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THE USE OF MEDICINAL PLANTS AND THEIR POSSIBLE INTERACTIONS WITH ALLOPATHIC DRUGS IN A METROPOLITAN REGION OF CURITIBA, PARANA

Bruna Machado da Silva[1], Mariana Eichenberger[1], Rafael Gomes Ditterich[1], Marilene da Cruz Magalhães Buffon[1]

1 Federal University of Parana, Curitiba, PR, Brazil

CORRESPONDING AUTHOR: bruna.machadodasilva@usp.br

ABSTRACT

The use of medicinal plants constitutes a popular practice and knowledge, and plays a fundamental role in communities, especially concerning health care. The easy accessibility of medicinal plants causes the individual to use concomitant allopathic medicines without any professional guidance. This form of self-medication can inhibit or intensify the effect of medications, so this association requires caution. Aim: To survey the medicinal plants used and their possible drug interactions between synthetic drugs and medicinal plants, including those of dental properties, employed by users of the Jardim das Graças Health Center, Colombo-PR. Methodology: Qualitative study of a descriptive approach; Composed of 31 research participants, chosen at random, according to the criterion: belong to the area of coverage of the UC, and accept to participate in the research. The data were obtained in three stages: 1st home visit, where the research participants answered a questionnaire, 2nd was collected the plants used for botanical identification were collected, 3rd in the medical records, data on the prescribed drugs were analyzed. Results: 77.4% of the research participants used medicinal plants, 33.3% were over 45 years of age, 74.2% were women, 95.8% took medication associated with plant use, 62.5% used plants as medicine, the most used part was the leaf (61.53%), preparation through boiling (75%). The most cited plant was guaco (10.4%), followed by chamomile (9.6%) and lemon (6.4%), and those related to dentistry were: rosemary, arnica, alfavaca, chamomile, fennel, ginger, spearmint, clove and melissa. We concluded that most of the participants used plants concomitantly with allopathic medication, mainly diseases, without any guidance from health professionals. A total of 14 allopathy drugs, and 13 medicinal plants which may present possible risk for drug interaction, were observed.

INTRODUCTION

Plants are an important source of natural products, biologically active. The population uses them as medicine, in order to treat and cure diseases. Yet, the industries study and test them in laboratory to prove their benefits and their side effects, making the transposition from the medicine into herbal remedy[1,2,3]. There is little access to herbal medicine, due to several factors, such as the industrialization process, researches, sponsoring, public policies and others, which implicate into drugs cost[4,5]. However, researches regarding medicinal plants have increased, searching for products in low toxicity and biocompatibility, providing low costs to

the population[6]. The World Health Organization considers that 80% of the world population uses these natural resources, and Brazil employs about 82% of the medicinal plants[7,8].In dentistry, the use of medicinal plants is still poorly explored[9]. Studies about teas show that they can be employed to inhibit bacterial growth and adherence on the dental surfaces, and to reduce the acid and extra cellular polysaccharides[6], among other dentistry properties that will be further highlighted in this article. The use of medicinal plants provides a huge socio economical relevance in low-income communities, due to the high availability, low toxicity, minimum risks of side effects and low cost[10]. Due to the easy access, people make association of medicinal plants with allopathic medicines without any kind of professional guiding. This self-medication may act, inhibiting or intensifying the therapeutic effects of the allopathic medicines. Then, the association of medicinal plants with other drugs should be carefully analysed, due to the possibility of interference upon the treatment of diseases. It is important to inform the patient about the risks of using them concomitantly, in order to ensure efficacy and safety[10].

This study aimed to perform a survey on the plants employed, and their possible drug interactions of medicinal plants, including the ones used for dentistry properties, with allopathic medicines used by a sample of the population in the area covered by the Health Unit Jardim das Graças in the town of Colombo – PR, in order to aware health professional towards this viewpoint.

MATERIAL AND METHODS

This research was submitted to the Ethics Committee in Research of the health sciences sector – Federal University of Paraná and approved under registration number CEP/SD 1051.176.10.11.

It is a qualitative and descriptive study. The inclusion criteria were: the participant should belong to the area covered by the Health Centers (HC) Jardim das Graças, in the town of Colombo-PR, accept home visit and participate in the research, by signing the informed consent. Data collection was performed in three stages, from August 2013 to July 2015 through random home visits, with the help of the community health agent. A questionnaire was applied and afterwards, the plants used were collected for botanical analysis. Then, data were collected from the prescribed medical reports about the allopathic medicines, prescribed in the same period of collection (Figure 1). Data collected through the questionnaire presented questions to measure independent variables (name, gender, age, income, education, etc.) and questions regarding the use of medicinal plants, with or without medical prescription. In affirmative case, a sample of plants reported was collected and sent to botanical identification in the Herbarium of the Municipal Botanical Museum(HMBM in Portuguese acronym). In the medical reports, data were collected on the allopathic medicines prescribed from August 2013 to July 2015, of patients participants on the research who used medicinal plants. Data on the plants used, based on scientific literature, were compared to the popular indications and potential risks of drug interactions, and those regarding to Dentistry were highlighted. These data were described through frames.

RESULTS

The study was composed by 31 participants on the research from the area covered by the health unit Jardim das Graças, located in the town of Colombo - PR. Of these participants on the research, 77.41% used medicinal plants. Socio demographic data regarding the participants in this study ranged from 3 months to 70 years of age. In case of babies, the mother signed the informed consent and answered the questionnaire for both of them, informing that she and the baby took tea from medicinal plants. Regarding the gender, 74.2% are female and 25.8% are male. Familiar income ranges from 1 to 3 minimum salaries (45.2%), presented similar results to those who received up to 1 minimum salary (6.45%) and those who received more than 5 minimum salaries (6,45%), the remaining 41.9% did not inform. Regarding education, 32.25% did not finish the Elementary school; those who finished the elementary school presented similar results to those who did not finished high school, with 22.58%. Those who finished the high school were 6.12%, while only 3.22% had completed or incomplete higher education.

The participants use medicinal plants because they consider them efficient (50%), trustful (20.8%), practical (20.8%) and useful (8.3%). In acquisition of medicinal plants, we 44 reports were obtained, because the participants reported more than a way of acquisition. The main one was buying 47.4%, followed by their own yard with 27.3%, and 25% acquired with a neighbor. The part of the plant most used was the leaf (61.5%), followed by the flower (25.64%) and the root (12.82%). The participants who reported using fresh plants were 66.7%, while 33.3% used dried plants. Regarding the acquisition of knowledge on the use

of plants, some participants reported more than one source, and 70.4% affirmed having acquired the knowledge from the family, 14.8% through other ways, e.g. the internet, and 11.1% from health professionals. The frequency of use of medicinal plants was: sometimes, 62.5%; always,25%; and 12.5% seldom. On preparation, 75% prepared the plant as tea by boiling and 25% made it as infusion. This study presented 36 species of different medicinal plants. From them, those related to the dentistry were: rosemary, arnica, alfavaca, chamomile, anise, ginger, mint, clove, macela and melissa. Each species was mentioned once or more times, composing 125 citations. Fresh plants collected at home corresponded to the botanical identification performed by the Herbarium of the municipal Botanical Museum. From those who used medicinal plants, about 95.8% used medicines associated to the medicinal plants. Arou nd 62.5% of the participants communicated the physician on the medicinal plants use. In case of disease, 76.7% visited the physician, and 3.3 went to the drugstore.

Figure 1. Scheme of data collection performed for the research.
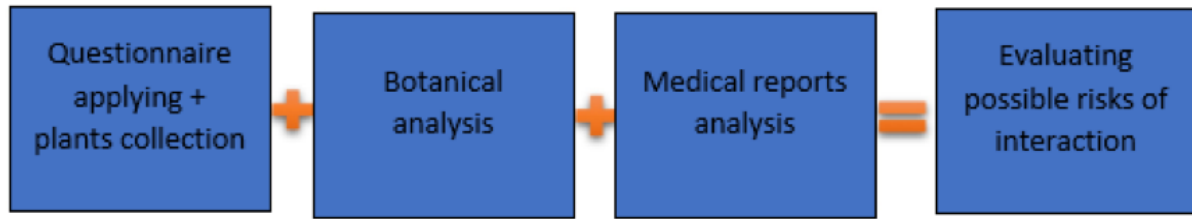
The frame 1 presents the plants most mentioned and also highlights those, which, regardless the amount of times they were mentioned, are related to dentistry.

After the botanical analysis, information was collected comprising 43 allopathic medicines from the medical reports of the participants who use plants. The study compared the medicines with the plants used by each participant. For those, the effect (synergic or antagonist) and the justification according to the scientific literature, were described.

Frame 2 describes the possible drug interactions among plants and the allopathic medicines used, prescribed on the medical reports.

DISCUSSION

In the study performed, the female gender was predominant, like the study performed by Caetano et al[10], pointing to the probable fact that women are responsible by home tasks, like cooking, shopping, among others. Regarding the incomplete elementary school and social economical level up to 3 minimum wages, maybe there is a relation with the cover area with lack of stimulus for education and incentive to work early by the local culture.

From the total participants, 77.41% use medicinal plants, according to the average of WHO, and about 80% of the Brazilian population use medicinal plants[29]. Regarding the popular employment of plants, predominated the cases for prevention or to ease the flu symptoms, sedative, cough, cold, infection or affections of the respiratory and digestive tracts, and anti-inflammatory properties, like the study of Albertasse et al[17], the plants used by the population presented importance when regarding to common problems and they are part of the health primary attention. Through botanical identification, the population studied know how to identify the plants, but not always know the scientific identifications for each one, when compared the popular use with the literature.

On the results, 95.8% use medicine associated to medicinal plants. However, associating plants with other medicines may be harmful, due to the possibility of occurring drug interaction. Professionals should be aware on the possibility of drug interaction and they should warn the patients[18]. About 62.5% of participants communicate the physician on the medicinal plants usage. However, despite more than half patients informed the use of medicinal plants to the physicians, specific guiding on them are important, because self-medication is considered a dangerous procedure, due to its potential to promote drug interactions with allopathic medicines and the possibility of side effects[10].

According to Frame 2, acetylsalicylic acid is the medicine that presents higher risk of drug interaction, when consumed concomitantly to the following medicinal plant teas: mint, orange tree, ginger, bol do and fig; as levomepromazine when consumed concomitantly to the medicinal plants teas: passion fruit, melissa, and mint. Similarly, paracetamol when consumed concomitantly to the medicinal plants teas: mint, green tea and mate herb.

CONCLUSIONS

We conclude that population from the metropolitan area of Curitiba, Parana uses plants for therapeutic treatments. Most participants use plants concomitantly to allopathic medicines, mainly for more common diseases without any guiding from health professionals. Fourteen drugs and thirteen medicinal plants presented possible risk for drug interaction. The information obtained regarding to the use of the plants will be presented to the population and to the health professionals of Colombo town through the Health Centers.

Frame 1. Population from cover area HU Jardim das Graças who use medicinal plants reports on the usage according to the participants and scientific indications, regarding to the most mentioned and with Dentistry usage in Colombo, Parana.

%	Popular name/ Scientific name	Popular usage	Scientific indications
10.4%	Guaco (*Mikania glomerata*)	Bronchial disorders	Dilating bronchus, expectorant (11); anti-fever action (12)
9.6%	Chamomile (*Matricaria recutita*)	Sedative Stomach	Anti-histamine, anti-inflammatory (12); teeth pain and sedative (13) (12)
6.4%	Lemon (*Citrus limonum*)	Flu Expectorant	Anemia (14); flu (15); pneumonia (16);
5.6%	Passion fruit (*Passiflora alata*)	Sedative Insomnia	Sedative (12); anxiolytic, antiepileptic and anti-inflammatory effects (13)
5.6%	Ginger (*Zingiber officinale*)	Liver Expectorant	Respiratory diseases and anti-inflammatory (17); halitosis (18); antiplatelet (13)
4.8%	Mint (*Mentha sp.*)	Stomach Headache	Anti-inflammatory, analgesic, antimicrobial (12) halitosis(18); indigestion (13)
4.8%	Melissa (*Melissa officinalis*)	Sedative Insomnia	Digestive, anti-inflammatory (12); nervousness, insomnias (17); halitosis (18);
4.8%	Pennyroyal (*Mentha pulegium*)	Bronchial disorders	Digestive, analgesic (12); gripe (17); antibacterial, antifungal (13)
4%	Lemon balm (*Lippia alba*)	Sedative	Digestive (17); Antimicrobial, antipyretic, anti-inflammatory, sedative (19); headache (20)
4%	Arnica (*Solidago Microglossa*)	Surgical healing	Healing (21); Anti-inflammatory (17); antibacterial and anti-adherent before bacteria that form the biofilm (22)
0.8%	Alfavaca (*Ocimum basilicum*)	Stomach	Cough, cold, mouth ulcers (23); digestive (17); anti-fever and anti-parasitic (20)
0.8%	Rosemary (*Rosmarinus officinalis*)	Halitosis	Dyspnea disorders (17); bacterial (contra *S. Mutans*)(24); anti-inflammatory(25)
0,8%	Clove (*Eugenia caryophyllus*)	Flu	Anti-inflammatory, analgesics, antiseptic (17); toothache (18);
0.8%	anise (*Pimpinella anisum*)	Gut	Anti-inflammatory(17); anti-microbial; antispasmodic (13)
		100% = 125 citations	

Frame 2. Medicinal plants cited, medicines used and their possible drug interactions and effects –population of a cover area of HU Jardim das Graças, in Colombo, Parana.

Medicines	Plant used	Effect/Justification
	Mint	Synergic. Flavonoids of plants have anti-platelet effect,
	Orange tree	as well as the AAS [13]
Acetylsalicylic acid	Ginger	Synergic. The plant increases the risk of hemorrhage whether administrated together the AAS [26]
	Boldo	Synergic because Boldo causes inhibition of platelet aggregation[26]
	Fig	Antagonistic because fig reduces anticoagulant effect[27]
	Lemongrass	Synergic. Both plants prolong depressor action of SNC
Topiramate	Chamomile	[28]
Amoxicillin	Guaco	Synergic. Guaco interacts synergistically with some anti-biotics like penicillin[26]
Amitriptyline	Mint	Synergic. Both amitriptyline and mint inhibit cytochrome P450[13]
Clopidogrel	Orange tree	Synergic. Flavonoids content in orange tree and in clopidogrel have antiplatelet effect[13]
	Pennyroyal	Synergic. Flavonoids content in plants increases the
Enalapril	Orange tree	absorption of enalapril [13]
	Chamomile	
	Passion fruit	Synergic. Flavonoid contents in the plant can increase
Phenobarbital		anticonvulsive effects[13]
	Melissa	Synergic. Melissa prolongs depressor action of SNC [26]
Insulin	Eucalyptus	Synergic. Fig and eucalyptus have hypoglycemic effect,
	Fig	as well as insulin[29]
Losartan	Ginger	Synergic. The plant interferes on losartan action[26]
	Passion fruit	Synergic. Flavonoids content in passion fruit increase
Levomepromazine		the effect of anxiolytics[13]
	Melissa	Synergic. The plant has depressor action on SNC [26]
	Mint	Synergic. Both the medicine and mint inhibit cytochrome P450[13]
Omeprazole	Mint	Synergic. Both omeprazole and mint inhibit cytochrome P450[13]
Clonazepam	Lemongrass	Synergic. Lemongrass prolongs depressor action of SNC [28]
	Orange tree	Antigenic. Flavonoids contents in mint decreases
Simvastatin	Mint	cytochrome P450 action, which is the main metabolization via of simvastatin[13]
	Mint	Antagonist. Mint decreases cytochrome P450 action,
Paracetamol		which is the main metabolization via of paracetamol [13]
	Green tea	Synergic. Caffeine increases paracetamol absorption[13].
	Mate herb	

Source: Research data

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