ORIGINAL ARTICLE

MEDICINAL PLANTS IN THE FACE OF INFECTIOUS DISEASES: PERCEPTION OF THEIR USE BY UNIVERSITY STUDENTS IN THE HEALTH FIELD

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Highlight: (1) Participants have limited knowledge about the use of medicinal plants. (2) Understanding by academics can be compared to the knowledge of the general population. (3) Importance of public policies that address the issue of medicinal plants.

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MEDICINAL PLANTS IN THE FACE OF INFECTIOUS DISEASES: PERCEPTION OF THEIR USE BY UNIVERSITY STUDENTS IN THE HEALTH FIELD

ABSTRACT

Plants have been used for years as a way to restore and strengthen health. Although the use of medicinal plants is common, health professionals have limited knowledge on this topic, which may compromise the reception of patients who opt for this therapy. This study adopted a cross-sectional observational design with the aim of analyzing the perception of health academics regarding the use of medicinal plants in the face of infectious diseases. An epidemiological questionnaire was completed and sent to the institutional email of the academics via a Google form, containing variables related to medicinal plants and infectious diseases by university students in the health field (pharmacy, nursing, aesthetics and cosmetics, nutrition, dentistry, medicine, veterinary medicine, physiotherapy and psychology) from a Private University located in the northwest region of the state of Paraná, Brazil. Once completed, the results were described and submitted to statistical analysis using the Chi-Square Test (x^2) with Fisher's Exact Test. The results showed that the majority of participating students were between 18 and 25 years old (77.35%), mainly female (71.07%), regardless of the area evaluated. The students demonstrated that they knew and used medicinal plants, such as chamomile, lemon balm, mint, ginger, guaco, garlic, and saffron. However, this knowledge is not linked to that acquired during graduation, being equal to popular knowledge. Therefore, it is suggested that this theme be included in the pedagogical curriculum of courses in, at least, elective subjects, in line with the guidelines of the National Policy on Integrative and Complementary Practices and the National Policy on Medicinal Plants and Phytotherapeutics, which, despite being in force since 2006, still face difficulties in curricular insertion due to bureaucratic obstacles.

Keywords: Public Health. Traditional Medicine. Communicable Diseases. Public Policies. Adjuvant Treatment.

INTRODUCTION

Plants have been used to maintain health for thousands of years. This knowledge acquired over time has been passed down through generations, being one of the oldest medicinal practices for preventing and treating diseases[4]. Plants that have pharmacological activities that help combat and alleviate the symptoms of diseases are considered medicinal.

This occurs due to the presence of chemical components with therapeutic potential capable of preventing infectious diseases by strengthening the immune system or minimizing their symptoms[11].

Currently, medicinal plants are still widely used by the population, whether due to tradition inherited from their ancestors, regional culture, or, often, due to low cost, immediate use or difficulties in accessing quality basic healthcare, guided by the false idea that natural treatments through plants do not pose health risks and do not have side effects like industrialized medicines[12].

The consumption of medicinal plants is common among the population, and, therefore, it has been encouraged by the Ministry of Health and implemented in the Primary Health Care of the Unified Health System (SUS) through programs such as the National Policy of Integrative and Complementary Practices (PNPIC) together with the National Policy of Medicinal Plants and Phytotherapeutics (PNPMF) and the National List of Medicinal Plants of Interest to the Unified Health System (RENISUS) that enable effective access and safe consumption, promoting the sustainable use of biodiversity, demonstrating the benefits of plants for the organism and stimulating the development of scientific research aimed at proving the effects of these plants on the organism[7-35].

In the health field, many professionals are unaware of or have little information regarding the use of medicinal plants in health promotion, often due to gaps in this topic during their training[19]. Although the National Policy and Program for Medicinal Plants and Phytotherapeutics has not been implemented since its inception, it proposes to the Ministry of Education the inclusion of specific disciplines focused on this topic in higher education courses in the health area[5]. Students in the health field have limited knowledge about these programs, however, they are aware of and use this therapy through popular knowledge[19-33]. The consumption of medicinal plants to maintain health is a common practice, especially among the low-income population and indigenous communities, and, the understanding and training of professionals from all areas of health is essential to assist and welcome this part of the community humanely, being able to transmit correct information and assist in the safe consumption of natural therapies[9]. Therefore, the objective of this work was to analyze the

perception of academics in the health area regarding the use of medicinal plants in the face of infectious diseases.

Methodology

This project was submitted to the Plataforma Brasil and later to the Research Ethics Committee Involving Human Beings (CEPEH) of the Universidade Paranaense (UNIPAR) under approval number CAE: 48272821.0.0000.0109

Sample, sampling, and location

This study adopted a cross-sectional observational design to investigate the knowledge and perception of health academics about the use of medicinal plants in the treatment of infectious diseases. From May to September 2022, a comprehensive epidemiological questionnaire containing variables related to medicinal plants and infectious diseases was completed. The participants included in this study were university students from any year, in the health field (pharmacy, nursing, aesthetics and cosmetics, nutrition, dentistry, medicine, veterinary medicine, physiotherapy and psychology) from a Private University located in the northwest region of the State of Paraná, Brazil, who signed the Free and Informed Consent Form (FICF). The exclusion criterion adopted was academics from areas not related to health, as well as those who did not sign the TCLE or did not fully complete the questionnaire, ensuring the integrity of the results obtained.

The epidemiological questionnaire was sent to the respective academic's institutional email (totaling 2,000 emails) via Google form, where it took up to three minutes to complete.

Research Instrument

The data collection instrument was a broad epidemiological questionnaire that contained information on the knowledge and perception of health academics regarding the use of medicinal plants and infectious diseases by university students (Knowledge about Medicinal Plants / Consumption of Medicinal Plants / Have you participated in academic activities about medicinal plants? / Academic activities about Medicinal Plants /

Consumption of Medicinal Plants in the treatment of infectious diseases / Consumption of Medicinal Plants to strengthen the immune system).

Statistical Analysis

The results obtained after studying the variables were performed descriptively and submitted to statistical analysis, adopting a significance level of 5%, the data will be analyzed using the Chi-Square Test (x^2) with Fisher's Exact, using the IBM SPSS v. 22 statistical program.

The chi-square test is used to test whether a sample distribution is consistent with a known theoretical distribution, such as a normal distribution, or to test the independence between two variables. Thus, to perform the Chi-square test and investigate the relationship between the variables, the participants were categorized into two education groups, first and second years of graduation (Group 1), and third to fifth years of graduation (Group 2).

It is worth noting that Fisher's Exact Test should be used when there are more than 20% of the cells in a contingency table with an expected frequency of less than 5. As it provides an accurate assessment of the exact probabilities, taking into account the limitations of low expected values. On the other hand, when cells have expected values greater than 5, the p-value found in the chi-square test is generally used[23].

Results and discussion

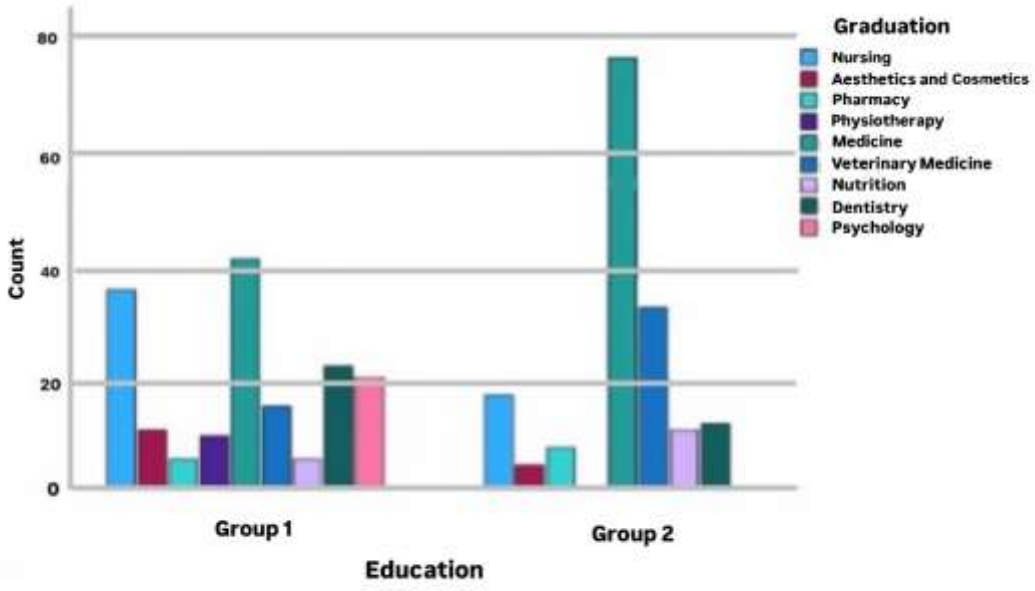
The research involved 318 (15.9% - 318/2000) academics in the health field. The low participation in this research can be attributed to the sporadic use of institutional emails, which are often underestimated by students.

This sample presented the following sociodemographic and economic profile: the majority are female (226/318 – 71.07%), predominantly between 18 and 25 years old (246/318 - 77.35%), do not need to work as they are financially supported by their parents during their undergraduate studies (210/318 – 66.04%), and live in urban areas (297/318 - 93.4%).

The female presence has been increasing in all areas. The greater prevalence of the female gender (71.07%) in this study, corroborates the last Higher Education Census, in 2019, according to the National Institute of Studies and Research (INEP) together with the Ministry of Education (MEC), representing 43% of graduates. Highlighting the female search for knowledge and qualification, being the majority within universities[22]. Furthermore, some authors have identified that the majority presence of women in health professions is due to the female association with welcoming, trust, emotional protection, bonding with the maternal figure, care for the home, children and the sick; strengthening gender stereotypes concerning care[35].

Regarding age group, the results were similar to the study carried out by Feitosa et al.14 with ages between 17 and 35 years old. The source of income of academics does not corroborate the research carried out by Pedro Peduzzi[26], for Agência Brasil, the rate of students who work simultaneously with their studies is higher in the private network (61.8%) compared to the public network (40.3%).

Figure 1 presents the results of the comparison between two groups, Group 1 and Group 2, about the area and year of graduation of the students. Each course is represented by a column in the table, where they are displayed in two parts: Group 1 is intended for the initial years (first and second) and Group 2 corresponds to the last (third, fourth, and fifth).



Source: Prepared by the authors.

Figure 1: Academics from different areas of health from a private university in the State of Paraná-Brazil divided into two groups: Group 1 related to the first and second years of graduation, while Group 2 demonstrates the participation of the third to fifth years of graduation in the different areas under study.

Regarding participation, some courses demonstrated greater willingness to complete the questionnaire, with emphasis on students from the medicine (37.11%), nursing (16.04%), veterinary medicine (14.47%), and dentistry (10.38%) courses. When comparing the groups, we can observe greater participation of all courses in the first years (Group 1), while in the last years the participation of all courses decreased, highlighting greater involvement of two courses, medicine and veterinary medicine (Group 2).

Scientific research is of utmost importance for identifying and analyzing problems to create effective solutions, however, this requires the active participation of the target group. In general, there is greater enthusiasm and availability to contribute from specific courses such as medicine and nursing, especially in the first years of the course, corroborating the research carried out by Feitosa et al.[14] and Marcelino et al.[19], suggesting

that participation in scientific research is more common in the first years of the course due to initial motivation and greater availability of time.

This minimal collaboration of academics in scientific research is reflected in specific areas of study, such as the knowledge and use of medicinal plants. It was found that a significant proportion of academics (97.48%) claim to know what medicinal plants are, and the majority use them to promote health (84.28%).

Of the academics participating in this research, 97.48% (310/318) consider themselves to know what medicinal plants are and only 2.52% (8/318) claim not to know about this topic. These numbers may be related to gaps on the topic during graduation and knowledge is acquired, mainly, within the family space, justifying the small portion that is unaware of the topic. This scenario can have several negative consequences, including the loss of traditional and cultural knowledge, but mainly the lack of knowledge about its properties, the impossibility of assisting in the adequate and safe use of this therapy, and a limitation in the treatment options available to patients.

Another situation that should be reflected upon is that minimal or non-existent contact with studies focused on medicinal plants and their policies in undergraduate health courses can reinforce prejudices and conflicts between patients and health professionals[24].

Medicinal plants are widely consumed by the Brazilian population to maintain health, especially by indigenous, riverside and low-income populations. It is known that indigenous peoples have vast knowledge about plants and their healing powers. This wisdom has lasted for thousands of years and is taught to new generations, along with the beliefs and traditions that involve this practice according to each ethnic group[15]. Therefore, it is important to approach this topic within the university.

The exposed data were subjected to statistical analysis (Table 1), enabling a comprehensive view of the variable studied and allowing a more precise understanding of the relationship between knowledge about medicinal plants and the year of graduation.

Table 1: Chi-square test to assess the association between the level of education and knowledge about medicinal plants of health students at a private university in the state of Paraná – Brazil.

Chi-square test					
Knowledge about Medicinal Plants			No	Yes	p-value (Fisher's exact)
Education	Group 1	Count	6	156	0.284
		Expected Count	4.1	157.9	
		% in Education	3.7%	96.3%	
	Group 2	Count	2	154	
		Expected Count	3.9	152.1	
		% in Education	1.3%	98.7%	

Source: Prepared by the authors.

The year of graduation did not significantly influence the students' knowledge about this topic, since they demonstrated empirical knowledge, probably acquired in the family and community environment (Table 1). Corroborating the studies by Silva et al.[34] and Badke et al.[3], which demonstrate that academics in the health field know medicinal plants, however, this knowledge can be compared with the general population, that is, acquired through family members or the community, according to the culture of the environment in which they are inserted[3].

A situation already pointed out by Rocha et al.[29], within the communities, in this study the riverside communities stand out, the use of medicinal plants is recurrent and this knowledge is transmitted through orality and practice, demonstrating both the form of identification and cultivation, as well as the preparation and benefit of the plants of the region where they live[29]. Teas are used more in the treatment of illnesses, within these communities, compared to industrialized medicines. However, this habit is being lost due to the ease of consumption of allopathic medicines, harming the practice of this culture among the new generation[20-27].

Regarding the frequency of consumption of medicinal plants to maintain health, it was found that 84.28% (268/318) use medicinal plants, this result is also observed in the studies by Marcelino et al.[19], Silva et al.[34] and Badke et al.[3], where they state that the majority of research participants use them for treatment[3]. We highlight that 46.23% consume it

reasonably, using it 69.81% of the time to treat and alleviate symptoms of diseases, and 30.19% for prevention purposes. Only 15.72% do not use medicinal plants.

When comparing the Groups of this study, it was observed that in Group 1 (88.3%) the consumption of medicinal plants was greater than in Group 2 (80.1%), this result may be related to the confidence in the consumption of industrialized medicines according to the years of graduation.

In this research, it became evident that most academics know and use medicinal plants to maintain health, however, the knowledge presented is not relevant with regard to professional performance. The limited knowledge about medicinal plants acquired during these courses can influence the exercise of their professions in the future, either by invalidating and discrediting the patient who uses and believes in the therapeutic power of plants, or by harming the initial reception, the implementation of care or the choice of treatment.

Regarding the knowledge acquired within the university through academic activities on this topic, 27.4% (87/318) of the participants in this research participated in academic activities on medicinal plants, while 72.6% (231/318) claim not to have participated.

The National Policy for Integrative and Complementary Practices (PNPIC) is a Brazilian public policy created with the aim of improving the population's access to complementary therapeutic practices, which seek to stimulate natural means of preventing diseases and restoring health. The population's access to therapies that were previously restricted and only available in the private sphere is seen as a way of promoting the humanization of health care and valuing the autonomy of individuals in choosing their treatments[6]. Another public policy is the National Policy on Medicinal Plants and Phytotherapeutics (PNPMF), which reinforces and ensures the population's effective access to the use of medicinal plants and phytotherapeutics in primary care, demonstrating the benefits of this therapy based on the safe consumption of these plants[6].

Therefore, the Directorate of Pharmaceutical Assistance of the Ministry of Health, aiming to encourage the use of medicinal plants as a safe and effective alternative to combat

diseases, prepares the list of Medicinal Plants of interest to Public Health based on scientific evidence, the RENISUS (National List of Plants of Interest to the SUS).

Regarding the statistical analysis of the exposed data, Table 2 presents the results of this analysis. This data makes it possible to understand the knowledge acquired within the university through academic activities on medicinal plants related to the year of graduation.

Table 2: Chi-square test to assess the association between level of education and participation in academic activities on medicinal plants by health students at a private university in the state of Paraná – Brazil.

Chi-square test				
Academic activities on Medicinal Plants			No	Yes	p-value (Fisher's exact)
Education	Group 1	Count	134	28	0.001
		Expected Count	117.7	44.3	
		% in Education	82.7%	17.3%	
	Group 2	Count	97	59	
		Expected Count	113.3	42.7	
		% in Education	62.2%	37.8%	

Source: Prepared by the authors.

There was a significant difference between the year of graduation (Group 1 and 2) and the participation in academic activities on medicinal plants by health students. Students in Group 2 participated more in academic activities on medicinal plants when compared to Group 1 (Table 2). This association may be influenced not only by the knowledge acquired in the classroom, but also by other sources of academic learning, such as participation in research projects, scientific initiation, internships, courses, lectures, among other extracurricular activities.

This result corroborates the studies by Badke et al.[3], Santos et al.[33] and Marcelino et al.[19], which demonstrate that the knowledge of academics in the health field is equivalent to popular knowledge, which can be justified due to the lack of disciplines focused on this topic in undergraduate curricula in the health field in general[l3-19].

Regarding academic activities on the National Program of Integrative and Complementary Practices, only 18.2% of academics said they had participated in academic activities focused on the topic. On the other hand, the majority said the opposite, around 81.8%. Likewise, 10.7% claim to have participated in academic activities aimed at studying the National Policy on Medicinal Plants and Phytotherapeutics, while 89.3% claim not to have participated. These policies encourage MEC to include, within the curriculum of health undergraduate courses, disciplines focused on Integrative and Complementary Practices, particularly medicinal plants and phytotherapeutics[19].

The study of medicinal plants and other integrative practices is not yet a reality in health courses. According to the Curricular Guidelines for Undergraduate Courses of the Ministry of Education, medicine, nursing, veterinary medicine, and dentistry do not include a specific subject on this topic. On the other hand, pharmacy, one of the courses with the lowest participation in the study, offers subjects focused on medicinal plants, PNPM and PNPIC[14].

Although there is encouragement from health policies, this topic is not seen as mandatory in the curricula of undergraduate health courses. These gaps can reduce the possibilities of treating diseases and make it difficult to integrate conventional and natural treatments, since little knowledge on this topic can lead health professionals to invalidate the therapeutic power of plants. Therefore, it is essential that health professionals are trained to guide the consumption of medicinal plants in a safe and effective manner, and that these therapies are adequately integrated with conventional medicine. To this end, it is essential that educational institutions and regulatory bodies work together to promote the inclusion of content on medicinal plants in the curricula of undergraduate health courses, as well as encourage continuing education on the subject for professionals who have already graduated.

In this context, Table 3 reveals that 43.7% (139/318) of the research participants believe that medicinal plants can be used in the treatment of infectious diseases, while 56.3% (179/318) believe that the use of medicinal plants does not influence the treatment of these diseases. These data highlight the importance of an adequate understanding of the therapeutic power of medicinal plants during training.

Table 3: Chi-square test to assess the association between the year of graduation and knowledge related to medicinal plants in the treatment of infectious diseases by health students at a private university in the state of Paraná - Brazil.

Chi-square test					
Medicinal Plants in the treatment of infectious diseases			No	Yes	p-value (Fisher's exact)
Education	Group 1	Count	77	85	0.002
		Expected Count	91.2	70.8	
		% in Education	47.5%	52.5%	
	Group 2	Count	102	54	
		Expected Count	87.8	68.2	
		% in Education	65.4%	34.6%	

Source: Prepared by the authors.

A significant difference was observed between the year of graduation (Groups 1 and 2) and the consumption of medicinal plants in the treatment of infectious diseases (Table 3). The year of graduation influenced the consumption of medicinal plants by students, decreasing in recent years (Group 2). This trend may be associated with greater confidence in using industrialized medicines during training, taking into account their immediate action.

Most people believe that medicinal plants do not help minimize the symptoms of infectious diseases. This data may be related to the lack of scientific knowledge about the chemical/biological compounds of medicinal plants, since plants that have chemical compounds capable of curing diseases or alleviating their symptoms are considered medicinal, that is, they have curative and preventive properties, becoming important therapeutic tools[13].

These teas are consumed with the aim of combating the symptoms of diseases, but also with the intention of preventing them, as well as minimizing their symptoms during the period of infection[21]. With the emergence of new infectious diseases, consumption and interest in studies of medicinal plants have increased, due to the wide variety of chemical compounds present in the species, which can help minimize symptoms of viral infections, emphasizing potentially transmissible diseases such as SARS-CoV-2[37].

This ancient therapy demonstrates excellent results in reducing symptomatic effects, especially when related to viral infections. The flavonoids present in plants have important biological properties that reduce cellular oxidation and also act as an anti-inflammatory, effectively blocking important enzymes in viral activity, contributing to fighting diseases and strengthening health[16].

Some plants that have flavonoids in their chemical composition are highlighted in the studies by Saad et al., evidencing the *Unkaria tomentosa* (cat's claw), *Schinus terebinthifolius* (Brazilian Pepper Tree) and *Eucalyptus globulus* (eucalyptus)[31].

In this context, the statistical analysis carried out in Table 4 reveals an opposing position with regard to strengthening the immune system. It was observed that 98.1% (312/318) of participants believe that medicinal plants can be used to strengthen the immune system (Table 4). This demonstrates the positive perception of most students regarding the effectiveness of medicinal plants in this aspect.

On the other hand, 1.9% (6/318) of the research participants believe that the use of medicinal plants does not influence immunological activity. Although it is a minority, these results indicate the existence of divergent opinions, which may be related to the small percentage of academics who do not use medicinal plants to promote health within the family.

Table 4: Chi-square test to assess the association between the year of graduation and knowledge related to medicinal plants in strengthening the immune system by health students at a private university in the state of Paraná - Brazil.

Chi-square test					
Medicinal plants to strengthen the immune system			No	Yes	p-value (Fisher's exact)
Education	Group 1	Count	1	161	0.115
		Expected Count	3.1	158.9	
		% in Education	0.6%	99.4%	
	Group 2	Count	5	151	
		Expected Count	2.9	153.1	
		% in Education	3.2%	96.8%	

Source: Prepared by the authors.

There was no significant difference between the year of graduation (Group 1 and 2) (Table 4), suggesting that, regardless of the year of graduation, the majority believe that medicinal plants can contribute to strengthening the immune system.

The consumption of medicinal plants, which had decreased, increased significantly due to the emergence of new infectious diseases, being used mainly with the aim of strengthening the immune system[18]. Inflammation is a response of the immune system in combating invading microorganisms. This body's defense mechanism acts through an inflammatory reaction, reducing the spread of the pathological agent, generating specific antibodies to combat it[36].

Some species of medicinal plants act directly on the immune system, and are also used in the prevention of infectious diseases due to their immunomodulatory and immunostimulant actions, strengthening and stimulating the production of important antibodies[31], achieving greater success when accompanied by a healthy lifestyle, since strengthening immunity is directly linked to healthy lifestyle habits, such as physical exercise, a balanced diet, good fluid intake, good social relationships and low stress levels, enabling greater effectiveness in preventing diseases[17].

The immune system is responsible for protecting the body by identifying, expelling or destroying invading microorganisms. A compromised immune system can leave the body susceptible to bacterial and viral infections, but there are plants with chemical properties that act to strengthen immunity through immunomodulation, that is, they adjust immunological reactions, strengthening immunity in the fight against invading microorganisms and preventing the manifestation of diseases[8]. Given this, the population sees this natural therapy as a way to avoid or reduce the intensity of the symptoms of infectious diseases[25].

Some plants have great immunostimulating potential, in this study, garlic, turmeric, and echinacea stand out[8]. The compounds present in garlic act to enhance the body's defense cells, strengthening the immune system. This action is due to its chemical compounds, mainly alliin[31]. These compounds directly influence the immune system, acting to stimulate defense cells such as macrophages and lymphocytes, improving the body's anti-inflammatory action and also reducing blood oxidation due to the presence of phenolic compounds[31].

Turmeric has anti-inflammatory and immunomodulatory action, due to the presence of curcumin, a class of polyphenols, as it acts to minimize the inflammatory process, reducing the number of leukocytes after the identification of the invading microorganism or wound[8-10,31]. The polyphenols present in medicinal plants minimize oxidative damage due to the inhibition of free radicals and reduce the inflammatory process[31].

The widespread use of teas to prevent diseases by strengthening the immune system is due to the idea that natural products do not pose any health risks. When prepared and used correctly, they act effectively in the care and prevention of diseases. However, knowledge about plants and their indications is not always accurate, and given that there is still a mistaken idea that the consumption of natural products does not cause harm, medicinal plants must be used with attention and caution, as their indiscriminate use can cause harm to health[2].

Most students believe that medicinal plants do not influence the treatment of diseases based on minimizing their symptoms, however, on the other hand, they believe that medicinal plants strengthen the immune system. This scenario can be explained by empirical

knowledge and the culture of consumption of medicinal plants acquired within the family, where plants are certainly used to make the body more resistant by strengthening immunity, while industrialized medicines are prioritized for the treatment of diseases.

In this context, when asked about the medicinal plants used by them within the family, regardless of the form of use, the most mentioned plants, in general, were chamomile (43.4%), boldo (34.28%), lemon balm (31.45%), mint (22.64%), and aloe vera (19.81%). These same species were identified as the most prevalent in other studies, such as Santos et al.[32], Santos et al.[33] and Marcelino et al.[19]. Regarding plants that act to minimize the symptoms of infectious diseases and modulate the immune system, chamomile, lemon balm, mint, ginger, guaco, garlic, and saffron were mentioned (Table 5).

Table 5: Medicinal plants cited by students of different health courses at a private university in the state of Paraná, Brazil, regarding their action in strengthening the immune system and their effectiveness in minimizing the symptoms of infectious diseases.

Common Name	Part used	Botanical Name	Absolute Frequency	Relative Frequency (%)	Indication for Use	References
Chamomile	Flowers	*Matricaria chamomilla*	138	43.40	Calming and anti-inflammatory	(SAAD et al., 2018)
Lemon balm	Leaves and Branches	*Lippia alba*	100	31.45	Calming and analgesic	(SAAD et al., 2018)
Mint	Leaves and Flowers	*Mentha x piperita*	72	22.64	Respiratory problems and flu	(SAAD et al., 2018)
Ginger	Rhizome	*Zingiber officinale*	35	11	Immunomodulatory, antitussive, anti-inflammatory	(SAAD et al., 2018)
Guaco	Leaves and Flowers	*Mikania glomerata*	23	7.23	Anti-inflammatory, anti-allergic, bronchodilator	(COUTINHO et al., 2020)
Garlic	Bulb	*Allium sativum*	23	7.23	Immunomodulatory, anti-inflammatory	(SAAD et al., 2018)
Saffron	Rhizome	*Curcuma longa*	12	3.77	Immunomodulatory, anti-inflammatory	(SAAD et al., 2018)

Source: Prepared by the authors.

It is important to highlight that the studies found demonstrated that the highlighted plants have beneficial actions for health, it is worth mentioning that they are present in the

Renisus list, except for *Lippia alba* (lemon balm). However, it has important chemical compounds and positive actions with regard to maintaining health. Although medicinal plants have valuable therapeutic properties, it is important to highlight the importance of checking the available scientific evidence before consuming medicinal plant species for the first time[28].

Conclusion

The results of this research revealed that most participants have limited knowledge about the use of medicinal plants, due to the absence or limitation of the topic in the curriculum of health courses. It was observed that a large part of the understanding acquired by the participants is based on popular knowledge, transmitted by common sense or by indications, reflecting the lack of a scientific approach in this specific area.

Only 27.4% of participants demonstrated substantial scientific knowledge about medicinal plants, while 72.6% demonstrated limited knowledge. These results suggest that the understanding presented by academics can be compared to the knowledge of the general population, highlighting the need for a review of the pedagogical projects of health courses, to contemplate the study of medicinal plants in a more comprehensive and in-depth manner.

Furthermore, it is necessary to highlight the importance of public policies that address the topic of medicinal plants, which have guidelines that emphasize the importance of including these contents in the curriculum of health courses, in addition to encouraging the study of medicinal plants and phytotherapeutics within universities. However, there are still bureaucratic obstacles that hinder the practical implementation of these guidelines. The results obtained in this research can stimulate curricular changes, considering that the use of medicinal plants to maintain health is a common practice among the Brazilian population, despite being frequently underestimated.

It is widely recognized that the consumption of teas based on medicinal plants is used as a form of treatment and prevention of diseases, however, medicinal plants are not only used with curative or preventive intentions, they are part of daily life and national culture. Therefore, health professionals must be prepared to understand the preferences and needs of

a given individual or community, validating their practical and cultural knowledge, facilitating acceptance and consequently establishing trust effectively to assess and identify the risks and benefits provided by plants.

In view of the above, it is expected that the data presented will encourage discussion on the need to include specific subjects on medicinal plants and their derivatives in undergraduate health courses.

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MEDICINAL PLANTS IN THE FACE OF INFECTIOUS DISEASES: PERCEPTION OF THEIR USE BY UNIVERSITY STUDENTS IN THE HEALTH FIELD

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