

Use of guaco (*Mikania glomerata*) in primary health care in Rio Grande do Sul/Brazil

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Mikania glomerata (guaco) is included in Brazil's National List of Essential Drugs (RENAME) with expectorant and bronchodilator indications. This research aims to describe the profile of patients and prescribers of guaco-based herbal medicines within the Unified Health System in the municipalities of Rio Grande do Sul (RS)/Brazil, quantify the consumption and cost of this product, and assess the prescriber's experience with guaco and herbal medicine. A cross-sectional observational study was conducted based on questionnaires applied to prescribers and guaco usage data in primary care in RS municipalities (May 1, 2020 - April 30, 2021). 44 municipalities (40%) were identified dispensing guaco syrup in the sample. The results showed a prevalence of women users (57.4%) and patients between 19 and 59 years of age (58.2%). All participating prescribers were physicians, and 37% of the responses indicated daily doses of coumarin lower than recommended. The syrup consumption per 1,000 inhabitants ranged from 0.3 to 36.6 bottles, and the monthly cost per municipality varied from \$0.50 to \$247.78. Only five prescribers (21.7%) were familiar with the herbal medicines in RENAME, and only one had formal training for prescribing herbal medicines, highlighting the need for instruction and dissemination of programs for using herbal medicines.

Keywords: *Mikania glomerata*. Guaco. Herbal medicines. Unified Health System. Phytotherapy.

INTRODUCTION

In Brazil, the Ministry of Health (MS), through Ordinance n° 971/2006, has sanctioned the National Policy of Integrative and Complementary Practices (PNPIC), aligning with the guidelines of the World Health Organization (WHO). This policy incorporates medicinal plants and phytotherapy into the Unified Health System (SUS) (Brazil, 2006a).

The National Policy of Medicinal Plants and Herbal Medicines (PNMPF), established by Presidential Decree N° 5.813/2006, and the Intersectoral Policy on Medicinal Plants and Herbal Medicines of Rio Grande

do Sul (PIPMF/RS – State Law N° 12.560/2006), in concurrence with the PNPIC, State Policy on Integrative and Complementary Practices of RS (PEPIC/RS), and the National Policy on Pharmaceutical Assistance (Resolution CNS/MS n° 338/2004) are the primary references for the implementation of phytotherapy in the SUS/RS. Phytotherapy is a multidisciplinary practice that fosters closer collaboration between healthcare professionals and the community, and it encompasses various fields of knowledge, permeating different policy sectors (Rio Grande Do Sul, 2020).

Mikania glomerata Spreng. (*M. glomerata*), commonly known as guaco, is listed in Brazil's National List of Essential Drugs (RENAME) (Brazil, 2022). According to the National Health Surveillance Agency (ANVISA), it is classified as a traditional herbal product with expectorant and bronchodilator indications without a medical prescription (Brazil, 2014a). Guaco syrup has

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been identified as the most prescribed phytotherapeutic in primary care units in the State of São Paulo/Brazil (Caccia-Bava *et al.*, 2017), in the municipalities of Petrolina-PE/Brazil (Nascimento Júnior *et al.*, 2016) and the metropolitan region of Curitiba-PR/Brazil (Gribner *et al.*, 2019).

Pre-clinical and clinical research conducted by the Center of Medicines (CEME) has provided evidence of the safety and efficacy of guaco leaves tea (*M. glomerata*) at the tested doses (5, 10, and 15 g in 200 ml of water) and demonstrated its bronchodilator and antitussive effects (Brazil, 2006b).

In a study conducted by Garcia and colleagues (2020), the bronchodilator activity of guaco syrup (*M. glomerata*) was evaluated through a randomized, crossover, double-blind clinical trial involving volunteers with mild or moderate asthma. The investigation concluded that guaco syrup did not exhibit significant bronchodilator activity over the four-hour evaluation period. It's worth noting that the dose administered in the study represents 0.5 mg of coumarin, which falls within the minimum daily dose recommended by ANVISA, ranging between 0.5 and 5 mg of coumarin (Brazil, 2022).

Two clinical trials of industrialized syrups containing an association of *M. glomerata* and other plants did not show signs of systemic toxicity, confirming the safety of the preparations (Soares *et al.*, 2006; Tavares *et al.*, 2006). A recent study by Bertol *et al.* (2024) evaluated the safety of oral solutions from *M. glomerata* and *M. laevigata*, two species usually interchangeably in Brazilian ethnomedicine, in healthy volunteers in a randomized, open-label, multiple-dose, two-arm trial across two weeks, with two different doses (15 and 30 mL of oral solutions twice a day). Both species were considered safe for humans under the dose regimen tested. However, for *M. glomerata*, even at the highest daily dose, the minimum therapeutical concentration of coumarin was not achieved. On the other hand, for *M. laevigata*, the safety was confirmed with a coumarin dosage of up to 144% of the maximum concentration recommended by ANVISA.

Differences in coumarin content and other bioactive components have been reported between species and from

different commercial formulations (Bertol *et al.*, 2024; Bertolucci *et al.*, 2013; Costa *et al.*, 2018; Czelusniak *et al.*, 2012; De Lazzari Almeida *et al.*, 2017; Gasparetto *et al.*, 2015; Ueno, Sawaya, 2019). This has raised concerns among health professionals about the standardization and quality control of the products, posing a challenge to integrating phytotherapy into the SUS.

Therapeutic resources in phytotherapy are largely based on scientific, institutional, and legal references available to professionals for guidance and support. According to the Federal Council of Medicine, phytotherapeutics are recognized as a therapeutic approach encouraged by national health agencies and can be employed by physicians (CFM, 2008). Various health professionals can recommend it within the scope of the healthcare network. As a complementary practice, a specialist title is not mandatory, although it is preferable, and some professional councils may require this title for their members (Rio Grande do Sul, 2020; Brazil, 2014a).

In light of recent regulations allowing the prescription of phytotherapeutics by the Federal Councils of Physiotherapy (COFFITO, 2010), Dentistry (CFO, 2008), Pharmacy (CFF, 2008; CFF, 2013), and Nutrition (CFN, 2013; CFN, 2015), which have published specific resolutions acknowledging the integration of Integrative and Complementary Practices in Health (PICS) into their professionals' scope of practice (Felten *et al.*, 2015; Barreto, Silveira, 2014), it becomes relevant to assess the use of these products and the profile of phytotherapeutic prescribers. These regulations could significantly impact the use of *Mikania glomerata* (guaco) in healthcare.

This study aims to provide an overview of patients and prescribers of herbal medicines, specifically those based on the *Mikania glomerata* species (guaco) in the SUS in municipalities in Rio Grande do Sul (RS)/Brazil. Additionally, it seeks to measure the consumption and cost of these products and to evaluate the patient characteristics and the experience of prescribers in health services related to guaco prescription and phytotherapy. The findings of this study will not only enhance the current body of knowledge but also have practical implications for healthcare professionals, researchers, and policymakers

interested in integrative and complementary practices in health.

MATERIAL AND METHODS

Study Design

A cross-sectional observational study with a quantitative descriptive approach was conducted based on a survey of guaco usage data in primary care within municipalities of RS from May 1, 2020, to April 30, 2021. Data were sourced from municipal pharmacy consumption reports, prescriptions, and prescriber interviews. The research project received approval from the Research Ethics Committee of UFRGS (CAAE 40784820.7.0000.5347). We assessed the data from the State of RS due to the regionality, once the University is based in the State, facilitating in-person access for field research. Additionally, guaco is included in RENAME with expectorant and bronchodilator indications, and the RS State is prone to respiratory diseases during the winter cold climate. To the best of our knowledge, this is the first report concerning the consumption of herbal medicines based on the *Mikania glomerata* species in the SUS in municipalities of RS/Brazil.

Municipality Selection

All municipalities in RS with a population exceeding 20,000 inhabitants, as per the 2020 census conducted by the Brazilian Institute of Geography and Statistics (IBGE, 2020), were included in the selection process. Afterward, an online inquiry was conducted either through the municipality's website or by contacting the Health Departments via email or phone to request data from the Municipal Medication List (REMUME) or its equivalent. Municipalities that included guaco syrup in the REMUNE and its pharmaceutical presentation were identified. Access to consumption reports, acquisition costs, and guaco prescriptions were requested. The data collection phase from patients and prescribers considered municipalities with identifiable and traceable prescriptions or consumption reports.

Sample Selection of Patients and Prescribers

In municipalities with up to 600 identified guaco syrup prescriptions, 200 prescriptions were randomly selected for collecting patient and prescriber data. In municipalities with more than 600 prescriptions, data from 25% of them were collected.

After identifying all prescriptions containing guaco syrup, a complementary search was carried out in the computerized medical records or physical records of patients who used the syrup to assemble patient characterization data and identify the prescriber.

Prescriber Interviews

Identified prescribers were invited to participate in the interview phase. They received a link to the Informed Consent Form and confirmed their agreement and awareness via email or WhatsApp®. Subsequently, a link to a structured electronic questionnaire was sent to them. Invitations were extended to up to three prescribers per municipality.

Data Collection and Analysis

Data collection involved gathering details on municipalities dispensing guaco syrup and its pharmaceutical presentation, as well as information on consumption and acquisition costs. Additionally, patient data included gender and age, while prescriber data encompassed socio-demographic information, details of their training in phytotherapy, length of professional experience, and practice locations. Information regarding guaco and phytotherapy prescriptions was also obtained. The results of the data analyses are presented descriptively.

RESULTS AND DISCUSSION

A total of 109 municipalities in the RS State, with over 20,000 inhabitants, were identified, of which 44 (40%) dispensed guaco syrup during the research period. Among these, 02 municipalities provided manipulated guaco syrup, while 42 municipalities dispensed industrially

manufactured pharmaceutical formulations. Of the 44

municipalities dispensing guaco syrup, only 40 had computerized and traceable data (Figure 1).

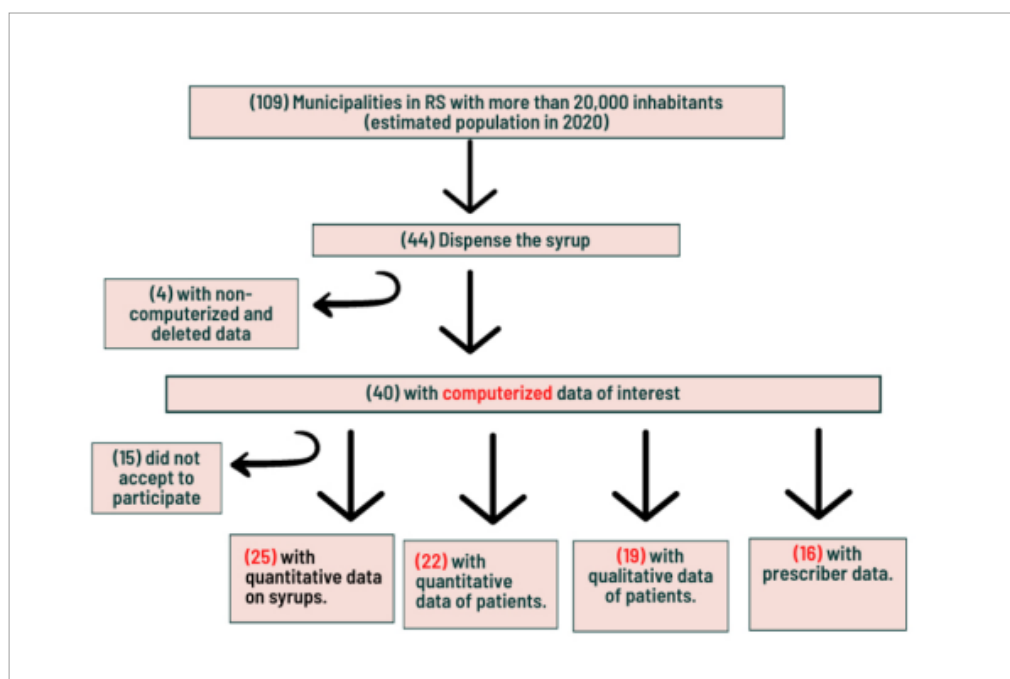


FIGURE 1 - Municipality selection in the Rio Grande do Sul State/Brazil.

Out of 40 municipalities with computerized and traceable data, 25 (62.5%) agreed to participate in the research, providing quantitative consumption data (Alegrete, Bento Gonçalves, Camaquã, Campo Bom, Candelária, Flores da Cunha, Igrejinha, Ivoti, Lagoa Vermelha, Lajeado, Novo Hamburgo, Palmeira das Missões, Parobé, Portão, Santo Ângelo, São Borja, São Francisco de Paula, São José do Norte, São Leopoldo, São Lourenço do Sul, Taquara, Torres, Tramandaí, Vacaria, Vera Cruz). Igrejinha and Lajeado provided manipulated syrups to the population, while the other 23 municipalities supplied industrially manufactured pharmaceutical formulations. Bento Gonçalves, Camaquã, and São Leopoldo dispensed the pharmaceutical product from laboratory 02 (brand 02), while the other municipalities dispensed the manufactured pharmaceutical formulation from laboratory 01 (brand 01).

Patient Profile

In 22 municipalities with accessible patient data (Figure 1), a total of 9,760 syrup prescriptions were identified, and 4,434 (45%) were comprehensively evaluated. Across 19 municipalities, the gender of 4,280 patients was reported, showing a prevalence of women users, representing 2,457 (57.4%) of the sample. This corroborates findings from the study conducted by Moura, Cohn, and Pinto (2012) in Santos (SP), which also indicated a higher prevalence of use among women. Similarly, Esteves *et al.* (2020) reported a greater number of women using phytotherapy.

The age of patients from 3,217 prescriptions was determined, revealing a distinct pattern in usage. Notably, the syrup prescription was considerably low among children and adolescents (0 to 18 years) (299 prescriptions

- 9.3%). The primary users were individuals between 19 and 59 (1,871 prescriptions - 58.2%), followed by those aged 60 or older (1,047 prescriptions – 32.5%). This age distribution provides valuable insights into the target population for prescription syrup usage.

Prescriber Profile

Twenty-three prescribers from 16 municipalities agreed to participate in the interview. All of them were physicians, despite resolutions authorizing the prescription

of phytotherapeutics and medicinal plants for other healthcare professionals (CFF, 2008; CFF, 2013; CFO, 2008; COFFITO, 2010; CFN, 2013). This data differs from a study conducted in Maringá-PR/Brazil, which identified herbal medicine prescriptions by physicians and nurses working in primary health care (Lopes, Obici, Albiero, 2012). Additionally, a study in Blumenau-SC/Brazil indicated prescriptions by dentists, nurses, physicians, and nursing or oral health technicians (Mattos *et al.*, 2018).

In the present study, 52.2% of the prescribers were men (Table I), consistent with other literature reporting a prevalence of male prescribers (60% and 54.4%) (Nascimento Júnior, 2016; Gribner, 2022).

TABLE I - Characterization of the prescribers interviewed

Variable (n)	Category	N (%)
Age range – years (23)	< 31	3 (13.0)
	31 – 40	10 (43.5)
	41 – 50	6 (26.1)
	51 – 60	2 (8.7)
	> 60	2 (8.7)
Gender (23)	Male	12 (52.2)
Insertion time in SUS – years (22)	up to 5	11 (50.0)
	6 - 15	4 (18.2)
	16 - 40	7 (31.8)
	Average 9.77 ± 10.3	
Time working in the health service – years (23)	Less than 1	10 (43.5)
	1 – 5	6 (26.1)
	More than 5	7 (30.4)
	Average 5.4 ± 7.2	
Weekly work hours in SUS – hours (21)	< 10	3 (14.3)
	10 – 20	3 (14.3)
	21 – 30	1 (4.8)
	31 – 40	14 (66.7)
Specialty	General Medicine/Internal	15 (65.2)
	Medicine	7 (30.4)
	Community/Family Pediatric	1 (4.3)

The average age among men prescribers was 44.8 ± 12.5 years, ranging from 27 to 66, and among women prescribers, it was 35.6 ± 6.9 years, ranging

from 28 to 49, reflecting a diverse spectrum of experience and perspectives.

The average length of employment for prescribers in the SUS was 9.77 ± 10.3 years. Fifty percent (11) had

worked for less than 5 years. When considering the length of work at the health unit, 43.5% (10) had been working for less than 1 year, while 26.1% (6) had been there for less than 5 years. The brief period of service indicates a high turnover of professionals in the health service. Most physicians (14 - 66.7%) have a workload of 31 to 40 hours per week in the SUS. Regarding specialties, the majority were general medicine/internal medicine (65.2%) and community/family doctors (30.4%).

Eighteen prescribers (78.3%) indicated other herbal medicines besides guaco, with *Passiflora incarnata* being the most commonly remembered. Of the 12 herbal medicines listed in the RENAME (Brazil, 2022), the interviewees recalled 05: *Plantago ovata* (Plantago), *Harpagophytum procumbens* (devil's claw), *Glycine max* (soy isoflavone), *Aloe vera* (aloe), and *Rhamnus purshiana* (cascara-sagrada).

Only 05 prescribers (21.7%), all women, were aware of the list of herbal medicines in RENAME, and 06 (26.1%) were familiar with PNPIC. The lack of knowledge about the list of herbal medicines by 78.3% of prescribers in our study aligns with another study's findings, which reported that 85.4% of prescribers were unfamiliar with the herbal medicines from RENAME and 80.3% with

plants in the National List of Medicinal Plants of SUS concern (RENISUS) (Mattos *et al.*, 2018; Brazil, 2006a; Brazil, 2018; Rio Grande Do Sul, 2013).

All respondents who claimed acquaintance with PNPIC also indicated the following reasons for supporting this initiative: expansion of therapeutic options, promotion of comprehensive care through other complementary practices, and the cultural aspect of the population regarding the use of herbal medicines.

Only 01 interviewed professional had formal training for the prescription of medicinal plants or herbal medicines, highlighting the need for training, as well as encouragement from Professional Councils and Universities responsible for undergraduate courses. This is particularly important given the existence of a national policy that encouraging the use of herbal medicines and medicinal plants by the SUS.

The indications for using the syrup are detailed in Table II and are in line with the literature, including its expectorant (Brazil, 2014a), bronchodilator (Brazil, 2014a, Freitas *et al.*, 2008), anti-inflammatory (Freitas *et al.*, 2008), antibacterial against *Streptococcus mutans* (Yatsuda *et al.*, 2005), antitussive (Brazil, 2011), and antiulcerogenic (Bighetti *et al.*, 2005) properties.

TABLE II - Therapeutic indications or clinical conditions for prescribing guaco syrup

Therapeutic Indications/Clinical Conditions	N (%)
Cough with different characteristics	17 (43.6)
Expectorant	6 (15.4)
Respiratory diseases or infections	5 (12.8)
Flu or colds	4 (10.3)
Bronchitis	3 (7.7%)

We identified 02 pharmaceutical formulations in the municipalities: syrup brand 01 (35 municipalities) and syrup brand 02 (07 municipalities). Syrup brand 01 contains 35 mg of guaco fluid extract per milliliter (mL), equivalent to 0.02625 mg of coumarin per mL of syrup. Syrup brand 02 comprises *Mikania glomerata* Tincture 0.1

ml/ml, equivalent to 80 µg/mL of coumarin, approximately 03 times higher than the coumarin concentration of brand 01 syrup. Despite the differences between the 02 commercial pharmaceutical formulations available in the municipalities (brands 01 and 02), it is important to note that the dosages suggested by the manufacturers result in

daily coumarin levels within the range recommended by RENAME (Brazil, 2022) and ANVISA's Instruction No. 02/2014 (Brazil, 2014a), as long as the dosages adhere to the instructions provided by the suppliers.

One of the manipulated formulations consists of a mixture of components with the following ingredients: Watercress fluid extract 1%, Propolis Tincture 1%, Tolu balsam Tincture 2%, guaco fluid extract 2%, and citric acid 0.2% in expectorant syrup. The second manipulated formulation contains 8% guaco fluid extract in syrup. For both manipulated syrups, it was not possible to calculate the coumarin content, as these medications have no leaflet, and the dosage is specified by the prescriber for each patient.

Prescribers reported diverse methods of administration for the medication, as indicated in Table III. All responses were related to municipalities dispensing syrup brand 01 (equivalent to 0.02625 mg of coumarin/mL of syrup). Considering the RENAME recommended daily dose of 0.5 to 5 mg of coumarin (Brazil, 2022; Brazil, 2014a), 37% of responses indicated daily doses of up to 15 mL, providing a daily coumarin dose lower than recommended. This practice leads to subtherapeutic dosage, lack of effectiveness, and resource waste. This finding is relevant because out of the 42 municipalities that distributed the industrialized syrup, 35 (83.3%) had syrup brand 01, while only 7 (16.7%) had syrup brand 02, which contains higher coumarin content.

TABLE III – Posology reported by interviewed prescribers for syrup brand 01 (equivalent to 0.02625 mg of coumarin/mL of syrup)

Dose (mL)	Frequency	Guaco syrup (mL/day)	Coumarin (mg/day)
2.5	3x/day	7.5	0.2 mg ^a
5.0	3x/day	15	0.4 mg ^a
7.0	3x/day	21	0.6 mg
10	12/12h	20	0.5 mg
10	1x/day	10	0.3 mg ^a
10	3x/day	30	0.8 mg
15	3x/day	45	1.2 mg
15	6/6h	60	1.6 mg

^a Doses lower than recommended by RENAME (0.5 to 5 mg of coumarin per day).

It is worth noting that for syrup brand 01, the manufacturer disposed of a second commercial presentation in addition to the one available in the municipalities, which contains 117.6 mg of guaco fluid extract per milliliter, equivalent to 0.0882 mg of coumarin/mL of syrup. In this case, if the municipalities acquired this commercial presentation with a higher concentration, all prescriptions reported by the interviewed prescribers would be within the recommended dosages. However, this presentation was not found in the evaluated municipalities. The same

would apply to brand 02 if it were available in the health unit for the prescribers.

In this scenario, prescribers should be aware of the different pharmaceutical formulations available for dispensing and their coumarin concentration. This is particularly important given that there are two formulations (brands 01 and 02) with varying coumarin contents, and some municipalities distribute manipulated pharmaceutical forms. In this context, the pharmacist's

integration with the health team and other prescribers for guidance becomes essential.

Only 01 prescriber recommended a usage limit of 7 days for acute cases and 14 days for chronic cases, complying with the recommendations of the Pharmacopoeia Herbal Medicines Formulary (Brazil, 2021).

Regarding the main barriers to prescribing guaco syrup, prescribers have mentioned allergy to coumarin, concurrent use of anticoagulants, decompensated hypertension, liver disorders, diabetes, lack of confidence in efficacy, and patients' prejudice against phytotherapy. On a positive note, prescribers have mentioned the ease of acquisition or supply by SUS.

The literature reports that *M. glomerata* extracts are contraindicated for patients with a history of hypersensitivity and known allergy to the species or other species of the same family (*Asteraceae*) (Brazil, 2021; Brazil, 2014b). Contraindication for simultaneous use with anticoagulants are described, as coumarins may enhance these effects (Brazil, 2021; Brazil, 2014b). Similar precautions should be taken with non-steroidal anti-inflammatory drugs. Guaco is also contraindicated in chronic liver diseases and severe arterial hypertension (Saad *et al.*, 2018). Diabetic patients should avoid the syrup formulation due to the high sugar content, and pregnant or lactating women and children under two years old should not use the tincture (Brazil, 2011; Brazil, 2021; Brazil, 2014b). The production of sugar-free syrup can address the contraindication for sugar in syrups, a procedure already adopted by syrup brand 01, and the manipulated formulation of one municipality by using saccharin instead of sucrose in their formulation.

A total of 21 (91.3%) prescribers indicated that patients expressed interest in using medicinal plants and herbal medicine. This finding aligns with the observations made by Lopes and collaborators (2015), who also noted a favorable acceptance of herbal medicines among the population. Efficacy or positive therapeutic response was the most frequently cited reason (39%) by prescribers as

the motivation to prescribe guaco syrup. Corroborating that, a clinical trial conducted by CEME assessed the effectiveness of *M. glomerata* tea in respiratory diseases, demonstrating its safety and the bronchodilator and antitussive effects (Brazil, 2006b).

According to the interviewees, the main challenges in prescribing guaco were the lack of access to herbal medicine in health services (8.7%) and poor adherence to treatment (4.3%). On the other hand, 18 (78%) of the prescribers mentioned medication availability in the health service as a facilitator for prescribing guaco syrup, demonstrating that availability is not homogeneous among the municipalities.

Survey of the quantity and cost analysis of guaco syrup bottles

The individual value of industrialized guaco syrup bottles ranged from \$0.34 to \$0.73, based on the dollar on 05/15/2024 (US\$1 = R\$5.14) (Central Bank of Brazil, 2024). The average value per bottle was $\$0.43 \pm 0.08$, with no variation between manufactured pharmaceutical formulations. The individual value ranged from \$0.16 to \$0.36 among manipulated guaco syrup bottles.

The monthly consumption per municipality ranged from 1.2 to 646 bottles, with an average of 83.98 ± 144.49 , and the monthly cost ranged from \$0.50 to \$247.78, with an average of $\$34.54 \pm 54.24$. According to Mello and collaborators (2019), the production of herbal medicines offers the best cost-benefit ratio compared to other products due to their low side effects and lower production costs. The major benefits of using medicinal plants are their low cost and easy availability, making them more accessible to the population.

The total consumption per patient during the study period ranged from 1.17 to 3.5 bottles, with the highest consumption in the municipality of Camaquã. The cost per patient ranged from \$0.29 to \$1.35. The syrup consumption per 1,000 inhabitants varied from 0.3 to 36.6 bottles (Figure 2), with most municipalities (n=18, 72%) consuming up to 13 bottles per 1,000 inhabitants.

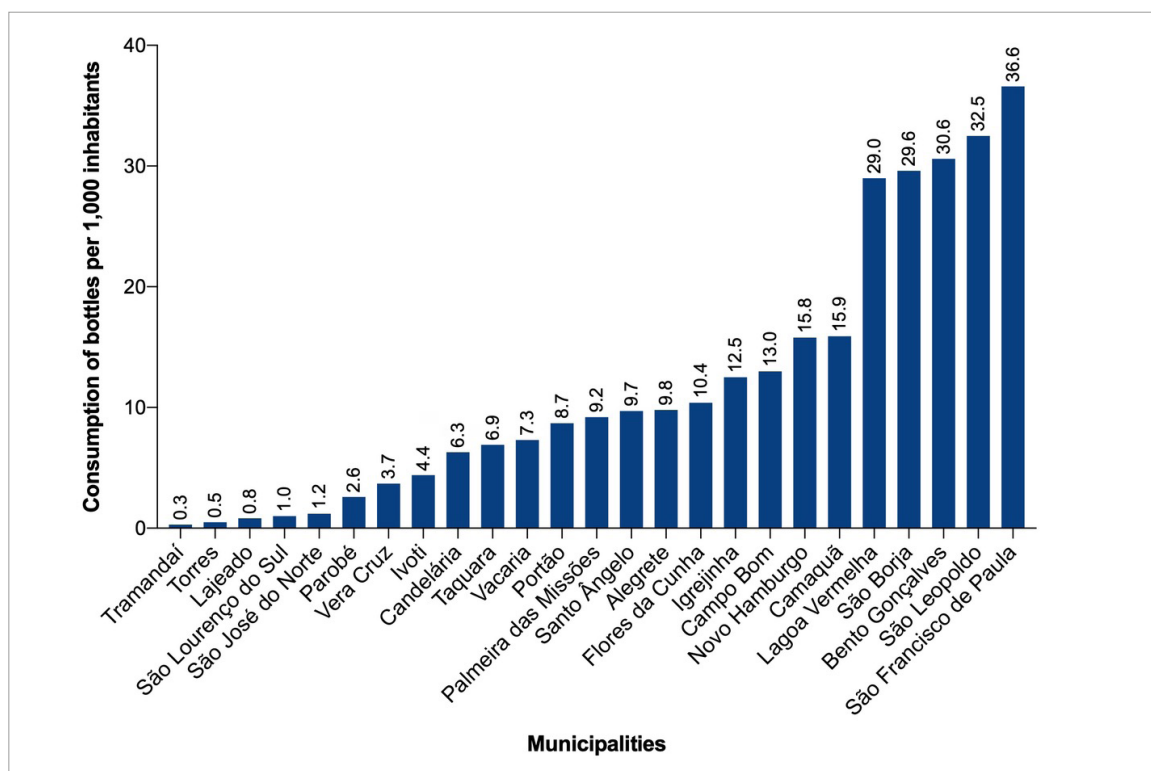


FIGURE 2 - Consumption of guaco syrup bottles per 1,000 inhabitants per municipality in the Rio Grande do Sul State/Brazil.

Integration Challenges and Policy Implications

The use of medicinal plants and herbal medicines aims to introduce complementary therapeutic options, reduce costs, reclaim traditional knowledge, preserve biodiversity, stimulate social growth, and should be encouraged in health education (Nascimento Júnior *et al.*, 2016).

Incorporating complementary and integrative health practices into public healthcare is gradually becoming a reality. However, integrating phytotherapy into the SUS presents challenges arising from the need to ensure its quality, effectiveness, safety, and reproducibility (Ormond, Fernandes, Diniz, 2022). It is also essential to make it accessible to both prescribers and patients.

During the bidding process, it's important to consider technical specifications such as dosage form, concentration, and marker specifications when preparing the tender and conducting subsequent technical analysis

of proposals. When well executed, these analyses attribute significant value to the health service, characterizing it as a pharmaceutical service (Campese, Carvalho, Farias, 2017).

In order to improve effectiveness, it is crucial to verify the concentration of herbal medicine markers in the pharmaceutical products provided by municipalities and standardize the prescribed dosage according to this information. Implementing this straightforward process in the municipalities can prevent underdosing, potential loss of effectiveness and the waste of public funds.

According to this study, less than 50% of the sampled municipalities dispense guaco syrup, one of the most prescribed herbal medicines in primary care. This scenario highlights the need to strengthen Integrative and Complementary Health Practices by mobilizing institutional resources to expand therapeutic options based on the National Policy of herbal medicines and medicinal plants in the SUS. This includes promoting formal

training for prescribing herbal medicines for healthcare professionals other than physicians, encouraging dialogue on the topic, and disseminating policies and programs to expand the use of herbal medicines in the State.

The limitations of this study are inherent to cross-sectional studies and real-world data of this magnitude, including the lack of standardization in the data organization, restrictions on access and data collection, and remote interviews with prescribers. On the other hand, the study's strengths include the fact that it was a first-of-its-kind to cover such a large region of RS on the use of guaco, providing data on consumption, costs, patients' and prescribers' characteristics, and prescribers' perceptions regarding the use of herbal medicine.

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