Use of medicinal plants by primary care elderly

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ABSTRACT

Our study objective was to verify the use of medicinal plants by elderly users of the primary care. The study has a cross-sectional, correlational, analytical and descriptive design with a quantitative approach. It was carried out in the west of Paraná state, in 2016. We applied 252 questionnaires with socio-demographic information and questions about the use of medicinal plants. Our results showed that 72.22% of elderly use plants, and of the most cited ones, Peppermint, Lemon Grass, Boldo and Rosemary were noteworthy. Elderly report to use them because they are better for healing, they prefer them, and it does not harm. There was disagreement regarding the recommendations, where 36.81% does not recommend them for fear to cause harm. About toxicity, they reported adverse events that are not found in the scientific literature. We highlight the importance of a correct guidance regarding the toxicity of some plants, as well as their benefits, and the importance of the nurse in this context acting as a health promoter.

Descriptors: Nursing; Old Age Assistance; Plants, Medicinal; Primary Health Care.

INTRODUCTION

The use of medicinal plants has always been part of the human history, since the beginning when civilizations perceived that some plants could help fighting diseases and empirically revealed its healing power[1-2].

The use of medicinal plants brings meanings that were built through family relationships when the elderly learned about its use with their antecedents, especially mothers and grandmothers, who had

caregiving roles. The acquisition of knowledge was passed through generations, being the elderly considered the more knowledgeable who shared their knowledge with the younger ones[3].

In this care scenario, the use of complementary health practices is noted, using medicinal plants to alleviate or cure some illnesses[1-2]. Thus, the Brazilian Health Ministry created the National Program of Medicinal Plants and Phytotherapy to "guarantee safe access and rational use of medicinal plants and phytotherapy to the Brazilian population" [4], helping to strengthen the use of medicinal plants in people's daily life.

Within the professionals working in the care network, nursing integrates the scientific knowledge conducting technical procedures and alternative care, allowing the multidimensional, humanized and integral care, acting on the prevention of diseases and health promotion and, recovery, especially in the primary care[5]. Thus, recognizing the importance of the nurse as a health promoter, the Nursing Regional Council of Santa Catarina was one of the pioneers to consider legitimate the prescription of medicinal plants as teas (shaved, dry, in natura) for clinical treatment. The phytotherapeutic nurse prescribes it, once the nurse is duly qualified, with a degree in Alternative Therapy according to the therapeutic protocol from the Municipal Health Secretaries[6].

From these policies, there was a research incentive to promote the correct use of medicinal plants. But a lack of studies about this theme remains, and it is necessary to know if plants used by elderly are coinciding with the therapeutic use presented in scientific research and if the users are aware of the side effects that they can cause. It is necessary to assist the health team to incorporate the use of medicinal plants as a therapeutic resource[7]. Thus, this study aims to verify the use of medicinal plants by elderly users of the primary care.

METHODS

Our study has a cross-sectional, correlational, analytical and descriptive design with a quantitative approach. It was carried out in the city of Itaipulândia (PR), in 2016. The city has a population estimated at 10.000 inhabitants and presents 12% of elderly, surpassing expected rates in Brazil[8]. The city has four basic health units that provide widespread attention, from lactating women to elderly. One of its units is central, and the other three are peripheral. Nurses, nutritionists, dentists, physicians and community health workers constitute the multi-professional teams in all units. The city provides care to an average of 250 elderly per week in regular consultations, as well as, specialty attention, guidance regarding the use of medications and conduction of procedures.

Initially, we conducted a survey observing the number of elderly accompanied by the primary care (n=754). After, we defined through a statistical calculation that a random sample would be drawn from the Central Unit as this location had more people; and a convenience sample would be drawn of peripheral units, due to difficulties for data collection. The sample calculation assumed a 95% confidence level, and an error margin of 5%, based on the calculations conducted using the Software Statistica 8.4.

Thus, the inclusion criteria for this study were to be elderly, to live in the urban area, to be registered in the E-SUS system and to be accompanied by the Primary Care Units. We excluded people younger than 60 years, and those that were older than 60 years with sensorial disabilities (deafness and muteness).

We conducted the interview for data collection at participant's residences (houses or retirement homes), from February to April of 2016. The principal investigator identified eligible elderly after an initial approach, explaining the study objectives. If the participant agreed to participate, he/she signed the Free and Informed Consent Term. After the participant answered a semi-structured questionnaire with socio-demographic information (gender, age, marital status, education, economic activity) and questions related to medicinal plants (use, place of acquisition, indication, frequency, toxicity, the motive of use, and mode of preparation). The species are well known in general medicine, and we compared their medicinal plant taxonomic identifications with the species of the herbarium from Unipar (PR).

We entered the data into Microsoft Excel 2010 and analyzed them using the software Statistica 8.4. For quantitative variables, we used frequency tables with percentages and contingency tables using the Fisher's Exact Test and the Chi-Squared Test to verify possible significant associations between the variables of interest. We adopted a significance level of 5%, that is, we considered significant the associations with $p < 0.05$.

The study respected the national and international regulating norms for research involving human beings, following the Resolution 466/2012 from the National Health Council. The study was approved by the Ethics in Reseach Committee from Centro Universitário de Maringá –Unicesumar, n° 1.401.270, in February 3rd of 2016.

RESULTS

We interviewed 252 elderly, from those, 72.22% (n=182) used medicinal plants, and 67.58% (n=123) were female. Regarding age, 51.65% (n=94) were between 60-69 years old,36.26% (n=66) were between 70 to 79 years, and 12.09% (n=22) were 80 years or older. When observing education, 51.65% (n=94) of participants were illiterate, and 38.46% (n=70) had one to four years of education.

We verified a significant difference regarding the use of medicinal plants and gender (0.0043*), where women reported to use more medicinal plants than men. When observing education, illiterate participants or those with one to four years of education used more medicinal plants than the others (0.0091*). Regarding their occupation, 83.52% were economically inactive (n=152) and 16.48% had a paid activity (n=30). The monthly income of 33 (18.13%) participants did not reach one minimum wage, and the majority of participants (n=144, 79.12%) earned one minimum wage. We present these data in Table 1.

Table 2 presents the use of medicinal plants by Basic Health Units, being the Central Unit represented as (BHU A) and the peripheral ones as (BHU B, C, D).

Table 1. The relationship between the use of medicinal plants and socio-demographic data, Itaipulândia, PR, 2016.

Profile	Medicinal Plants		Fisher's Exact Test p-value
	Yes n(%)	No n(%)	
Gender			
Women	123 (67.58)	35 (50.00)	0.0043*
Men	59 (32.42	35 (50.00)	
Age (years)			
60 - 69	94 (51.65)	33 (47.14)	
70 - 79	66 (36.26)	31 (44.29)	0.4765
80 or +	22 (12.09)	6 (8.57)	
Education			
Illiterate	94 (51.65)	23 (32.86)	
1 to 4 years of education	70 (38.46)	42 (60.00)	0.0091*
5 to 8 years of education	4 (5.71)	17 (9.34)	
9 to 11 years of education	1 (0.55)	1 (1.43)	
Occupation			
Active	30 (16.48)	7 (10.00)	0.2356
Inactive	152 (83.52)	63 (90.00)	
Monthly income (minimum wages)			
< 1 mw.	33 (18.13)	6 (8.57)	
1 mw.	144 (79.12)	61 (87.14)	0,1225
2 to 3 mw.	5 (2.75)	3 (4.29)	

* Significant at the 95% confidence level

Table 2. Characteristics of the use of plants per Basic Health Unit, Itaipulândia, PR, 2016.

	BHU(A) n(%)	BHU(B) n(%)	BHU(C) n(%)	BHU(D) n(%)	Qui Squared	p-value
Use of medicinal plant						
No	23 (46.00)	8 (13.79)	12 (21.82)	27 (30.34)		
Yes	27 (54.00)	50 (86.21)	43 (78.18)	62 (69.66)	15.1941	0.0017*
Total	50 (100.00)	58 (100.00)	55 (100.00)	89 (100.00)		
Place of acquisition						
Backyard	26 (89.66)	43 (71.67)	39 (75.00)	62 (84.93)		
Neighbors	1 (3.45)	11 (18.33)	5 (9.62)	6 (8.22)	89.417	0.1769
Other	2 (6.90)	6 (10.00)	8 (15.38)	5 (6.85)		
Total	29 (100.00)	60 (100.00)	52 (100.00)	73 (100.00)		
Indicate the use of plants						
No	23 (46.00)	11 (24.44)	21 (33.87)	12 (44.44)		
Yes	27 (54.00)	34 (75.56)	41 (66.13)	15 (55.56)	56.940	0.1275
Total	50 (100.00)	45 (100.00)	62 (100.00)	27 (100.00)		
Frequency						
Daily	14 (23.33)	8 (29.63)	15 (33.33)	15 (35.71)		
1x week	13 (21.67)	7 (25.93)	12 (26.67)	7 (16.67)	39.542	0.6829
3x week	33 (55.00)	12 (44.44)	18 (40.00)	20 (47.62)		
Total	60 (100.00)	27 (100.00)	45 (100.00)	42 (100.00)		
Motive						
Promotes healing	27 (38.03)	31 (50.82)	49 (45.37)	20 (58.82)		
Like it better	21 (29.58)	10 (16.39)	20 (18.52)	9 (26.47)	99.191	0.1281
Does not harm	23 (32.39)	20 (32.79)	39 (36.11)	5 (14.71)		
Total	71 (100.00)	61 (100.00)	108 (100.00)	34 (100.00)		
Mode of preparation						
Infusion	27 (96.43)	33 (42.86)	34 (64.15)	42 (40.00)		
Maceration	0 (0.00)	16 (20.78)	12 (22.64)	30 (28.57)	37.629	0.0001*
Other	1 (3.57)	28 (36.36)	7 (13.21)	33 (31.43)		
Total	28 (100.00)	77 (100.00)	53 (100.00)	105 (100.00)		

* Significant at the 95% confidence level

When analyzing the use of plants by health unit, we verified differences statistically significant about their use (p=0.0017*), considering that all Units had a high percentage of people reporting the use of medicinal plants. Regarding the mode of preparation, there was also a significant difference (p=0.0001*), and participants cited infusion the most.

Regarding the place of acquisition, 93.40% (n=170) participants collected plants from their backyards and home gardens, followed by 12.63% (n=23) from neighbors, and 11.53% (n=21) from other places, like pharmacies, grocery stores, from people who specifically sell plants and others.

The infusion was the primary mode of preparation with 74.72% (n=136), using it three times a week (42.85, n=78). Regarding the motive of use, 69.78% (n=127) of participants thought that it was for healing, 47.80% (n=87) used them because they do not harm their health and 32.96% (n=60) use them because they like it better.

Regarding indication to other people, 69.78% (n=127) indicate the use of plants, while 36.81% (n=67) do not, as they are afraid of causing harm. Regarding toxicity, 87.36% (n=159) of participants did not feel any side effect after using plants. But, 12.6% (n=23) reported that some plants as Lemon Grass, Guaco, Orange leaves and Rosemary could increase heart beats, Lemon Grass and Chayote could lower blood pressure too much and they harm the liver. While Taioá, Echinodorus grandifloras (known as *"Chapéu de coro"*) and Guava leaves could cause sharp stomach pain and, Peppermint increases the blood sugar.

About the most used plants, 11.22% of elderly reported Peppermint (n=123), 11.13% Lemon Grass (n=122), 9.03% Boldo (n=99), 6.84% Rosemary (n=75), 6.84% Fennel (n=75), Rue (n=68), 5.93% Chayote (n=65), 5.66% Chamomile (n=62), 4.93% Melissa (n=54), 4.38% Guaco (n=48), 2.83% Absinthe (n=31), within others. Regarding their finality and parts used, our results found similarities with the consulted literature (Table 3).

Table 3. Principal mentioned medicinal plants, family, species, use and, part used.

Medicinal plant	Family	Species	Use mentioned by elderly	Use mentioned in the literature	Part used	Total N(%)
Peppermint	Lamiaceae	*Mentha piperita* L.	Flu, indigestion, worms	Digestive, Antiseptic[9]	Leaves	123 (11.22)
Lemon Grass	Gramineae	*Cymbopogon citratus* (DC) Stapf	Calmative	Antispasmodic, anxiolytic and mild sedative[9]	Leaves	122 (11.13)
Boldo	Monimiaceae	*Plectranthusbarbatus* Andr.	Indigestion	Digestive[9-10]	Leaves	99 (9.03)
Rosemary	Laminaceae	*Rosmarinus officinalis* L.	Stomach issues	Intestinal disorders[9]	Leaves	75 (6.84)
Fennel	Apiaceae	*Foeniculum vulgare* Mill	Stomach gas, digestion	Bronchitis, cough, dyspepsia, flatulence[9]	Seed	75 (6.84)
Rue	Rutaceae	*Ruta graveolens* L.	Stomach gas	Carminative, antispasmodic	Leaves	68 (6.20)
Chayote	Cucurbitaceae	*Sechium edule* (Jacq.) S	High blood pressure	Hypertension[9]	Leaves/fruit	65 (5.93)
Chamomile	Asteraceae	*Matricaria chamomilla* L.	Calmative	Anxiety, insomnia, dyspepsia, flatulence[9-10]	Leaves	62 (5.66)
Melissa	Lamiaceae	*Melissa officinalis* L.	Calmative	Antispasmodic, anxiolytic and mild sedative[9]	Leaves	54 (4.93)
Guaco	Asteraceae	*Mikania glomerata* Sprengel	Flu, colds	Asthma prevention and treatment, bronchodilator, airways antiseptic[9]	Leaves	48 (4.38)
Absinthe	Asteraceae	*Artemisia absinthium* L.	Stomach pains	Dyspepsia[9]	Leaves	31 (2.83)
Marcela	Asteraceae	*Achyrocline satureioides* (Lam.)	Digestion	Antidystopic, antispasmodic and anti-inflammatory[9]	Flower	18 (1.64)
Carqueja	Asteraceae	*Baccharis trimera* (Less) DC.	Improves digestion	Liver and intestine diseases[9]	Leaves	18 (1.64)
Yarrow	Asteraceae	*Achillea millefolium* L.	Stomachache, colic	Aperient, antidystopic, anti-inflammatory and antispasmodic[9]	Leaves	17 (1.55)
Marjoram	Lamiaceae	*Origanum majorana* L.	Improves digestion	Digestive[9]	Leaves	16 (1.46)
Poejo	Lamiaceae	*Mentha pulegium*	Flu, bowel issues	Anti-oxidant, Antihyperglycemic, anti-inflammatory, antimicrobial[11]	Leaves	11 (1.00)
Espinheira-santa	Celastraceae	*Maytenus ilicifolia* (Schrad.) Planch.	Improves digestion	Digestive[9-10]	Leaves	10 (0.91)
Stonebreaker	Euphorbiaceae	*Phyllanthus niruri* L.	Kidney stones	Litolytic[9]	Leaves	10 (0.91)
High Malow	Malvaceae	*Malva sylvestris* L.	Laxative	Anti-inflammatory; Laxative[9]	Leaves/flowers	9 (0.82)
Bergamot orange	Rutaceae	*Citrus aurantium* L. subsp. bergamia	Improves digestion	Digestive[9]	Fruit	11 (1.00)

DISCUSSION

Our data showed the use of medicinal plants by most elderly accompanied at the primary care, and it highlights that 15 elderly did not use any plant due to medical restriction or because they are afraid of side effects. This data emphasized that is primordial to stop the cultural resistance when facing the biomedical

science imposed by the contemporary world[9,11]. Training about the prescription of phytotherapics and medicinal plants is vitally needed, with information about the safe use of medicinal plants and incentive for its practice[12]. With the intention to bring detailed knowledge to physicians, Anvisa published the *"Memento Terapêutico da Farmacopeia Brasileira"* (Therapeutic Memory of the Brazilian Phamacopoeia) that guides medical professionals to prescribe medicinal plants. This document presents the common names and the parts of the plants that are used, besides contraindications, precautions for use, adverse events, drug interactions, routes of administration and posology, thus assisting plant prescription[10].

Nursing has been one of the most active fields, maybe because it conducts a multi-dimensional, humanized and integral attention, and because it acts as health promoter[4-5,12]. The nurse has the role of preparing the multi-professional team to attend these users and to promote the use of these plants. They achieve that through permanent educational groups, where the physicians, pharmacists, and other health team members can discuss clinical cases, trying to understand the possible interactions between plants and traditional drugs, ways of preparations and correct dosages of each plant; thus the whole team would be prompted to inform the elderly. When knowing the reality, nurses can think of strategies for the specific needs of the population[4-5].

In our study, we had a predominance of female elderly, of low education levels, they earned up to one monthly minimum wage and, who are economically inactive. These data corroborate with other studies that affirm that nowadays there is a feminization of aging[13], and that women have developed the role of caregivers throughout humanity history and, they adhered to the cultivation and use of medicinal plants to minimize and to cure diseases[14].

Other studies also see the female predominance, and the authors described that this female aging trajectory marked by low education, low insertion of women in the formal job market and, low professional qualification. Therefore women became responsible for domestic tasks, cultivation of medicinal plants and to care for older family members and their husband[13].

Besides that, another study highlights that elderly have low education levels due to the time and culture that they were part of, and they present empirical knowledge about medicinal plants passed through generations[15].

Regarding income, the data found here is similar to a study conducted in the South of Brazil, where 67.7% of users had an income up to one and a half minimum wage. The economic inactivity relates to the fact that after retirement, the elderly decrease their roles in the community and they end up keeping only their domestic activities[16].

When understanding the elderly profile, it is possible to comprehend that they are in a culture that encourages the use of medicinal plants. When asked about the place of acquisition, the most cited ones were backyards and neighbors, resulting from the low purchasing power of these individuals and also by the fact that they are part of a culture that encourages the practice of medicinal plants. It can also be associated with the biological and psychic limitations. Therefore they search for plants in closer and easy access places[17]. A

study conducted also found that backyards and gardens are the main areas for cultivating medicinal plants[3].

Regarding the mode of preparation, the first choice reported was the infusion, this technique occurs with the boiling water, followed by the immersion of the plant and muffling for a given moment. Another cited mode of preparation was maceration, that consists of the contact of the plant with the water at room temperature, for a given moment[8]. Regarding the part used, leaves were the most cited, and because they are fragile, they should be prepared through infusion, similarly to results found in the literature[18].

When inquired about the therapeutic indication, 36.81% (n=67) mentioned that they do not indicate their use due to fear of causing harm. Thus, we infer that participants believe that it would not harm themselves, but they do not indicate their use due to toxicity to others. Corroborating with our results, studies describe that the motive to use medicinal plants relates to the fact that "they do not harm health", and that users are unaware about adverse events that can be triggered[19-20].

In this study, it was possible to find that some elderly relates the use of medicinal plants correctly according to the literature, however, when questioned about their toxicity, the affirmation was wrong. Within the common use ones, most elderly cited Peppermint to improve digestion and they use in case of worms, which is a similar result compared to the literature[8]; although they mentioned that it could increase sugar levels in the blood. This concept is wrong considering that within the many side effects that could be triggered by the excessive use of Mint, there are: inhibition of iron absorption, enhancement of drug actions, increased of follicle stimulating and testosterone hormones. Also, the anti-suppressant decreased effect on the body, but no evidence exists that it causes hyperglycemia[21].

Secondly, the reported use of Lemon Grass (*Cymbopogon citratus* (DC) Stapf) as a calmative could cause "increased heartbeat" and an excessive decrease of blood pressure. The Anvisa reiterates that it can only enhance the effect of sedative medications[9]. A study conducted with rats verified that *Cymbopogon citratus* (DC) Stapf induces to hypotension, and it occurs due to vascular resistance and bradycardia, probably due to the activation of cardiac muscarinic receptors[22]. Another study also addresses that Lemon Grass has a fungicide, bactericidal, antidiarrheal function, acts as anti-inflammatory, antispasmodic, hypo tensor, anti-convulsing, analgesic, antiemetic, anti-rheumatic, antiseptic and, it works in the treatment of neurological disorders, fevers and gastrointestinal issues[23].

Participants also cited "increased heartbeat" when using Guaco (Mikania glomerata Sprengel) and Rosemary (Rosmarinus officinalis L.), but research indicates that Guaco used as non-steroidal anti-inflammatory can interfere with blood coagulation with the risk of bleeding in coagulopathies(24). Rosemary is used for heart treatments, hypertension, cardiac insufficiency, and tachycardia(25).

The Chayote (*Sechium edule* (Jacq.) S) commonly used to decrease blood pressure, can truly cause hypotension[8], it occurs because it enhances the effect of drugs used to control blood pressure. Thus, it increases the risk of hypotension and predisposes for falls[22].

There were no other reported cases of toxicity in other described plants. However, we highlight the need to know the purpose of each plant, due to the report that the two mainly used medicinal plants could

present side effects in elderly, minimizing the risk of accumulating harmful substances in the body, and by this practice being performed most of the time without professional guidance[20].

Whitin the cited plants, the *Plectranthusbarbatus* Andr. (Boldo), *Rosmarinus officinalis* L. (Rosemary), *Citrus aurantium* L. subsp. Bergamia (Bergamot Orange), *Malva sylvestris L.* (Malva), *Mentha Pullegium* (Poejo), *Maytenus ilicifolia* (Schrad.) Planch. (Espinheira-santa), *Origanum majorana* L. (Marjoram), *Artemisia absinthium* L. (Losna), *Achillea millefolium* L. (Yarrow) and *Ruta graveolens* L. (Rue) are indicated to treat diseases specially in the Gastrointestinal Tract[8]. While *Mikania glomerata* Sprengel (Guaco) and *Foeniculum vulgare* Mill (Fennel) act as bronchodilators of the Respiratory System[8,25]. The *Baccharis trimera* (Less) DC. (Carqueja) and *Ruta graveolens* L. (Rue) can be used for hepatic diseases, due to carminative actions[8]. The *Matricaria chamomilla* L. (Chamomile) e a *Melissa officinalis L.* (Melissa) act as mild sedatives, anxiolytics and antispasmodic in the Central Nervous System[22]. The *Sechium edule* (Jacq.) S (Chayote) act in the Cardiovascular System as hypotensor[22], and the *Phyllanthus niruri* L. (Stonebreaker), known by its litolytic properties acts in the Renal System[8].

The elderly users of medicinal plants know the indications of particular species, but when observing the side effects, they presented different concepts when compared to the literature. Thus, we emphasize the importance of the nurse to act as a health promoter and to be a facilitator on the knowledge exchange with these users, incentivizing the correct use.

CONCLUSION

This study showed that elderly accompanied by the primary care use medicinal plants, and even with empirical knowledge about their use, they use them correctly. However, the reports about side effects and toxicity were divergent from the ones described in the literature. This result shows the importance that nursing professionals should develop actions with the elderly to try to understand their use of medicinal plants, care when performing indiscriminate use, the mode of preparation, thus avoiding intoxication cases.

Thus, the nurse as educator needs to search for the training of the multi-professional team to attend these users, informing about the benefits that plants bring to aging and awakening the interest so they can unveil the social stigmas about the use of plants, and incentivize the search for knowledge.

A limiting factor was the small city where we carried out the study. Therefore our results characterize the study population, and it cannot be generalized. Consequently, we suggest new studies that can reach a broader population, verifying the possible interactions between the continuous use of drugs and medicinal plants.

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