



Medicinal Plants and Herbal Medicines for Oral Health Promotion: Analysis of Students and Professionals Knowledge

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Authors' contributions

This work was carried out in collaboration between all authors. Authors EMAS and LMB designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors MFS and GFM managed the analyses of the study. Author LMB managed the literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/EJMP/2018/42954

Editor(s):

- (1) Dr. Daniela Rigano, Department of Chemistry of Natural Compounds, University Federico II of Naples, Italy.
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Reviewers:

- (1) Mahesh R. Khairnar, Bharati Vidyapeeth University, India.
(2) Janti Sudiono, Trisakti University, Indonesia.

Complete Peer review History: <http://www.sciencedomain.org/review-history/25803>

Original Research Article

Received 16th May 2018
Accepted 20th July 2018
Published 7th August 2018

ABSTRACT

Aims: Verify the indications of medicinal plants and herbal medicines carried out by professors and academics of the dentistry course, and their knowledge about the interaction of medicinal plants and herbal medicines with medications of continuous use.

Materials and Methods: An evaluation instrument was applied to professors who practice the profession of dental surgeon and students of the dentistry course on the indication of herbal and phytotherapeutic products to their clients in the clinic and in the office.

Results: A total of 52 subjects participated in the research, providing a total of 5 different types of plants cited and 1 herbal medicine, highlighting *Malva sylvestris*, and not reporting the knowledge of the subjects on any type of drug interaction.

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Conclusion: There is a lack of knowledge among professional dental surgeons and students about the use and benefit of natural resources such as medicinal plants and herbal medicines.

Keywords: Phytotherapeutic drugs; medicinal plants; herb drug interactions; dentistry.

1. INTRODUCTION

The history of medicinal plants use has shown that they are part of human evolution and were the first therapeutic resources used by the people. Ancient civilizations have their own historical references to medicinal plants, and long before any form of writing appeared, man already used plants, and among them some as food and others as medicine. In their experiments with herbs, they had successes and failures, is that they often healed and in others, they killed or produced severe side effects [1].

As for Brazil, there are historical accounts in which medicinal plants were used by the Indians in their rituals of healing and worship when the shaman invoking and using herbs to "cured" the sick [2]. The use of medicinal plants, as a form of treatment, cure and prevention of diseases, has become a widespread practice in popular medicine, and this is due to the difficult access of a large part of the population to medical care, high prices of allopathic medicines, and the popular knowledge of these plants.

According to Carvalho and Silveira [3], over the centuries, products of plant origin were the basis for the treatment of various diseases, either in a traditional way, due to the knowledge of the properties of a given plant, which is passed from generation to generation, or by the use of plant species, as a source of active molecules. Due to studies carried out with the introduction of medicinal plants in the treatment of some diseases, in recent years the Ministry of Health has sought to stimulate the insertion of complementary care practices in the official health system, such as the National Relation of Medicinal Plants of interest to the Unified Health System (SUS), launched in 2009, containing 71 medicinal plants that should be the object of research and implementation in the Brazilian public health sectors and services [4].

There are many reports in the literature about the increasing indication by dental professionals of the use of medicinal plants and herbal medicines to treat the most varied diseases related to the stomatognathic apparatus or even to relieve the discomfort caused by the dental treatment.

In this way, Xavier et al. [5], have identified just over 260 medicinal plants distributed to about 19 different indications for use in dentistry. Several studies have been carried out to evaluate plant species in dentistry, such as *Equinacea purpurea*, *Copaifera multijuga*, *Lippias idoides*, *Stryphnodendron barbatiman*, among others [6,7,8].

From the perspective of health professionals, the lack of knowledge about the indications and care in the use of medicinal plants is still a problem [9], because some professional dental surgeons do not know the true benefit of using herbal medicines, and even so do the indication. Faced with this fact, the present study seeks to encourage professionals in this area to research and know the real indication of some medicinal plants and herbal medicines, as well as the possible interactions between plants and some drugs of continuous use.

2. METHODS

An observational analytical study was carried out on the knowledge and indication of the use of medicinal plants and herbal medicines for the promotion of oral health by professors and academics of a Faculty of Dentistry of the Southern Region of Brazil.

For data collection, an evaluation instrument containing open and closed questions regarding the indication of medicinal plants and herbal medicines (knowledge, use, purpose, indication, place of acquisition) was used. The questionnaire applied to students and teachers was a simple questionnaire elaborated by the researchers themselves, and was not validated for the application, however, due to the absence of validated questionnaires on the subject, it was used for this research, and may undergo a validation process, responsible researchers. The interviewees were informed individually, in clear language about the objectives of the research, and on the non-compulsory participation, and only by signing the Free and Informed Consent Term were able to participate. The research was submitted and approved by the Research Ethics Committee of the Herrero Educational Society of Curitiba, with the approval number: 2.143.714.

In the choice of participants, the following inclusion criteria were applied: academics regularly enrolled from the fifth period of the undergraduate course in dentistry, and professors of the dentistry course practising the profession of a dental surgeon. The remaining academics and teachers from the other courses of the institution as well as the students of the corresponding course who were enrolled in periods prior to the fifth were excluded from this research.

The number of respondents during the application of the survey was considered significant within the institution in which it was applied, however, when taking into account a global population, this number is still small. This may be considered a limitation of the study in question.

Data were analyzed using SPSS for Windows, version 19.0 (SPSS Inc., Chicago, United States). Statistical analysis comprised the descriptive analysis of the general characteristics of the studied population, through the presentation of absolute and relative frequencies.

3. RESULTS AND DISCUSSION

To carry out the research, 52 participants were interviewed, of which 36 were academics with a mean age of 25 to 50 years, and 16 teachers, with a mean age of 25 to 60 years, of which 18.5% had five to ten profession as and 81.25% had more than ten years. These data can be observed in Table 1.

From the analysis of the questionnaires, it was observed that most of the professionals and students know what medicinal plants and herbal medicines are, as well as knows some type, thus

showing that this subject is widely publicized and used by the population in general.

The knowledge about the benefits of herbal and phytotherapeutic plants was mostly transmitted to the students by the parents being 41.66%, followed by the grandparents 38.88%, internet and college 19.44% and 19.77% respectively, leaving percentages almost equal to those were transmitted to him by neighbors and other sources, such as magazines and advertisements (Fig. 1, A).

The pattern observed in these responses is justified by the existence of several journals in the literature that proves the use of medicinal plants in human care. This is an old practice, related to the beginnings of medicine and based on the accumulation of information by successive generations [10]. Still, women are considered to be one of the main agents of transmission, because according to Ceolin et al. [11], the predominance of females shows the importance of women in the execution of health care among the families, making use of the plants in the accomplishment of these care and, in addition, are often responsible for transmitting this knowledge.

Badke [12], mentions that care in the family is a daily practice, and it occurs in particular by living among its members. Generally, there is no specific time to teach about medicinal plants, which reinforces the need for the different generations in the family to be together so that the knowledge is shared. In the case of teachers, knowledge about medicinal plants and herbal medicines in 50% of the interviewees was acquired during the period of college, and 37.5% cited other sources, such as journals, scientific articles, doctors, courses and congresses, 12.5%

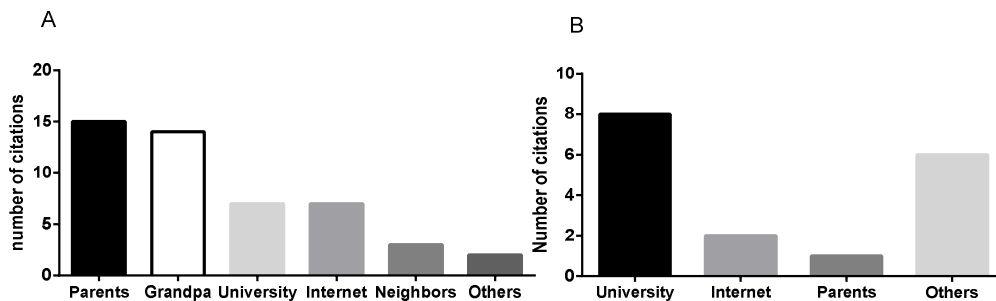


Fig. 1. Source of knowledge about medicinal plants and herbal medicines. A - students, B - teachers

Table 1. Replies from undergraduate students and teachers on medicinal plants and herbal medicines

		Professor %	Student %
Graduation period	6°	-	44.44%
	8°	-	55.56%
Years in the profession	1 – 5	0	-
	5 – 10	18.75	-
	>10	81.25	-
Do you know any type of medicinal plant?	Yes	93.75	86.1
	No	6.25	13.92
Do you know any kind of herbal medicine?	Yes	81.25	75
	No	18.75	25
Do you indicate any medicinal plant or herbal medicine for treatment?	Yes	50	33.33
	No	50	66.77

Authors (2018)

internet, followed by 6.25% who cited the parents (Fig. 1, B).

A percentage of 33.3% of the academics stated that they indicated during their dental clinic attendance of some medicinal plants such as aloe (*Aloe vera* (L) Burm), arnica (*Lychnophora ericoides*), and chamomile (*Matricaria chamomilla* L), as an anesthetic, and for mouthwash, pain and periodontal disease, for their patients, and 66.7% reported that they did not perform this indication. Fig. 2 shows the main plants cited by the research subjects.

When it comes to teachers, 50% stated that they had the indication of herbal medicines, and the other half reported that they were not indicated in their practice. The most cited plant was malva (*Malva sylvestris*), followed by chamomile (*Matricaria chamomilla* L), being prescribed for the most varied symptoms, such as: for inflammation, cold, pre and postoperative, stomatitis, and cold sore, a phytotherapy called

Chamomilla Recutita (AD-MUC) was also mentioned for gingivitis, stomatitis and aphthae (Fig. 3).

The most suitable dental plant for the academics was malva (*Malva sylvestris*), used for healing, inflammation, gingivitis and infection, among others. Ecker et al. [13], affirm that the malva is beneficial in broad aspects for health, can be used as chemotherapy, antioxidants, anti-wrinkles, anti-cancer, anti-ulcers and anti-inflammatory in various therapies against infections in the oral and vaginal mucosa, hearing aid and pharynx. Oliveira et al. [14] stated that the malva has anti-inflammatory and antimicrobial properties, in addition to controlling the growth of bacteria present in the dental biofilm. Still for Alves et al. [15] the same plant has antimicrobial, antifungal and anti-adherent activity, inhibiting the growth of the bacteria of the dental biofilm and fungi of the candidosis, which shows a beneficial effect of the malva. It is also considered a mucilaginous and slightly

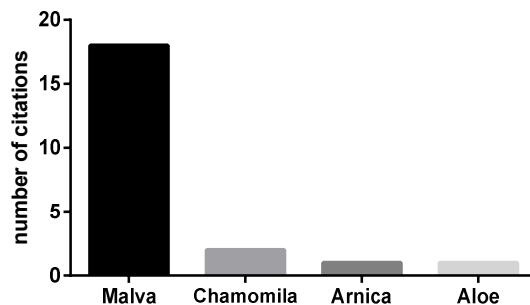


Fig. 2. Medicinal plants most cited by research subjects

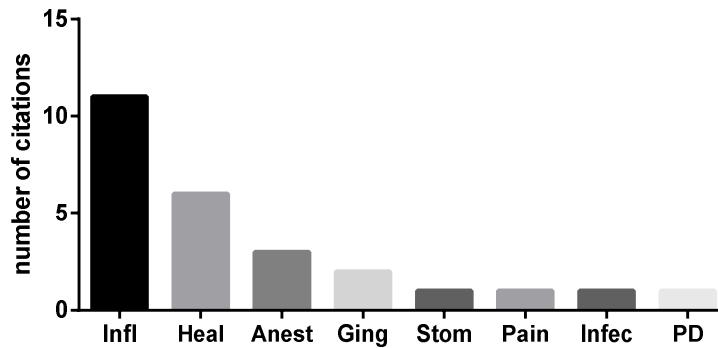


Fig. 3. Major pathologies for which medicinal plants or herbal medicines are used
 Caption: Infl = Inflammation; Heal = Healing; Anest = Anesthetic; Ging = Gingivitis; Stom = Stomatitis; Infec = Infection; PD = Periodontal Disease

astrigent herb, cited in the ethno-pharmacological literature as a plant able to soften tissue irritation and reduce inflammation, especially of the skin, mouth and throat [16].

It was observed that a minority of academics (8%), usually indicate to the patient the use of plants or herbal products together with allopathic medications, showing a contrariness to the professors' statements, since of these, 43% indicate for their patient the double medication, resulted in drug interaction. Regarding the interaction of allopathic medication with plants or herbal medicines, all students interviewed reported not having received any complaints of discomfort when ingesting plants together with medication of continuous use. The majority teachers, (93.75%) also affirmed a similar quote while only 6.25% of the academics mentioned that some patient complained of some discomfort, due to, unfortunately, most herbal remedies that are currently used by self-medication or by prescription does not have your well-known toxic profile [17,18]. According to Pinn [19] many plants minimize, augment or counteract the effects of allopathic drugs. In particular, they act as anxiolytics, antidepressants, anticonvulsants, anticoagulants, antiplatelets, antiarrhythmics, hypotensives, cancer treatment among others. Inadequate use of a product, even of low toxicity, can induce serious problems since there are other risk factors such as contraindications or concomitant use of other medicines [20,21,22].

A similar percentage of affirmation of the interviewees when questioned about the use of

medicinal or phytotherapeutic plants by the client in the pre and postoperative period, 5.5% mentioned once again the malva (*Malva sylvestris*) and soon after 2.7% mentioned the arnica (*Lychnophora ericoides*). It was also mentioned the use of bach floral, not being classified as a herbal remedy, because it is a form of treatment that uses the energy of wildflowers to combat the negative emotions that cause diseases [23]. Still according to Armstrong; Ernst [24] bach florals as well as homoeopathic medicines, exert their action through the "energy" that is transmitted from the flowers to the medicine.

The use of medicinal plants and phytotherapics for oral health by students and teachers presented great diversity, indicating the identification of four plant species, among a total of 52 interviewees, for the various affections as oral analgesic that affect their clients, where only one interviewee reported the use of a herbal medicine called Chamomilla Recutida (AD- MUC) a herbal remedy in the form of ointment or tube, a product containing a 10% extract of *Chamomilla recutita* (L.) Rauschert fluid indicated for the treatment of stomatitis and other inflammations of the oral cavity, including those caused by the use of a complete denture. In addition to its calming and anti-inflammatory properties, chamomile also has antifungal activity [25].

In the postoperative period, some authors reported that some patients did not use medicinal plants for surgical wound healing or pain control,

at 80%, the remainder used an affirmative answer, citing plants such as malva (*Malva sylvestris*) and chamomile (*Matricaria chamomilla* L.), 81% of teachers mentioned that their clients used plants such as malva (*Malva sylvestris*) and arnica (*Lychnophora ericoides*), with 68% saying they did not use them.

From the information provided by students and teachers dentist surgeons it was identified the relationship of medicinal plants and herbal medicines with a higher prevalence of indication in oral treatments, as well as the forms of use and knowledge of them on such products. In view of the results of our study, it is necessary to train professionals in the dental area regarding the use of plants, knowledge and indication of medicinal plants and phytotherapeutic medicine, the great benefits of such plants, and the low cost to the population. As Amaral et al. [26] emphasize phytotherapeutic products have been used as important therapeutic alternatives due to several factors, such as the high cost of synthetic drugs or the fad itself, making its consumption worrying when considering that the inspection of such products is precarious, representing several risks to the consumer.

Phytotherapy and medicinal plants provide an alternative treatment for diseases of dentistry, are natural resources of great medicinal value. The development of the present study made possible an analysis of the knowledge of the correct indication of herbs and phytotherapeutic medicines by the academics and teachers, as well as helping to identify doubts about the use and correct interactions, where in this study the most cited plant was malva for treatment of inflammation, and stimulation of healing.

The knowledge acquired by the students about alternative therapies is more related to "popular knowledge", from the media and oral tradition, than with the "official knowledge". Thus, among the students, the most well-known therapy is that of flower essences, perhaps because of educational institutions that have a specific role in this area. In considering that facts not all professionals are aware of the taxonomy of botanical material; that herbal medicines contain the possibility of side effects and intoxications, and that indications, preparation and optimum dosage of this product which must be known to the professionals, it is understood that the faults in the administration of herbal medicines, the

preparation and administration of allopathic medicines, submitted to ethical-legal postulates.

Thus, health training cannot be norms, rules or standards, nor to simple reordering disciplines and workloads. It is understood that there is a need to include a component that focuses on alternative practices in all the Political Pedagogical Projects of the Undergraduate Courses of public and private schools.

4. CONCLUSION

Due to the small citation of plants and herbal medicines and the importance of the subject, a deeper study by the students and teachers is necessary to know the correct indication, and the real benefit of the appropriate use of these natural resources, as well as an incentive to undergraduate education by undergraduate institutions.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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