Factors associated with professional guidance and prescription of medicinal plants and herbal medicines in Brazil

Fatores associados à orientação profissional e à prescrição de plantas medicinais e fitoterápicos no Brasil

Received: 2023-06-13 | Accepted: 2023-07-10 | Published: 2023-07-13

Adriano Referino da Silva-Sobrinho
ORCID: https://orcid.org/0000-0002-4733-3430
Faculdade de Integração do Sertão, Brasil
E-mail: nanorssobrinho@gmail.com

Maiara Bernardes Marques
ORCID: https://orcid.org/0000-0002-1048-3945
Universidade de Pernambuco – campus Garanhuns, Brasil
E-mail: maiarabernardes.marques@upe.br

Moan Jéfter Fernandes Costa
ORCID: https://orcid.org/0000-0002-7250-5863
Universidade de Pernambuco – campus Arcoverde, Brasil
E-mail: moan.jefter@upe.br

Pedro Henrique Sette-de-Souza
ORCID: https://orcid.org/0000-0001-9119-8435
Universidade de Pernambuco – campus Arcoverde, Brasil
E-mail: pedro.souza@upe.br

ABSTRACT
Despite the well-known influence of social determinants on access to health services, it is still being determined whether there are differences in the user profile regarding access to guidelines and prescriptions for medicinal plants and herbal medicines in Brazil. Given this context, the present study aimed to investigate the prevalence of professional guidelines and prescriptions on phytotherapy and associated factors among Brazilian practice users. The research is cross-sectional, analytical, and with a quantitative approach. In total, 1,396 individuals were questioned about access to guidance on phytotherapy, and of these, 664 (47.6%) received such guidance. Likewise, 1,421 participants were asked about the prescription for this use, among which 510 (35.9%) received a prescription for medicinal plants and/or herbal medicines. Phytotherapy guidelines and prescriptions in Brazil proved to be infrequent. There must be professional training, investments in continuing education, and readjustment of public policies among health professionals to encourage the use of herbal medicines.

Keywords: Health policy; Herbal medicines; Medicinal plants; Prescriptions
RESUMO

Apesar da conhecida influência dos determinantes sociais no acesso aos serviços de saúde, ainda não se sabe se há diferenças no perfil dos usuários quanto ao acesso a orientações e prescrições de plantas medicinais e fitoterápicos no Brasil. Diante desse contexto, o presente estudo teve como objetivo investigar a prevalência de orientações e prescrições profissionais sobre fitoterapia e fatores associados entre usuários de consultórios brasileiros. A pesquisa é transversal, analítica e com abordagem quantitativa. No total, 1.396 indivíduos foram questionados sobre o acesso a orientações sobre fitoterapia e, desses, 664 (47,6%) receberam tais orientações. Da mesma forma, 1.421 participantes foram questionados sobre a prescrição para esse uso, dentre os quais 510 (35,9%) receberam prescrição de plantas medicinais e/ou fitoterápicos. As orientações e prescrições de fitoterapia no Brasil se mostraram pouco frequentes. É preciso que se tenha capacitação profissional, investimentos em educação continuada e readequação das políticas públicas entre os profissionais de saúde para incentivar o uso de fitoterápicos.

Palavras-chave: Política de saúde; Ervas medicinais; Plantas medicinais; Prescrição

INTRODUCTION

The use of medicinal plants for therapeutic purposes has been widely spread by humanity since the beginning (NÓBREGA et al. 2017). Throughout the technological-scientific development, the practice evolved into research and production of drugs with active compounds from plants came to be called phytotherapy (PEDROSO et al. 2021); this is part of the Integrative and Complementary Health Practices (PICs) and emerged as an alternative to allopathic pharmaceutical treatments because it is more accessible to patients (PINTO et al. 2020). Whether in the form of a plant or herbal medicine, the proper use of these products requires guidance and prescription in light of the correct indications based on the scientific knowledge of each product (FREGNANI AND SALVI 2020).

The National Policy on Integrative and Complementary Practices (PNPICs) has promoted the inclusion of phytotherapy in the health services of the Unified Health System (SUS) (PINTO et al. 2020). The National Policy on Medicinal Plants and Herbal Medicines (PNPMF), through the National Program of Medicinal Plants and Herbal Medicines, has as one of its guidelines the universalization of access to medicinal plants and herbal medicines (MATTOS 2017). These products have been widely accepted among managers, healthcare professionals, and SUS users (MACHADO et al. 2012). However, among other factors, the lack of knowledge by professionals is still a critical issue in the full implementation of phytotherapy in the SUS (HARAGUCHI et al. 2020; MACEDO 2016; SANTOS AND REZENDE 2019) as it can make it difficult for patients to adhere to this practice of care.

The need for more training of health professionals regarding PICs is a common phenomenon in Brazilian graduations (COSTA et al. 2019). Despite regulations of respective councils allowing the work of several professionals in the area, curricular matrices of most courses do not include PICs as part of the training of their graduates (SANTOS AND REZENDE 2019).
As one of the consequences of this, there is a compromise in comprehensive care provided to users through a lack of possibility of offering such a popular treatment due to the unpreparedness of professionals (NÓBREGA et al. 2017; PEDROSO et al. 2021; PINTO et al. 2020). Finally, the proper use of this and other PICs is restricted to the portion of the population with better socioeconomic conditions and access to health services (BoccolinI AND BOCCOLINI 2020).

Despite the already-known influence of social determinants on access to health services (GALVÃO et al. 2021), it is not yet known if there are differences in user profiles regarding access to guidelines and prescriptions for medicinal plants and herbal medicines, specifically. Among the consequences that this may entail is an inappropriate use of products indicated for its treatment (SECOLI et al. 2018), an even worse scenario among the most vulnerable individuals (MOREIRA et al. 2020).

Given the importance of health education for patient’s self-care and the success of therapy offered to them (PEDROSO et al. 2021; AMARAL et al. 2019), identifying whether users are receiving guidance and prescriptions for the use of medicinal plants and herbal medicines will allow an evaluative diagnosis of transmission of scientifically based knowledge on the practice of herbal medicine. Thus, the quality of therapy can be investigated beyond access to it (FREGNANI AND SALVI JÚNIOR 2020; AMARAL et al. 2019).

In this context, the present study aimed to investigate the prevalence of professional guidelines and prescriptions on phytotherapy and their associated factors among Brazilian practice users.

METHODOLOGY

The research is cross-sectional, analytical, and with a quantitative approach. Here is an excerpt from a database from the project “Use of phytotherapy by Brazilian population and associated factors”. The project was developed nationwide, remotely, and encompassing the entire Brazilian population, which is estimated at around 213 million inhabitants divided into five macro-regions (IBGE).

The study sample was selected remotely and voluntarily. A sample calculation was performed to estimate the number of individuals needed to compose the study group. A study on PICs, which used data from the 2013 National Health Survey in Brazil, was used as a basis for calculating this sample according to the prevalence of the use of practices presented by the research (BOCCOLINI AND BOCCOLINI 2020). Thus, through OpenEpi® application version 3.01, using the estimated number of Brazilian inhabitants as a basis, an anticipated frequency of 4.5% for an investigated phenomenon,
a confidence limit of 2%, and a design effect of 1.5, arrived at up to the total of 620 participants needed for the research. Added by 20% to avoid possible losses, the final number was 744 individuals.

The recruitment period for individuals took place between August and November 2021. Individuals aged 18 or over were eligible for inclusion in the study, with regular internet access, and who resided for at least 12 months in Brazilian territory. Individuals who reported not using and/or knowing about phytotherapy were excluded.

Data collection was performed with a structured questionnaire publicly available via Google Forms®. The instrument was sent to eligible participants in several ways. The first strategy was to reach the population via social networks, using Instagram®, Facebook®, WhatsApp®, and Twitter®; the research was publicized through personal profiles of researchers and people close to them, and also with the help of other profiles related to PICs, Higher Education Institutions, and research groups, among others. The second strategy was to collect e-mail contacts in annals of scientific events, periodicals, and publications for a more direct sending. With each shipment, efforts were made to maintain recruitment proportionality by region of the country.

The dependent/outcome variables were established according to two sample cuts. Individuals who reported knowing phytotherapy prior to the survey were asked whether they had received guidance from health professionals as follows: “was the information about phytotherapy passed on by a health professional?”; the answers to this question were categorized as “no” or “yes”. The portion of respondents who reported being adept at herbal medicine practice was asked about receiving prescriptions from health professionals for the use of medicinal plants and herbal medicines as follows: “was there a prescription by a health professional for the use of phytotherapy?”; the answers were also grouped into “no” or “yes”.

All individuals mentioned independent variables related to their socioeconomic and demographic profile and health conditions. The list of these variables and their respective response options are presented below:

- Gender (non-female; woman);
- Age (up to 29 years old; ≥ 30 years old);
- Municipality of residence (non-capital; capital);
- Education (without complete higher education; with higher education);
- Income (1 minimum wage = R$ 1,100.00) (no income or up to 1 minimum wage; between 1 and 3 minimum wages; more than 3 minimum wages);
● Race/color (non-white; white);
● Marital status (single; not-single);
● Occupation (without formal employment; with formal employment);
● Religion (Catholic; no religion or no religion);
● Healthcare service(s) used (public only; both; private only);
● Self-assessment of health status (negative; positive);
● Health problems (no; yes).

Data were tabulated in R studio. Initially, the results were analyzed descriptively in their absolute and relative frequencies. Subsequently, data were submitted for bivariate analysis using Pearson's chi-square test.

Univariate analysis was performed by binary logistic regression in the same way as the multivariate analysis in the final model. All tests adopted as significance $p < 0.05$.

The study was approved by the Institutional Research Bureau of the University of Pernambuco Multicampi Garanhuns under number 4,880,872. The recommendations of Resolution nº 466/12 from the National Health Council were obeyed; Circular Letter nº. 02/2021/CONEP/SECNS/MS; and the Helsinki Declaration. All potential participants were only included after the consent form in the Free and Informed Consent Form (TCLE).

RESULTS

In this research, 1,396 individuals questioned access to guidance on phytotherapy, and of these, 664 (47.6%) received such guidance. Similarly, 1,421 participants were asked about prescriptions for use, among which 510 (35.9%) received a prescription for medicinal plants and/or herbal medicines. The process for obtaining the sample is explained in figure 1.
Among the distribution of sociodemographic and economic profiles of individuals, 943 (66.4%) were female; 811 (57.1%) were aged 30 or over; 727 (51.2%) did not reside in Brazilian state capitals; 895 (63%) had completed higher education; 409 (28.8%) had an income between 1 and 3 minimum wages, and for 584 (41.1%) it was higher than 3 minimum wages; 754 (53.1%) self-declared as white; 789 (55.5%) were single; 728 (51.2%) were formally employed; and 875 (61.6%) had no religion or were not Catholic. Regarding the conditions and access to health services in the sample, 449 (31.6%) used only the public healthcare sector, and 337 (23.7%) were exclusive users of the private sphere; 1,003 (70.6%) self-assessed their health status as positive, and 753 (53%) did not report having health problems.

After multivariate analysis, the final model showed that the predictors of access to professional guidance on herbal medicine were identified as female (ORadjusted = 1.308 / 95%CI = 1.017;1.683; p = 0.036); have completed higher education (ORadjusted = 1.438 / 95%CI = 1.060;1.951; p = 0.020); have income higher than 3 minimum wages (ORadjusted = 1.961 / 95%CI = 1.342;2.865; p = 0.001); formal employment (ORadjusted = 1.350 / 95%CI = 1.033;1.763; p = 0.028); use both health care sectors (ORadjusted = 1.623 / CI95% = 1.206;2.190; p = 0.001) or just the private sector (ORadjusted = 1.664 / CI95% = 1.172;2.363; p = 0.004); and self-assess their health status as positive (ORadjusted = 1.393 / 95%CI = 1.041;1.865; p = 0.026).

In the same type of analysis, the final model indicated age equal to or greater than 30 years (ORadjusted = 2.258 / 95%CI = 1.795;2.840; p <0.001); having completed...
higher education (ORadjusted = 3.367 / 95%CI = 2.568;4.414; p <0.001); have income between 1 and 3 minimum wages (ORadjusted = 2.362 / CI95% = 1.691;3.300; p <0.001) or higher than 3 minimum wages (ORadjusted = 5.642 / CI95% = 4.055;7.850; p <0.001); self-declared white (ORadjusted = 2.992 / 95%CI = 2.367;3.782; p <0.001); does not have a single marital status (ORadjusted = 1.883 / 95%CI = 1.427;2.485; p <0.001); being formally employed (ORadjusted = 2.319 / 95%CI = 1.819;2.956; p <0.001); being a user of both sectors of health care (ORadjusted = 2.376 / CI95% = 1.777;3.176; p <0.001) or only in the private sphere (ORadjusted = 5.243 / CI95% = 3.778;7.276; p <0.001); self-reporting a positive assessment of their own health status (ORadjusted = 2.583 / 95%CI = 1.975;3.379; p <0.001); and having health problems (ORadjusted = 1.456 / 95%CI = 1.157;1.832; p <0.001) as predictors of access to a professional prescription of medicinal plants and herbal medicines. The multivariate analysis and the final complete model, derived from binary logistic regression, are presented in Table 1.

Table 1. Predictive factors for access to guidance and professional prescription of medicinal plants and herbal medicines in Brazilian users of the practice.

<table>
<thead>
<tr>
<th></th>
<th>Access to guidance (n = 1.396)</th>
<th>Prescription Access (n = 1.421)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ORgross (IC95%)</td>
<td>p-value</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No-woman</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td>Woman</td>
<td>1.300</td>
<td>0.041</td>
</tr>
<tr>
<td></td>
<td>(1.011;1.671)</td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to 29 years</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td>≥ 30 anos</td>
<td>1.107</td>
<td>0.395</td>
</tr>
<tr>
<td></td>
<td>(0.876;1.399)</td>
<td></td>
</tr>
<tr>
<td><strong>Municipality of residence</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-capital</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td>Capital</td>
<td>1.211</td>
<td>0.106</td>
</tr>
<tr>
<td></td>
<td>(0.960;1.529)</td>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without higher education</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td>With higher education</td>
<td>1.373</td>
<td>0.018</td>
</tr>
<tr>
<td></td>
<td>(1.055;1.788)</td>
<td></td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No income or up to 1 salary</td>
<td>1.00</td>
<td>-</td>
</tr>
</tbody>
</table>
The frequencies of prescription of medicinal plants and herbal medicines by each health professional are presented in Table 2, referred to by the research participants. In this way, doctors appear as the professionals who prescribed these products more frequently to individuals (n = 220; 15.5%), while dentists had the lowest frequency among professionals (n = 130; 9.1%).

**Table 2.** Professionals who prescribed the most (n = 1,421).
<table>
<thead>
<tr>
<th>Professional</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor</td>
<td>220</td>
<td>15.5</td>
</tr>
<tr>
<td>Nutritionist</td>
<td>194</td>
<td>13.6</td>
</tr>
<tr>
<td>Other professionals</td>
<td>172</td>
<td>12.1</td>
</tr>
<tr>
<td>Pharmaceutical</td>
<td>166</td>
<td>11.6</td>
</tr>
<tr>
<td>Nurse</td>
<td>154</td>
<td>10.8</td>
</tr>
<tr>
<td>Dentist</td>
<td>130</td>
<td>9.1</td>
</tr>
</tbody>
</table>


**DISCUSSION**

Despite the efforts of Brazilian health policies, access to information about PICs still needs to be improved; social determinants condition this access, making it difficult to reach the most vulnerable users (BOCCOLINI AND BOCCOLINI 2020). In this perspective, the present study proposed to investigate the distribution of phytotherapy guidelines and prescriptions by health professionals, as well as possible differences in the profile of practice users about receiving this information. Thus, findings point to a low frequency of phytotherapy guidelines and prescriptions among Brazilian health professionals and a greater chance of having such attitudes among patients with better socioeconomic conditions and, consequently, better state conditions and access to health services.

The prevalence of phytotherapeutic guidelines and prescriptions was low among individuals. A study developed from the primary care perspective identified that the health team did not know how to guide patients about phytotherapy, and two-thirds of it did not prescribe it (NASCIMENTO JÚNIOR et al. 2021). Additionally, Ferreira et al. (2021) identified the use of medicinal plants by the SUS user population and by sellers of these products in a northeastern city without any professional guidance regarding indications, forms of use, and risks. Other research which sought to verify herbal medicines in a dispensing service of these products identified the lack of prescription in half of the dispensations (FREGNANI AND SALVI 2020). Thus, this phenomenon is frequent in Brazil and among the different sectors and levels of assistance.

The individuals most likely to refer to phytotherapy guidelines and prescriptions had a profile that refers to the most socioeconomically privileged: with better income levels, schooling, and working conditions; these same individuals also used the private
healthcare sector. This fact is not a surprise, given that this portion of the population has access to the best health services (MALTA et al. 2020; HASENCLEVER et al. 2021), which in turn may be endowed with a better-prepared infrastructure to provide information about herbal medicine. Therefore, the alert for managers about this disadvantage of the most socially vulnerable individuals and the importance of reinforcing the guarantee of providing this information within the scope of the SUS.

The historical influence of gender and race inequalities was also verified in the findings of this study. Whites had more significant chances of accessing herbal prescriptions, evidencing better health care offered to this group. Differences in access to services are already known to be conditioned, among other factors, to the structural racism of society, which privileges whites to the detriment of ethnic-racial minorities (GALVÃO et al. 2021; COBO et al. 2021). Regarding gender, women were associated with greater chances of reporting receiving guidance on phytotherapy, which reflects a more excellent search for this therapy. The different perceptions of health between men and women can explain this finding. While men tend to be perceived as healthier and more robust, the social construction weighs on women by making them self-evaluate as fragile, which leads them to a greater demand for services (GALVÃO et al. 2021; HASENCLEVER et al. 2021; MOURA et al. 2017). Compared to information already published in the literature, these results show that the inequalities that permeate gender and race are also impediments to better health care through phytotherapy.

The individual who reported having health problems had more significant chances of receiving herbal prescriptions. This finding was already expected due to the treatment demands that various pathologies entail (PINTO et al. 2020; HASENCLEVER et al. 2021). However, it also signals that these users may be looking for alternative therapies to the more conventional ones to solve their problems.

Being older was associated with greater chances of having received phytotherapy prescriptions, similar to what was found by Esteves et al. (2020). Another previous study (MACHADO et al. 2014) identified factors for the high prevalence of phytotherapy use among the elderly low cost, easy obtainment, the difficulty of obtaining medication, few adverse effects compared to allopathic ones, cultural tradition, and preference for natural products. A possible explanation for this fact is that, due to the high frequency of use, there is a more excellent search for this therapy and, consequently, greater access to professional referrals.
The doctors, followed by nutritionists, it was the professionals who prescribed medicinal plants and herbal medicines more frequently; dentists prescribed less frequently, a situation similar to that found in previous studies carried out locally (FREGNANI et al. 2020; MACHADO et al. 2012; HARAGUCHI et al. 2020; COSTA et al. 2019; AMARAL et al. 2019; NASCIMENTO JUNIOR et al. 2021). Both the low report of individuals having received this information from professionals, for the differences between the professions themselves denote a deficiency and unpreparedness of these actors concerning herbal medicine practice. Among several others, the main consequences of this can be the devaluation of phytotherapy in the health service, the loss of widespread knowledge about plants, and the distancing of the user from the health team (NÓBREGA et al. 2017).

The first step to overcome this problem is the implementation of phytotherapy in the curriculum of training courses for professionals (SOUSA et al. 2021), especially among those least mentioned in this research. By itself, such an attitude would not be able to resolve this; concomitantly, there should be more significant investments in continuing education after these professionals start working; physical restructuring of health services to allow for full practice; and also, the availability of medicinal plants and herbal medicines in pharmaceutical care at all levels of care.

The prescription of herbal medicines is already legally regulated; however, without deeper investigations into the profile and needs for improvements in this phenomenon (DAVID AND BELLO 2017). This study sought to contribute to elucidating such gaps. However, some limitations are recognized. The way of recruiting the sample, remotely and with an instrument applicable online, only allows us to show the reality of individuals who have the internet. Another limitation is the self-reporting of responses, which in turn gives room for memory bias among participants. There was also no way to guarantee the sample representativeness by the country's regions since the researchers could not control the volunteers. However, the unprecedented approach in bringing a diagnosis of the phenomenon investigated at the national level manages to increase the representativeness of the findings, which is necessary for discussions on the effectiveness of a national policy such as the PNPMF.
CONCLUSION

Phytotherapy guidelines and prescriptions in Brazil proved to be infrequent. However, the prevalence of access to this information was higher among socioeconomiclly more privileged individuals who sought and had greater access to health services and pre-existing health problems. Investments in continuing education among health professionals should be encouraged for more excellent knowledge about phytotherapy among this group and, consequent, more excellent transmission of scientifically based knowledge and practices to their patients.
REFERENCES

IBGE. Projeção da população 2021 [cited 2021 Nov 28].