health professionals[12]. Professionals working in health should be concerned, providing guidance on the use of medicinal plants as well as on other therapeutic interventions that promote the improvement of the health of users, clarifying their doubts and guiding the correct use of plants[13].

In this study, the use of two plants were cited incorrectly: the use of chamomile leaves, because it is well known and described by some authors that the active agents of this plant are concentrated in its flower buds[6,14]. The other plant was comfrey, since this plant has great potential in wound healing when applied topically and this is due to the presence of allantoin. However, participants of the study mentioned its internal use. It is emphasized that this plant has pyrrolizidine alkaloids, which are proven hepatotoxic and carcinogenic, and its use was condemned by the World Health Organization after numerous cases of death caused by cirrhosis resulting from hepatic veno-occlusive disease, caused by these alkaloids[15].

Regarding the method of preparation, respondents reported that they put the leaves of medicinal plants in water after this has initiated boiling, leaving them immersed and capped. This form of preparation is known as infusion, and these uses are consistent with the reports of the literature and are similar to other studies[16].

Participants in the study said that they use to indicate the use of medicinal plants to others, similar data found by another study[13]. However, this sharing of knowledge is not always done the right way, as for example the indication for internal use of comfrey, the most mentioned case and one that represents risk to health.

The most cited plants were mint, boldo, fennel, lemon balm, chamomile, guaco, arnica and rosemary. When the type of plant and the citation by participants was analyzed, it became evident that their use of the plant is in line with the literature.

The mint was the most cited plant and useful for worm infections, flu and digestive problems. These therapeutic actions are confirmed by the investigated literature and are attributed mainly to essence oils containing menthol, alpha-menthone and mento-furan, substances that stimulate gastric acid secretion, intestinal contraction and facilitate the removal of gases by decreasing tone[17].

Boldo was indicated for dyspepsia and liver problems. This action is due to the presence of alkaloids, the main one being the Boldine whose effects are backed by extensive scientific literature[18]. Fennel was cited as calming and digestive and this is in line with studies that describe these therapeutic properties as the result of the presence of essential oils and are liberated at infusion[18].

The lemongrass cited as calming and useful for diarrhea has this use supported by a study that also mentions antibacterial, antifungal and anticarcinogenic properties[19]. Chamomile as calming and antispasmodic is also mentioned in the literature, and the form of use was the infusion of the leaves and flowers. Its main constituents are essence oils and sesquiterpene compounds such as alpha-bisabolol, which acts as antiinflammatory oil and protector of the gastric mucosa[12].

Guaco is used as an expectorant for influenza and its action is due to the presence of coumarin (1,2-benzopyrone), triterpenes/steroids and flavonic heterosides. It acts facilitating the fluidization of the tracheobronchial exudates or it stimulates its secretion so that they can be expelled by coughing reflex[19].

Arnica, cited mainly due its anti-inflammatory actions, has this use supported by scientific literature. Studies show the importance of sesquiterpene lactones and triterpenes present in its phytocomplex,

as responsible for enzyme inhibition in inflammatory processes[20]. Other plants mentioned were rosemary that has stimulant actions, it is a pulmonary antiseptic and stimulant of gastric secretion, and these actions come from the presence of essential oils, saponins and tannin; then, rue with antispasmodic action; carqueja, used for liver problems; and "espinheira santa" for stomach problems[20].

Regarding other medicinal plants cited by the elderly, rosemary, rue, arnica, carqueja and "espinheira santa" were indicated for intestinal disorders, as antispasmodic, as anti-inflammatory, for liver problems and for stomach problems, respectively. As for eggplant, chayote and elderberry, these are used to lower cholesterol, for high blood pressure, for flus and colds, respectively, and these information are coincident with the scientific literature[6].

The limiting factor of this study was the completion at the Consortium of the North of Paraná that provides service to regional health districts of the region, but that has unique characteristics when compared to other states that provide the same service. Thus the results characterize specifically this study population and can not be generalized. This suggests that further studies should be conducted in order to have a broader view on the use of medicinal plants by the elderly, without ceasing to be useful as a guide such future actions.

Conclusion

Medicinal plants are present in the daily lives of the elderly, the most used are mint, boldo, fennel, lemon grass and chamomile. The manner and the part of the plant used reflect the popular knowledge of people about medicinal plants, highlighting their importance as therapeutic resource. New studies to assess the possibility of interactions between traditional medicines and medicinal plants are suggested.

Collaborations

Pereira ARA contributed to the design of the project, analysis and interpretation of data, and the writing of the article. Velho APM, Cortez DAG and Szerwieski LLD contributed to analysis and interpretation of data. Cortez LER contributed to the conception and project. All authors contributed to the relevant critical review of intellectual content and final approval of the version to be published.

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