Original Research Article

PHYTOTHERAPY IN THE FAMILY AND COMMUNITY MEDICINE RESIDENCY PROGRAM IN PARANÁ, BRAZIL

ABSTRACT

INTRODUCTION: Phytotherapy, as a therapeutic method, uses medicinal plants and their derivatives for the treatment of diseases. The aim of this study is to know how Phytotherapy is conceived as a medical practice among Family and Community Medicine residents in training. MATERIAL AND METHODS: Mixed study, starting from a cross-sectional research design based on a questionnaire in the online survey model, followed by a qualitative phase, based on Social Representations, using Free Lexical Evocation. This study sample consisted of 46 Family and Community Medicine residents. They were invited to participate in the research through groups in message applications. RESULTS: The gap between acceptance and knowledge can be reduced with the insertion of phytotherapy in the current medical curriculum, so that future physicians can better communicate with their patients about this therapeutic modality. Educational interventions, through continuing education programs, are also indicated to give physicians the opportunity to update their knowledge in this area. Equipping public health institutions with products from the Brazilian Pharmacopoeia, as well as the availability of electronic databases to answer questions that may arise in the course of clinical practice, may be steps towards access to information. CONCLUSION: Phytotherapy can and should be used as a transformative tool, allowing university-community interaction.

Key words: Phytotherapy, Residency, Family and Community Medicine.

INTRODUCTION

Plants have long been used as a source of medication. Phytotherapy, as a therapeutic method, uses medicinal plants and their derivatives for the treatment of diseases. These plants can be used popularly or through Rational Phytotherapy, which considers tests based on the standardization of plant extracts and on scientific evidence[1].

Historically, the Declaration of Alma-Ata, in 1978, made by the World Health Organization (WHO), recognized that 80% of the population in developing countries used traditional practices in their basic health care, and 85% used plants or plant preparations[2]. In Brazil, phytotherapy was recognized as a medical practice in 1991 by the Federal Council of Medicine[3] and the 8th National Health Conference[4]recommended

the establishment of a policy to encourage the use of effective phytotherapy. Furthermore, in 2006, the National Health Council approved the National Policy of Integrative and Complementary Practices (PNPIC)[5], which encompasses the implementation and execution of actions and services in the Brazilian Public Health System (Sistema Único de Saúde - SUS), and the National Policy of Medicinal Plants and Phytotherapy Medicines[6]. In 2008, the Ministry of Health approved the National Medicinal Plants and Phytotherapy Products Program (PNPMF)[7].

Regarding the legal recognition of the use of medicinal and phytotherapy plants, it is observed that physicians and nurses working in primary health units show little knowledge about these practices, despite reporting the desire to learn more about the subject, since there is some deficiency in the training of prescribing professionals in phytotherapy. Surprisingly, there is lack of studies seeking to answer some questions, such as: to what extent could Phytotherapy be conceived as a complementary therapeutic method, with applicability from the practical point of view? Another relevant point would be its insertion, at the curricular level, as a subject or course content. In relation to this topic, we have found only isolated studies on the application of Phytotherapy in medical practice, without strong association with academic training, pointing out the novelty of the research[1].

Thus, as possible repercussions, it is necessary to develop scientific research to locate the interest, perception, intention, knowledge, and scope of phytotherapy. Consequently, this research aimed to find how Phytotherapy is conceived as a medical practice among residents in training in Family and Community Medicine in the state of Paraná.

MATERIAL AND METHODS:

This research is exploratory and descriptive. The study was conducted in quantitative and qualitative phases, starting with a cross-sectional research design based on an online questionnaire, followed by a qualitative phase, based on Social Representations, using Free Lexical Evocation[8].

This study sample consisted of 46 Family and Community Medicine residents, who got their residency training in the state of Paraná. The residents were called to participate in the research through an invitation in Whatsapp® groups or email. The invitation included a link to a Google® Form so that residents could respond to the survey.

The form had 3 sections. The first with sociodemographic data, the second with Free Lexical Evocation, which is based on the evocation of answers given by the subjects[9], and the third with specific questions about the research topic (quantitative phase).

Free Lexical Evocation is a technique characterized by the use of stimulus words or inducing terms related to the research object, aiming at making subjects associate words, ideas, or short phrases to the research topic. Therefore, it is a questionnaire composed of open-ended questions, in which the respondent evokes or associates words of an inducing term, and ranks them according to their order of importance. The Free Lexical Evocation questionnaire technique is used to stimulate the spontaneous emergence of associations related to the words explored in terms of the stereotypes generating them[8]. This questionnaire format allows revealing implicit or implicitly understood elements that could be hidden in the discursive productions.

Then, in the second section of the research questionnaire, the resident physician was invited to write down 4 (four) words, expressions, or short phrases that came to

mind, that is, spontaneously evoked and related to the inducing term “Phytotherapy”. Next, the research participant was asked to organize, in numerical order of importance, the items mentioned in the first question, from the most evocative to the least relevant. However, in the same question, research participants were asked to justify each evocation. These explanations or justifications for the selection of terms helped in the elaboration of the categories of analysis, used to synthesize the data.

To assess the sociodemographic data and the responses related to the research topic, descriptive statistical analysis (quantitative phase) was used. Data referring to the Free Lexical Evocation questionnaire were analyzed using the Central Core Theory, to understand the meaning of the answers attributed by the subjects participating in the study (qualitative phase).

The Central Core Theory states that every social representation is organized around a central core and a peripheral system, the former being related to the collective memory that portrays a more stable representation, and the latterbeing related to representations subject to updates[9].

From the words mentioned by the research subjects in the Free Lexical Evocation, through thorough reading, possible answers were sought for the meaning of phytotherapy for the participants. In the second stage of the analysis, the information was decoded by grouping it into lexical fields, i.e., words belonging to the same topic, as well as semantic fields of words with similar meanings.

Next, to determine the central core[10] for the construction of the Four Quadrant Table, two variables were used from the data collected for each term evoked: the Average Order of Evocation (AOE) and the Total Frequency of Evocation.

The analysis of these data is based on Abric's proposal, in which the terms encompassing, at the same time, the most frequent evocation criteria and which are located in the first places, through the hierarchical order, have more relevance in the subject's cognitive schema[9]. Consequently, these are considered hypotheses of the central core of social representation.

The research followed the ethical precepts of Resolution No. 466 of 2012 of the National Health Council and was approved by the Research Ethics Committee under CAAE number: 31817820.7.0000.5580. All participants signed the Free Informed Consent Form, which was sent by email, before responding the research form.

RESULTS AND DISCUSSION

The presentation of the results is divided into three sections: sociodemographic characterization of the participants; free evocation of words and determination of the central core, and acceptance and use of phytotherapy drugs, as well as interest and knowledge about it; sociodemographic characterization of family and community medicine residents in the state of Paraná.

Table 1 Sociodemographic characteristics of the Family and Community Medicine residents (n = 31)

Variable	**Number**	**%**
Age		
18-22	0	-
23-27	16	51.6
28-32	10	32.3
33 +	5	16.1
Otherhighereducationcourse		
Yes	5	16.2
No	26	83.8
Profile of the IES where you studied		

Public	14	45.2
Private for-profit	11	35.5
Private non-profit	6	19.4

Source: Survey data, authors, 2020.

According to the study "Medical Demographics in Brazil 2020", the "youngest" medical specialty, with the lowest average age, is Family and Community Medicine (41.7 years). This specialty, which accounted for 5.3% of all R1 residents in 2019, grew almost five times the overall growth rate of 81.4% in R1 placements in the period analyzed[11].

Regarding self-referred previous higher education (Table 1) course, different professions were reported by 16.2% of the residents, among them those in Biological Sciences, such as Biology, Pharmacy, and Dentistry. On the other hand, it is observed that there are graduates in the area of Human Sciences, such as Law and International Relations.

Regarding the city of residence (Table 1), a large part (74.2%) is in Curitiba, followed byCascavel, with 12.9%, thenMaringá, with 9.7%, and Londrina, with 3.2%. The distribution in relation to the year of residence (Table 1) seems homogeneous, with 58.1% in the first year (Table 1).

Regarding the presence of phytotherapy in the medical curriculum (Table 1), the survey shows that 80.6% of respondents had never received any information on phytotherapy, compared to only 19.4% who had had some contact with the subject. Very similar data were presented in a study that states that for 85.7% of Brazilian physicians, there was little or no contact with this therapy during graduation[26].

Even so, among those who had already had contact with the subject, only 33.3% reported that phytotherapy had been presented within the mandatory curricular contents,

while 33.3% obtained it through a specific elective course, 16.7% through extension activities, and 16.7% through some approach in the Pharmacology class.

Free lexical evocation and determination of the central core.

We proceeded with the thorough reading of evoked words and the grouping into categories and subcategories, developed as follows[12]. Category: medicinal plants (subcategories: medicinal plants; species); Category: Treatment (subcategories: Alternative/Complementary Treatment; Homeopathic Treatment; Pharmacological Therapy; Natural Treatment; Holistic Treatment; Integrative Practice); Category: Origin (subcategories: Ancestry; Population; Indigenous); Category: Quality (subcategories: pure product; questionable quality; low concentration; assistant; inert; low cost; toxic effect); Category: Science (subcategories: science; evidence-based medicine); Category: Effects (subcategories: effect; sensation; characteristics). After determining the categories and subcategories, data were organized according to the order of importance reported by the participants.

Table 2. Resident evocations of "Phytotherapy Medicine" organized according to hierarchy and frequency of evocation.

EVOCATIONS	HIERARCHY				FREQUENCY
	1	2	3	4	
Plants	16	3	2	3	24
Herbs	0	1	0	0	1
Leaves	1	1	0	1	3
Teas	0	2	7	1	10
Maytenus ilicifolia	0	0	0	1	1
PassionFruit	0	0	0	1	1

Peumus boldus	0	0	1	0	1
Alternative/Complementary	1	0	4	2	7
Homeopathy	1	0	0	1	2
Therapeutics	0	1	1	0	2
Treatment	0	1	0	0	1
Traditional	1	0	0	0	1
Medication	1	2	0	0	3
Natural	8	6	2	0	16
Holistics	0	1	0	0	1
Medicinal	0	1	0	0	1
Integrative Practice	1	0	0	0	1
Ancestry	1	1	1	0	3
Popular culture	0	0	1	0	1
Indigenous	0	0	0	2	2
Purity	0	1	0	0	1
Doubtful quality	1	0	0	0	1
Dilution	0	1	0	0	1
Mild	0	0	0	1	1
Secondary	0	0	1	0	1
Placebo	0	0	1	2	3
Inexpensive	0	0	0	1	1
Toxicity	0	0	0	1	1
Science	0	1	0	0	1
Effective	0	1	0	0	1
Evidence	0	0	0	1	1
Cure	0	0	1	0	1
Medicine	0	0	1	1	2
Health	0	0	0	1	1
Essences	0	0	1	0	1
Similar	0	1	0	0	1
Supplement	0	1	0	0	1
Extract	0	1	1	0	2
Derivative	0	0	0	1	1
Poultice	0	0	0	1	1
Manipulated	0	0	0	1	1
Energy	0	0	1	0	1
Tranquility	0	0	0	1	1
Pleasant	0	0	0	1	1
TOTAL NUMBER OF EVOCATION: 45	**33**	**26**	**26**	**25**	**110**

Source: Survey data.

According to Table 2, it was possible to find 45 evocations. It can be observed that 110 words were evoked, being distributed in hierarchical order of importance 33, 26, 26 and 25 as first, second, third and fourth, respectively. The analysis of the data shows that most of the evoked words had a single frequency, with a great predominance of "plants", "natural", and "teas".

In Table 3, frequencies were determined by the sum of word evocations by subcategories. The analysis in Table 3 shows the predominant frequency for the term "medicinal plants", and considerable ascendancy for the terms "pharmacological treatment" and "natural treatment".

Table 3. Subcategories of evocations organized according to hierarchy of evocations and frequency of subcategories.

SUBCATEGORIES	**EVOCATIONS**	**HIERARCHY**				**FREQUENCY**
		1	**2**	**3**	**4**	
Medicinal plants	Plants	16	3	2	3	38
	Herbs	0	1	0	0	
	Leaves	1	1	0	1	
	Teas	0	2	7	1	
Species	*Espinheira Santa*	0	0	0	1	3
	Passion Fruit	0	0	0	1	
	Boldo	0	0	1	0	
Alternative Treatment	Alternative/ Complementary	1	0	4	2	7
HomeopathicTreatment	Homeopathy	1	0	0	1	2
FarmacologicalTreatment	Terapeutic	0	1	1	0	16
	Treatment	0	1	0	0	
	Traditional	2	01	0	0	
	Medication	1	1	0	0	
	Medicinal	0	1	0	0	
	Similar	0	1	0	0	
	Extract	0	1	1	0	
	Derivative	0	0	0	1	
	Poultice	0	0	0	1	
	Manipulated	0	0	0	1	
	Essences	0	0	1	0	

	Supplement	0	1	0	0	
Natural Treatment	Natural	8	6	2	0	16
HolisticTreatment	Holistic	0	1	0	0	1
Integrative Practice	Integrative Practice	1	0	0	0	1
Ancestor	Ancestrality	1	1	1	0	3
Population	Popular culture	0	0	1	0	1
Native people	Native people	0	0	0	2	2
Pure product	Purity	0	1	0	0	1
Doubtfulquality	Doubtfulquality	1	0	0	0	1
Low concentration	Dilution	0	1	0	0	2
	Mild	0	0	0	1	
Assistant	Secondary	0	0	1	0	1
Inert	Placebo	0	0	1	2	3
Low cost	Cheap	0	0	0	1	1
Toxiceffect	Toxicity	0	0	0	1	1
Science	Science	0	1	0	0	1
Evidence-basedMedicine	Efficacious	0	1	0	0	6
	Evidence	0	0	0	1	
	Cure	0	0	1	0	
	Medicine	0	0	1	1	
	Health	0	0	0	1	
Effect	Energy	0	0	1	0	1
Sensation	Tranquility	0	0	0	1	1
Characteristic	Enjoyable	0	0	0	1	1
SUBCATEGORIES TOTAL: 23	**EVOCATIONS TOTAL: 45**	**33**	**26**	**26**	**25**	**110**

Source: Survey data.

Table 4. Subcategories of evocations ordered according to evocation hierarchy, frequency, average order of evocations.

SUBCATEGORÍAS	**JERARQUÍA**				**FRECUENCIA**	**OPE**
	1	**2**	**3**	**4**		
Medicinal Plants	17	7	9	5	38	2.0
Species	0	0	1	2	3	3.67
Alternative Treatment	1	0	4	2	7	2.86
Hemopathictreatment	1	0	0	1	2	2.5
Pharmacologicaltherapy	3	7	3	3	16	2.37
Natural treatment	8	6	2	0	16	1.43
HolisticTreatment	0	1	0	0	1	2.0
Integrative Practice	1	0	0	0	1	1.0
Ancestral medicines	1	1	1	0	3	2.67

Population	0	0	1	0	1	3.0
Native people	0	0	0	2	2	4.0
Pure product	0	1	0	0	1	2.0
Doubtfulquality	1	0	0	0	1	1.0
Low concentration	0	1	0	1	2	3.0
Assistant	0	0	1	0	1	3.0
Inert	0	0	1	2	3	3.67
Low cost	0	0	0	1	1	4.0
Toxiceffect	0	0	0	1	1	4.0
Science	0	1	0	0	1	2.0
Evidence-based Medicine	0	1	2	3	6	3.33
Effect	0	0	1	0	1	3.0
Sensation	0	0	0	1	1	4.0
Characteristic	0	0	0	1	1	4.0
23subcategories **45 evocations**	**Total:**				**110**	**64.5**
	Average				**4.78**	**2.80**

Source: Survey data.

In summary, Table 4 shows that 45 terms were evoked, which were grouped into 23 subcategories organized according to semantics, i.e., different words having the same meaning formed semantic aggregations. Based on these subcategories, the average frequency of evocations was 4.78 and the OPE between subcategories was 2.80.

Based on these orientations, a four-quadrant table was elaborated, which presents the content and structure of the social representations of the phenomenon studied, using the cut-off values, average frequency of evocations of the subcategories (average f), order of evocations of the subcategories, and average order of evocations of the subcategories (average OPE).

Table 5. Table of four quadrants of free evocations to the inducing term "Phytotherapic".

CENTRAL ELEMENTS AverageOPE< 2.80				INTERMEDIATE ELEMENTS MeanOPE< 2.80		
Terms	F	OPE		Términos	F	OPE
Medicinal plants	38	2.0	mean f ≥ 4,78	Alternative treatment	7	2.86
Pharmacologicaltherapy	16	2.37		Evidence-basedMedicine	6	3.33
Natural treatment	16	1.43				
INTERMEDIATE ELEMENTS Mean OPE < 2.80				PERIPHERAL ELEMENTS Mean OPE< 2.80		
Terms	F	OPE		Terms	F	OPE

Homeopathictreatment	2	2.5		Species	3	3.67
Holistictreatment	1	2.0		Native people	2	4.0
Integrative Practice	1	1.0	Mean f< 4.78	Low concentration	2	3.0
Ancestral medicines	3	2.67		Assistant	1	3.0
Pure product	1	2.0		Inert	3	3.67
Doubtfulquality	1	1.0		Low cost	1	4.0
Science	1	2.0		Effect	1	3.0
				Toxic effect	2	4.0
				Sensation	1	4.0
				Characteristic	1	4.0
				Population	1	3.0

Source: Survey data.

The structural analysis of the Residents' Social Representations shows, in the upper left quadrant in Table 5, the central core, that is, the most significant evocations for the individuals who participated in the research. Therefore, it is clear that the residents have the term "medicinal plants" as the meaning of phytotherapy drugs.

It seems that for the residents who participated in the phytotherapy study, the term is synonymous with medicinal plant. Phytotherapy, in Brazil, is the product obtained exclusively from active plant raw material (comprising the medicinal plant, plant drug, or plant derivative, alone or in composition), except for isolated substances, for prophylactic, curative, or palliative purposes[12]. Medicinal plant, in its turn, is the plant species, cultivated or not, used for therapeutic and/or prophylactic purposes[13].

Nevertheless, it is noted that there is some explicit intrinsic knowledge, by relating medicinal plants in their origin as medication, going through derivatives, active principles or plant actives, parts used as plant drugs, single-use and associations, ending in teas or infusions as a pharmaceutical form.

Non-scientific and/or non-institutional sources of information were identified as predominant, including the reading of non-technical material, from television, contact with other people, and general knowledge. Even among the participants who reported

having had contact with phytotherapy in the university context (37%), none of them reported having taken a subject addressing the topic in their curriculum[14].

Moreover, the term that most represented the investigated group (16 responses) was pharmacological therapy. The term Phytotherapy, represented here by pharmacological therapy, can be related to different perceptions. According to the interviewees, Phytotherapy can be seen as a medicine in itself, used for different purposes, through different routes of administration and different pharmaceutical forms.

According to ANVISA (Brazilian Health Regulatory Agency), food supplements are not medicines. Therefore, they do not treat, prevent, or cure diseases. They are intended for healthy people, with the objective of providing nutrients, bioactive substances, enzymes, or probiotics as a dietary supplement. This category was created in 2018 to ensure the population's access to safe and quality products[15].

Finally, the term that most represented the group investigated, also with 16 responses, was "natural treatment". The view of phytotherapy as a therapeutic resource, as something mild, not aggressive or ineffective, stands out. It should be noted that herbal medicines can also present toxicity, adverse effects, and drug-drug interactions, both among phytotherapy drugs and between phytotherapy drugs and synthetic drugs. Therefore, it is important to consider such risks, as the number of adverse reactions related to medicinal plants and phytotherapy has increased proportionally to their use[16].

Acceptance, use, interest, and knowledge about phytotherapy.

This quantitative analysis corresponded to 43 responses from the participants in this study. The questions were divided into four themes regarding phytotherapy: acceptance, use, interest, and knowledge, as shown in Table 6.

Table 6. Acceptance, use, interest, and knowledge about Phytotherapy

Items relatedto the use, acceptance, interestandknowledge aboutPhytotherapy	YES (n) %	NO (n) %
1. Do you believe that phytotherapy medicines are beneficial in health care management?	(41) 95,3	(2) 4.7
2. Have you ever recommended the use of phytotherapy?	(38) 88.4	(5) 11,6
3.Have you ever prescribed phytotherapy to your patients?	(36) 83.7	(7) 16,3
4.Have you ever referred patients to a Phytotherapist?	(0) 0.0	(43) 100,0
5.Have you ever made personal use of phytotherapy?	(31) 72,1	(12) 27,9
6.Do you believe that the use of phytotherapy should be limited only to patients who failed with conventional therapy?	(1) 2.3	(42) 97.7
7. Are you or would you be interested in prescribing phytotherapy in your daily practice?	(40) 93.0	(3) 7,0
8.Do you think your patients would like to have phytotherapy also prescribed?	(40) 93.0	(3) 7,0
9.Do you believe that the use of phytotherapy is safe?	(38) 88.4	(5) 11,6
10. Do you believe that the combined use of phytotherapy and synthetic drugs is more effective?	(28) 65,1	(15) 34,9
11. Do you believe that the combined use of phytotherapy and synthetic drugs is safe?	(34) 79,1	(9) 20,9
12. ¿Do you think that you can use phytotherapy instead of conventional medicine?	(27) 62,8	(16) 37,2
13. Do you ask you patient specifically if he/she is using phytotherapy drugs or medicinal plants products during their history taking?	(11) 25,6	(32) 74,4
14. Do you have any information about drug interactions between synthetic and phytotherapy drugs?	(16) 37,2	(27) 62,8
15. Do you have any information about drug interactions among phytotherapy drugs?	(5) 11,6	(38) 88.4
16 Do you have any information about adverse effects and secondary effects of phytotherapy drugs?	(22) 51,2	(21) 48,8
17. Dou you have any information about phytotherapy contraindications?	(16) 37,2	(27) 62,8
18 Do you have any information about the time limit of use of phytotherapy drugs?	(2) 4.7	(41) 95,3
19. Do you have any information about clinical trials with phytotherapy drugs?	(10) 23,3	(33) 76,7
20. Do you have any information about regulations on the use of phytotherapy drugs in Brazil?	(8) 18,6	(35) 81,4
21. Do you have any information about theMinistry of Health PNPIC (National Policy of Integrative and Complementary Practices?	(39) 90,7	(4) 9.3
22. Do you have any information about the Ministry of Health PNPMF?	(12) 27,9	(31) 72,1
23. Do you think that continuing training in Medical Phytotherapy is important?	(41) 95,3	(2) 4.7
24. Would you be interested in including some contenton Medicinal Plants and Phytotherapy in a specific course of Medical Residency?	(41) 95,3	(2) 4.7

25. Do you think it is important to include Phytotherapy in the medical course?	(39) 90,7	(4) 9.3
26. Have you had any training in Medicinal Plants and Phytotherapy drugs?	(17) 39,5	(26) 60,5
27. Would like to enhance your clinical practice knowledge on the field of Medicinal Plants and Phytotherapy Drugs?	(42) 97.7	(1) 2.3

Source: Survey data.

When the subject is the acceptance of phytotherapy as a therapeutic resource (Table 6), it is observed that 95.3% of the resident physicians believe that phytotherapy drugs are beneficial when used in health care management, and that 97.7% believe that the use of these drugs should not be limited to patients in whom conventional treatment has failed. These participants even suggest their use as first-choice therapy.

Several studies have been conducted in developed countries to determine medical students' acceptance of complementary and alternative medicines (CAM), including herbal medicine and medicinal plants[17]. A study by Greiner et al. (2007) showed a high level of acceptance among first-year medical students, revealing that 84% believed that knowledge about alternative medical therapies would be important for them as future physicians[18].

In addition, a study found that 48.7% of conventional medicine specialists, 100% of CAM specialists, and 72.6% of students were in favor of education on these topics in Swiss medical schools, and herbal medicine was again among the most requested subjects[19].

The results observed are very close to those recorded by the research conducted by Foster et al. (2018), at the University of Colorado School of Medicine, in the United States, with 65 Family Medicine residents, in which 91.1% stated that phytotherapy should be included in the medical curriculum, both at the undergraduate and postgraduate levels[20]. The teaching of CAM in medical schools, including phytotherapy,

is becoming more widespread worldwide and gaining importance as a research topic and as a modality of use[21]. Research in medical schools in the United States, Canada, Australia, Japan, Germany, the United Kingdom, among others, continues in this direction, indicating that this content is significantly present in undergraduate medical curricula[22, 23, 24, 25].According to a study conducted by Levin et al. (2009), in 2003, 83% of primary medical schools in the United States offered CAM courses within primary care curricula, and no less than 40% of European medical schools offered courses related to CAM[26]. In the United Kingdom, most medical schools offered courses of familiarization with CAM[22, 23, 27]. Other studies show increasing use in many countries, demanding from physicians some knowledge on CAM.[19].

Another relevant data presented in Table 7 is that 88.4% of the residents had already recommended the use of phytotherapy, which represents a simple indication, not exactly the prescription of the phytotherapy drugs; 83.7% had already effectively prescribed; and 72.1% had already made personal use of phytotherapy drugs. Incidentally, a study conducted with professionals working in the Family Health Strategy (ESF) found that 76.2% of the physicians interviewed used phytotherapy drugs or medicinal plants to take care of their own health[27].

These data show that most of the participants, despite little or no training in the area, sympathize with phytotherapy, either for their own use, for informal indication, or even for the prescription of herbal medicines. In fact, the contents related to phytotherapy, present at undergraduate courses, were shown to be more informative than formative, as previously exposed in the comments related to the data, where the presence of phytotherapy in the curriculum of the medical degree represented 19.4%.

Furthermore, in a study conducted with professionals working in the ESF, it was found that, although 66.7% of the physicians stated that they prescribe phytotherapy

drugs, the majority stated that they had not received any instruction on the subject, and that for 85.7% of the physicians there was little or no contact with this therapy during the undergraduate course[26]. Interestingly, the family itself has been identified as the main source of information on the use of this type of product[28]. Other sources, such as the Internet, television, and friends, also contribute[29].

In another intriguing perspective, patients are often hesitant to report information on the use of CAM, due to the perception that physicians lack knowledge in this area and because they fear disapproval of their complementary treatment[30]. It is important to highlight that 62.8% of residents are unaware of possible drug-drug interactions between synthetic drugs and phytotherapy drugs, and 88.4% have no information on drug-drug interactions among phytotherapy drugs. In addition, 88.4% of the respondents answered that they consider the use of phytotherapy drugs safe, as shown in Table 2. Furthermore, the association with synthetic drugs seems safe in the opinion of 79.1%.

The unprecedented global increase in the use of herbal remedies will continue apace for the foreseeable future. This raises important public health concerns, especially with regard to safety issues, including adverse effects and phytotherapy drug interactions[17]. Continuing with the theme of knowledge, 65.1% of residents believe that associating phytotherapy drugs with conventional treatment can increase their efficacy (Table 6), while 62.8% believe that phytotherapy can be substituted for conventional medicine.

Considering that the interaction between modern drugs and medicines can lead to undesirable pharmacodynamic and pharmacokinetic effects, patients' health will depend on the knowledge of physicians about possible adverse effects[31] of medicinal plants and their products. When the topic refers to knowledge of possible adverse effects and/or side effects of phytotherapy drugs, and to the existence of any

information on contraindications for the use of phytotherapy (Table 6), 51.2% of physicians say they have some information on side and/or adverse effects. However, one study found that 62.8% were unaware of information on contraindications for the use of phytotherapy drugs[17].

In Brazil, the number of adverse reactions related to medicinal plants and phytotherapy drugs has increased proportionally to their use[16]. The need to include adverse effects and drug-drug interactions with medicinal plants and phytotherapy drugs in the medical curriculum is highlighted. Although some medical schools offer adequate medical education in CAM, including Phytotherapy, the proportion of medical schools in the world providing such training is very small. A study from India with second-, third- and fourth-year undergraduate medical students demonstrates the lack of knowledge and awareness of medical students about phytotherapy drugs and drug interactions with medicinal plants. Regarding the time of use of a phytotherapy drug, the responses of 95.3% of the interviewees refer to another relevant concern: the lack of knowledge regarding the information that treatments with phytotherapy drugs require extreme attention in terms of limiting the time of use, due to their possible toxicity[30].

With respect to information on the existence of clinical research on phytotherapy, as shown in Table 6, only 23.3% of the residents say that they know about clinical trials with phytotherapy drugs. However, a simple search in databases and scientific websites, for example, reveals numerous systematic reviews and randomized, double-blind, placebo-controlled trials[1].

The main objective of the aforementioned PNPIC5 is to recommend the implementation and execution of actions and services at SUS, which include phytotherapy, to guarantee injury prevention, health promotion, and recovery with emphasis on primary health care. Several municipalities have implemented the

application of phytotherapy programs in public health services. Some of these initiatives have a very solid structure and systematic monitoring of results, as is the case of Brasilia (DF) and Vitoria (ES), some with implementations dating back to the early 1980s, as is the case of Curitiba (PR). In this study, it was observed that almost three quarters of those interviewed (72.1%) are still unaware of the PNPMF of the Ministry of Health, which curiously contrasts with the 90.7% who are aware of the PNPIC, according to Table 2. Another study concluded that only 52.4% of physicians were familiar with the normative and PNPMF educational materials produced by the Ministry of Health[27].

The level of lack of knowledge is more evident and striking when the topic is Regulation, as shown in Table 6, since 81.4% of the research subjects, when answering question 20, said they had no information about the regulation regarding the use of phytotherapydrugs in Brazil. According to Guven (2019), medical students do not have adequate medical information about medicinal plants and phytotherapy products, nor about their regulation[29].

Concerning interest in prescribing phytotherapies, the majority of physicians (93%) stated that, in addition to being in favor of their prescription in their daily practice (Table 6), they also believe that their patients would like that. In a survey, it was observed that physicians are not encouraged to use this therapy during their training, but find this practice fromthe demand of the patients themselves. This statement is in agreement with the present study, which showed that 93% of the physicians expressed their patients' interest in treatment with phytotherapy[14].

The fact that only 39.5% have received training in the field of phytotherapy (Table 6) contrasts with the percentage of 95.3% of physicians interested in including this content as a specific discipline in the Medical Residency, as well as with the data of

97.7% that show interest in making an in-depth investigation of this subject (Table 6). Another study showed a gap between acceptance or interest and knowledge related to the use of phytotherapy drugs in medical practice among professionals recruited in six Caribbean hospitals[17].

Studies assessing the attitudes of medical students towards their interest in learning more about CAM in various countries show unanimously positive attitudes and a high level of desire for this content. Finally, 100% of our respondents answered that they had never referred patients to Physiotherapy. It is known that there are very few options for training courses in Phytotherapy, making it extremely expensive to find medical professionals dedicated to the practice of Phytotherapy as a first choice therapy. However, they do find physicians who prescribe Phytotherapy drugs among the most varied specialties, including Acupuncture, Homeopathy, Gynecology, and Otolaryngology, to name a few.

Analyzing the central core of the social representations studied, it is noted that residents have the term "medicinal plants" as meaning phytotherapy drugs. There is also some intrinsic knowledge, explicit in relating medicinal plants to their origin as medication, passing through derivatives, active principles or plant actives, parts used as plant drugs, single-use and associations, ending in teas or infusions as a pharmaceutical form.

Sequentially, a dual representation of pharmacological treatment x natural treatment is presented. Moreover, in the view of the interviewees, phytotherapy drugs can be seen as a medicine in themselves, used for different purposes, through different routes of administration, and in different pharmaceutical forms.

In detailing the responses of the physicians participating in the study, whose representation refers to natural treatment, the view of phytotherapy drugs as a therapeutic resource, as something mild and non-aggressive, is noted. It should be noted that phytotherapy drugs can also present toxicity, adverse effects, and drug interactions (among phytotherapy drugs and between phytotherapy and synthetic drugs). The reference to natural treatment, it seems, must be related to the tendency to compare it with synthetic drugs, which are potentially more aggressive. The residents of Family and Community Medicine in the state of Paraná who participated in the study showed expressive acceptance and interest in using, indicating, and prescribing phytotherapy drugs themselves to their patients, but they have little knowledge.

It was observed that the scarce knowledge evidenced is due to the deficiency in the curricular plans, which do not offer the subject of Phytotherapy, as well as to the lack of knowledge about the public policies implementing and guiding SUS health services, such as the PNPMF and the PNPIC. It was observed that much of the "learning" comes from family, television, internet, friends, and patients themselves. However, conversely, we propose that knowledge should come from academic training, starting in a specific discipline in undergraduate courses, continuing at postgraduate studies or, mainly, in medical residency, since this is precisely what most of the interviewed physicians aspire to (95.3%).

CONCLUSION

The Family and Community Medicine residency would be the ideal environment to insert the discipline of Phytotherapy, since this therapeutic method has relevant clinical application, and requires professionals with specific training to meet the

significant demand (93%). In addition, scientific knowledge and rational use of Phytotherapy in the academic environment is imperative, since it allows the necessary training of resident physicians, then duly qualified for responsible prescription, avoiding the indication by unqualified professionals or even self-medication. Thus, the Brazilian reality could be transformed, as in several countries where Phytotherapy has been offered as a discipline in their medical schools for many years.

The gap between acceptance and knowledge can be reduced by inserting phytotherapy into the current medical curriculum so that future physicians can better communicate with their patients about this therapeutic modality. Educational interventions, through continuing education programs, are also indicated for physicians to have the opportunity to update their knowledge in this area. Equipping public health institutions with Brazilian Pharmacopoeia products, such as the Brazilian Pharmacopoeia Phytotherapeutic Formulary12 (and the Brazilian Pharmacopoeia Phytotherapeutic Memento37) produced by ANVISA, in addition to providing electronic databases to answer questions that may arise during the course of clinical practice, may be initial measures to access information. Finally, from our point of view and based on the findings of this study, Phytotherapy can and should be used as a transformative tool, allowing university-community interaction. Further studies can confirm and extend these findings.

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