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# Study on the practice of self-medication in adults from Paraná during the COVID-19 pandemic

**Camila Zurlo Pianca**[1] **Flavia Cristina da Silva**[1] **Any de Castro Ruiz Marques**[2]

[1]UniCesumar - UniCesumar. Maringá/PR, Brasil.
[2]Universidade Estadual do Centro Oeste – Unicentro. Guarapuava/PR, Brasil.
E-mail: anycrmarques@gmail.com

**Abstract**

The lack of knowledge about medications to prevent or treat COVID-19, as well as the use of previous prescriptions and the storage of medicines at home, can encourage self-medication. Thus, this work aimed to study the practice of self-medication in adult individuals from Paraná during the COVID-19 pandemic. Therefore, a quantitative-descriptive and cross-sectional study was carried out with the online distribution of questionnaires reaching people from Paraná aged ≥18 years old. The results show that participants (n=329) between 18-37 years old were the most frequent responders. Approximately 24% self-medicated, influenced mainly by having the medication at home (21%) or by family members or friends (13%). Self-medication with vitamins (28%) and ivermectin (20%) in preventing COVID-19 was frequent. However, over-the-counter drugs used for respiratory symptoms were mostly analgesics/antipyretics (17%) and muscle relaxants (10%). Additionally, participants who tested positive for COVID-19 self-medicated with vitamins (6%), ivermectin or nitazoxanide (4%), and analgesics/antipyretics (3%). The use of ivermectin or nitazoxanide for COVID-19 has not been scientifically proven for this purpose. Finally, self-medication for non-respiratory symptoms was higher for analgesics and antipyretics (14%), muscle relaxants (9%), and laxatives (9%). Although little used, self-medication with chloroquine/hydroxychloroquine was cited, even without an efficacy study for COVID-19. It is concluded that more than half of the adult participants from Paraná self-medicated during the COVID-19 pandemic, with the most frequent drug classes being analgesics/antipyretics, muscle relaxants, laxatives, vitamins, and ivermectin.

**Keywords:** Self-medication. COVID-19. Medicine. SARS-CoV-2.

## INTRODUCTION

Self-medication means resorting to one or more medications to be treated without the help of prescribing professionals[1]. The characteristics of self-medication as a treatment or prevention for COVID-19 were reported according to the use of various drugs, herbal products, and dietary supplements[2,3]. Interest in the study of self-medication during the COVID-19 pandemic has shown to be on the rise worldwide, presuming such a practice occurs among patients[4].

Before the period of the COVID-19 pandemic, in Wuhan, China (2018), there was a higher prevalence of people who self-medicated (45.4%) than those who took medication through a medical prescription (39.1%)[5]. Du-

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ring lockdown periods, it was reported that 16% of respondents to a survey in Poland took prescribed medication without consulting a prescriber[6].

During the COVID-19 pandemic, factors such as social isolation and hesitation to enter pharmacies and/or other health units motivated people to use medication without medical advice[6]. Still, even after the critical moment of the pandemic, there are drugs of questionable use for the prevention and effective treatment of COVID-19[7], despite the practical proof of remdesivir for treating patients with severe COVID-19[8].

Self-medication is linked to several risks for the patient, such as incorrect self-diagnosis, wrong choice of therapy, masking a serious health condition, severe adverse effects, and drug interactions. In addition, there are risks of inappropriate self-medication that involves the community by increasing public health spending[9,10].

During the pandemic, there was a publication on self-medication in Brazil with data from patients admitted to hospitals[11]. However, the current study analyzes the medicating behavior of non-hospitalized people from Paraná to verify inappropriate medication consumption patterns and encourages patients to seek help from prescribers, in addition to reducing damage to their health.

Therefore, this study aims to evaluate self-medication in adults from Paraná during the COVID-19 pandemic.

## METHODOLOGY

An online survey using Google Forms was carried out to study the practice of self-medication in adult individuals from Paraná. The research has a quantitative-descriptive aspect, an online transversal character, and intends to collect hypotheses, analyze facts, and evaluate these data according to their main variables.

The project was submitted and approved by the Research Ethics Committee, and only after agreeing to the Informed Consent Form (ICF) did the participants have access to the questionnaire.

Through the Google Forms platform, participants were reached via the internet through social applications and digital media, such as WhatsApp, Messenger, Facebook, Instagram, and email. The distribution of the questionnaires was random such is named snowball, i.e., the link to access the form was initially transmitted to people with close ties, who were invited to share the questionnaire with other personal contacts.

Thus, 400 online questionnaires were distributed in random cities in the state of Paraná, covering random adult individuals. The number of forms was designated by sample calculation referring to the population of Paraná (~11 million inhabitants), confidence level of 95%, and sampling error of 5% to reach at least 385 individuals.

Inclusion criteria were age ≥18 years, regardless of gender, being a resident of Paraná, and agreeing to the Informed Consent Form. Exclusion criteria were applied to individuals who did not fully complete the form.

The data collected through the application of the questionnaire were computed in an Excel spreadsheet and statistically analyzed using the Bioestat version 5.0 program. The essential characteristics of the study participants were analyzed using descriptive statistics. Frequencies and percentages were used to present categorical variables. The Chi-square test was used for qualitative variables and demonstrated significance when $p \leq 0.05$.

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## RESULTS

The online questionnaires were randomly distributed on digital platforms and social media to reach adults from Paraná. A total of 400 questionnaires were obtained, with 24 forms being excluded for not meeting the following selection criteria: minors (n=7), did not agree with the ICF (n=1), or non-residents of the State of Paraná (n=16). Thus, the amount of 376 questionnaires met the selection criteria. Another 27 forms were excluded due to duplicate responses. Therefore, a total of 349 questionnaires were validated and used for the analyses (Figure 1). Figure 2 also shows the distribution and frequency of completed forms according to location in Paraná.

From the 349 questionnaires answered, the general characteristics of the research participants were obtained, mainly involving adults between 18 and 37 years old (67%), women (76%), non-health professionals (70%), and those who had a private healthcare plan (70%) (Table 1).

The 349 self-medicating research participants reported that they rarely self-medicated (39%) or never self-medicated (37%) during the COVID-19 pandemic. People who self-medicated 4 to 7 times or more than eight times during the pandemic totaled 24% (Table 2).

The predominant influence of self-medication was identified in 398 responses from the 349 participants, and was due to storing the medication at home (21%) or previous medical prescriptions (20%).Other influences were reported, such as a family member or friend (13%), the individual - for fear of leaving home (8%), advertising on television, magazines, or the internet (3%), and others (3%) (Table 2). The "others" option was described in an open field completed by the participants, including influence by the family doctor (n=1), being a doctor or pharmacist (n=4), by the individual themself for trivial reasons (n=3), or the reason was not informed (n=4) (data not shown).

Most of the 349 participants acquired information about the medication taken (n=199; 57%); however, another 43% (n=150) did not obtain knowledge. Contradictorily, 295 people answered that they received information before self-medicating, such as: a package insert or electronic leaflet (44%), qualified health professional (24%), internet (23%), relative or friend (7%), or others (2%) (Table 2). The choice "others" was described in an open field for participants who obtained medication information through an application (n=2), through their own knowledge as they were health professionals (n=1), through previous prescriptions (n=1), or did not inform (n=1) (data not shown).

Considering more than one response alternative, 428 returns were obtained on using the medication as a preventive measure against COVID-19, in which 196 people did not use any medication. Mainly, the use of vitamin C, vitamin D, zinc, or multivitamins included 28% of the studied population, followed by the use of ivermectin (20%), phytotherapy or teas (3%), homeopathy or *Bach* flower remedies (1%), nitazoxanide (1%), and others (<1%) (Table 3). The option "others" was described in an open field by the participants, including manipulated products similar to ivermectin (n=1) and acyclovir (n=1).

Table 4 shows the use of over-the-counter medications by individuals with cold, flu, or other symptoms (fever, fatigue, cough, sneezing, muscle pain, nasal congestion, runny nose, sore throat, headache, or lack of air) (n=491). Thus, analgesics and antipyretics were used more in the studied population (17%), subsequently were muscle relaxants (10%), medication for flu-like illnesses (8%), anti-inflammatory drugs (8%), vitamins or multivitamins (7%), phytotherapy or teas (6%), nasal decongestants (4%), antihistamines (4%), ivermectin or nitazoxanide (3%), throat lozenges (3%), antibiotics (3%), cough suppressants (1%), corticosteroids ( 1%), or other drugs (<1%). The "other drugs" choice involved using prescription drugs (n=4).

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Survey participants also responded about using over-the-counter medications after testing positive for COVID-19. Among a total of 407 responses, 72% had not tested positive for COVID-19. Others who tested positive and were self-medicating mainly were those who used vitamin C, vitamin D, zinc, or multivitamins (6%), ivermectin or nitazoxanide (4%), analgesics and antipyretics (4%), antibiotics (2%), corticosteroids ( 1%), cough suppressants (1%), chloroquine or hydroxychloroquine (1%), anti-inflammatory drugs (1%), nasal decongestant (1%), or herbal medicine or teas (1%). Antacids, antihistamines, laxatives, cold sores, throat lozenges, or muscle relaxants were <1%. Anticoagulants, antidiarrheal, antiviral drugs, homeopathy or Bach flower remedies, gastroprotective agents, and antispasmodic or antiemetic drugs were not cited among these self-medicators (Table 5).

Continuing to observe the data in Table 5, those who selected "others," an open answered field, did not administer medication without a prescription (n=10; 2%) after testing positive for COVID-19.

Table 6 shows the 609 responses obtained from the 349 participants regarding the use of over-the-counter medications for non-respiratory symptoms, such as stomach pain, poor digestion, insomnia, anxiety, allergies, nausea, vomiting, cramps, headache, and diarrhea, among others. The highest frequency was individuals without the previously mentioned symptoms (30%).

The drug classes that were used most by self-medicators for the symptoms reported in Table 6 were: analgesics and antipyretics (14%), laxatives (9%), muscle relaxants (9%), antispasmodics (7%), gastroprotective agents ( 6%), anti-inflammatory drugs (5%), phytotherapy or teas (4%), antihistamines (4%), antiemetics (4%), antipyretics (3%), antiparasitic drugs (1%), homeopathy or Bach flower remedies (1%), and corticosteroids (1%). Classes including antibiotics, antifungals, antidiarrheal drugs, or others were <1%.

Finally, in Table 6, when "other" was selected, participants reported in the open field that they took fluoxetine (n=1), sumatriptan (n=1), or took it with a prescription (n=1).

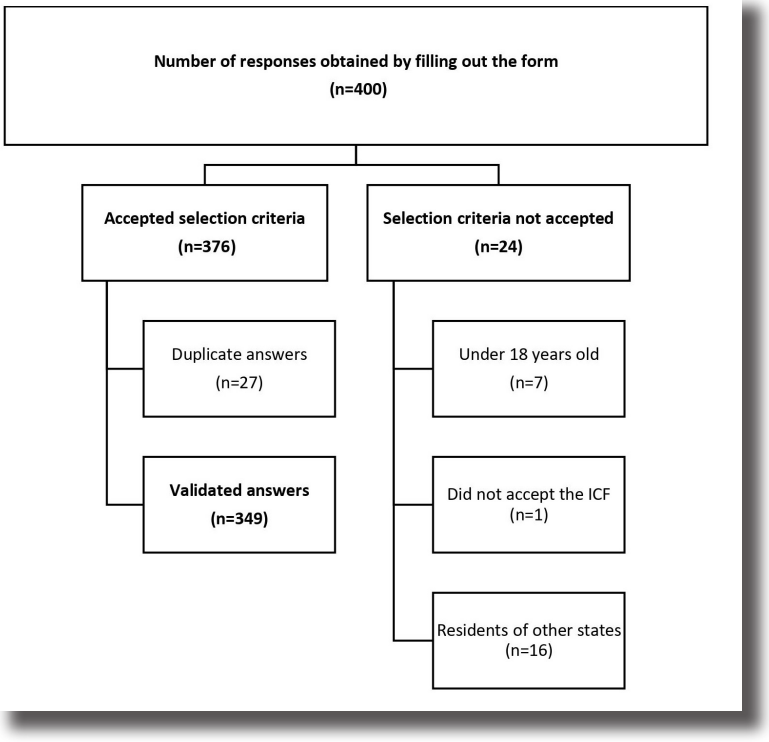


**Figure 1 –** Flow chart diagram illustrating inclusion and exclusion criteria for online questionnaires. Maringá. State of Paraná. 2022.

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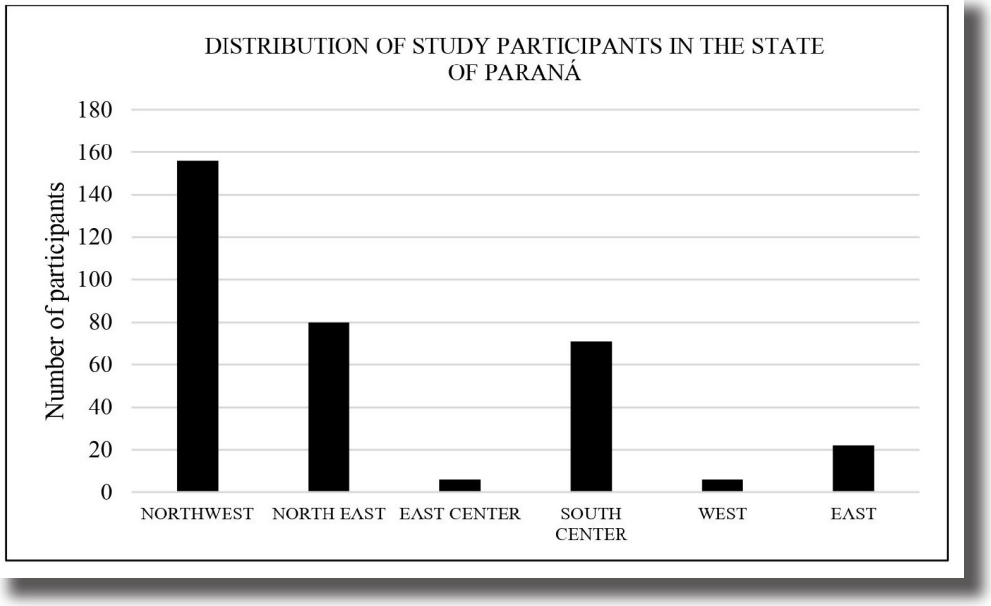


**Figure 2 –** Distribution and Frequency of the research according to the regions of the State of Paraná (n=349). Maringá. Paraná. 2022.

**Table 1 –** General characteristics of participants in the study on self-medication Maringá. Paraná. 2022.

| Characteristics | n = 349 | Frequency | p-value* |
|---|---|---|---|
| **Age groups** | | | |
| 18 – 27 years old | 111 | 32% | < 0.0001 |
| 28 – 37 years old | 123 | 35% | |
| 38 – 47 years old | 40 | 11% | |
| 48 – 57 years old | 41 | 12% | |
| 58 – 67 years old | 24 | 7% | |
| 68 – 77 years old | 10 | 3% | |
| **Sex** | | | |
| Female | 265 | 76% | < 0.0001 |
| Male | 84 | 24% | |
| **Health professional** | | | |
| No | 243 | 70% | < 0.0001 |
| Yes | 106 | 30% | |
| **Healthcare insurance** | | | |
| No | 105 | 30% | < 0.0001 |
| Yes | 244 | 70% | |

*p-value: Chi-squared test.

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**Table 2 –** Self-medication activity reported by study participants. Maringá. Paraná. 2022.

| Frequency | n = 349 | Frequency | p-value* |
|---|---|---|---|
| Rarely (1 to 3 times) | 135 | 39% | |
| With some frequency (4 to 7 times) | 56 | 16% | < 0.0001 |
| Very often (more than 8 times) | 27 | 8% | |
| Never | 131 | 37% | |
| **Influence** | **n = 398‡** | **Frequency** | |
| I did not self-medicate | 127 | 32% | |
| I had the medicine at home | 82 | 21% | |
| Previous prescriptions | 80 | 20% | |
| Relative or friend | 50 | 13% | |
| Myself, for fear of leaving home | 32 | 8% | < 0.0001 |
| Advertising (TV, magazines, internet) | 15 | 3% | |
| Others | 12 | 3% | |
| **Was the participant informed about the medication?** | **n = 349** | **Frequency (%)** | |
| Yes | 199 | 57% | 0.0102 |
| No | 150 | 43% | |
| **Means of information** | **n = 295** | **Frequency (%)** | |
| Package insert/electronic leaflet | 129 | 44% | |
| Qualified health professional | 70 | 24% | |
| Internet | 69 | 23% | < 0.0001 |
| Relative or friend | 22 | 7% | |
| Other | 5 | 2% | |

*p-value: Chi-square test. ‡More than one answer was considered.

**Table 3 –** Use of over-the-counter drugs as a preventive against COVID-19. Maringá. Paraná. 2022

| | N = 428‡ | Frequency | p-value* |
|---|---|---|---|
| I did not use anything as a preventative | 196 | 47% | |
| Vitamin C, Vitamin D, Zinc, or Multivitamins | 119 | 28% | |
| Ivermectin | 84 | 20% | |
| Herbal medicine or teas | 12 | 3% | < 0.0001 |
| Homeopathy or Bach Flower Remedies | 8 | 1% | |
| Nitazoxanide | 7 | 1% | |
| Others | 2 | <1% | |
| Total | | 100% | |

*p-value: Chi-square test. ‡More than one answer was considered.

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**Table 4 –** Use of over-the-counter medications used as symptomatic in cold, flu, or other symptoms (fever, fatigue, cough, sneezing, muscle pain, nasal congestion, runny nose, sore throat, headache, or shortness of breath). Maringá. Paraná. 2022.

| | n = 646‡ | Frequency | p-value* |
|---|---|---|---|
| I have not had a cold/flu or other symptoms mentioned. | 155 | 24% | |
| Analgesics and antipyretics | 109 | 17% | |
| Muscle relaxants | 62 | 10% | |
| medication for flu-like illnesses | 52 | 8% | |
| Anti-inflammatory | 49 | 8% | |
| Vitamin C, Vitamin D, Zinc, or Multivitamins. | 45 | 7% | |
| Herbal medicine or teas | 37 | 6% | |
| Nasal decongestant | 28 | 4% | |
| Antihistamines | 24 | 4% | < 0.0001 |
| Ivermectin or Nitazoxanide | 21 | 3% | |
| Throat lozenge | 18 | 3% | |
| Antibiotic | 17 | 3% | |
| Cough Suppressants | 10 | 1% | |
| Corticosteroid | 10 | 1% | |
| Others | 5 | <1% | |
| Homeopathy or Bach Flower Remedies. | 3 | <1% | |
| Chloroquine or Hydroxychloroquine. | 1 | <1% | |
| Total | | 100% | |

*p-value: Chi-square test. ‡More than one answer was considered.

**Table 5 –** Use of over-the-counter drugs after testing positive for COVID-19. Maringá. Paraná. 2022.

| | n = 407‡ | Frequency | p-value* |
|---|---|---|---|
| I have not tested positive for COVID-19 | 293 | 72% | |
| Vitamin C, Vitamin D, Zinc, or Multivitamins | 26 | 6% | |
| Ivermectin or Nitazoxanide | 17 | 4% | |
| Analgesics and antipyretics | 16 | 4% | |
| Others | 10 | 2% | |
| Antibiotics | 9 | 2% | < 0,0001 |
| Corticosteroid | 6 | 1% | |
| Cough Suppressant | 6 | 1% | |
| Chloroquine or Hydroxychloroquine | 6 | 1% | |
| Anti-inflammatory | 4 | 1% | |
| Nasal decongestant | 4 | 1% | |
| Herbal medicine or teas | 4 | 1% | |
| Antacids | 1 | <1% | |

*to be continued...*

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*...continuation table 5*

| | n = 407‡ | Frequency | p-value* |
|---|---|---|---|
| Antihistamines | 1 | <1% | |
| Laxatives | 1 | <1% | |
| Medication for flu-like illnesses | 1 | <1% | |
| Throat lozenge | 1 | <1% | |
| Muscle relaxants | 1 | <1% | |
| Anticoagulant | 0 | 0% | |
| Antidiarrheal | 0 | 0% | < 0.0001 |
| Antiviral | 0 | 0% | |
| Homeopathy or Bach Flower Remedies | 0 | 0% | |
| Gastric protector | 0 | 0% | |
| Medicine for colic | 0 | 0% | |
| Vomiting medicine | 0 | 0% | |
| Total | | 100% | |

*p-value: Chi-square test. ‡More than one answer was considered.

**Table 6 –** Use of non-prescription drugs for non-respiratory symptoms: stomach pain, poor digestion, insomnia, anxiety, allergies, nausea, vomiting, cramps, headache, and diarrhea, among others. Maringá. Paraná. 2022.

| | n = 609‡ | Frequency | p-value* |
|---|---|---|---|
| I had no non-respiratory symptoms | 180 | 30% | |
| Analgesics and antipyretics | 85 | 14% | |
| Laxatives | 57 | 9% | |
| Muscle relaxants | 53 | 9% | |
| Medicine for stomach pain | 44 | 7% | |
| Gastroprotective agents | 34 | 6% | |
| Anti-inflammatory | 32 | 5% | |
| Herbal medicine or teas | 27 | 4% | |
| Antihistamines | 25 | 4% | |
| Vomiting medicine | 25 | 4% | < 0.0001 |
| Medicine for gas | 16 | 3% | |
| Antiparasitic | 6 | 1% | |
| Homeopathy or Bach Flower Remedies | 6 | 1% | |
| Corticosteroid | 5 | 1% | |
| Antibiotic | 4 | <1% | |
| Antifungal | 4 | <1% | |
| Antidiarrheal | 3 | <1% | |
| Others | 3 | <1% | |
| Total | | 100% | |

*p-value: Chi-square test. ‡More than one answer was considered.

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## DISCUSSION

A sample of n=349 adults from Paraná answered the online questionnaire and, for the most part, the north, northeast, and south-central regions of Paraná contributed to the most participants, probably because those responsible for the research began the study in these places (Figure 2). Coincidentally, in another Brazilian study on the impact of COVID-19 on eating habits, physical activity, and sleep in health professionals, it was shown that despite the distribution in more than 21 Brazilian states, most of the participants were in the state of Paraíba, which was also the place of study of the researchers[12].

Adults between 18 and 37 years old (67%) participated the most, likely because they are more knowledgeable about the Google Forms platform and similar in age to the researchers. Women responded more to the questionnaires (76%), suggesting they were more interested in healthcare than men (Table 1).Simultaneously, self-medication with herbal products was studied to treat symptoms associated with anxiety and depression in adults from the central-west region of Mexico during the COVID-19 pandemic, and, like the present study, there was more participation of women aged <40 years old[13].

In the current study (n=349), self-medication was reported by 63% (n=218) of respondents. A study in India, also with online questionnaires, recruited 323 participants, of which 40% had a profile of self-medication[14]. Another study carried out with 1013 Polish participants during the COVID-19 pandemic showed that almost half of the respondents (45.6%) indicated at least one behavior associated with self-medication during the lockdown[6]. Comparing these studies with the one herein, greater self-medication behavior in Paraná is observed.

A recent study demonstrated the influence of self-medication, with 21% (n=82) already having the medication at home, while a family member or friend influenced 13% (n=50). Additionally, in a study in Colombia with 136 self-medicated participants, almost 100% (n=135) had medication at home, and 45% (n=61) recommended medication to others[15]. Thus, contradictorily, the current study showed less interference from storing medicines at home and less importance regarding the knowledge of friends and family. These factors may demonstrate that social and cultural conditions may be associated with self-medication.

A study with 909 people surveyed in Chile showed that the influence of self-medication by other people did not exceed 20%, and reusing previous prescriptions reached 46%[16]. Our study with 398 responses reached 13% and 20%, respectively. Proportions indicate that the present study shows a correlation equal to or greater than the study in Chile.

Advertising and the internet played influential roles in drug consumption in this study and, therefore, remained among the reasons for self-medication of 3% (n=15) of participants (Table 2). However, another article demonstrated that internet use is a factor of self-medication in more than 50% (n=52) of their study population[17]. This finding was contradictory to our results and in agreement with another study in which it was found that internet use during the quarantine played a direct role in the practice of self-medication, as people trusted it regardless of whether it was true or updated[15].

Herein, the use of medication to prevent COVID-19 without a medical prescription was recorded in 312 responses, with 28% using vitamin C, vitamin D, zinc, or multivitamins. Likewise, previous studies observed the use of the same products in self-medication during the COVID-19 pandemic[18]. Moreover, studies reveal that the usefulness of these products is contradictory in preventing viral infections or specific cases of COVID-19[19,20].

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The current study's second most used drug for prevention was ivermectin at 20% (n=84). Equating the results, some previous studies show a higher proportion of ivermectin use in individuals engaged in self-medication activity in 35% (n=1617)[21] and 77% (n=483)[22], while other studies demonstrated a lower consumption in self-medication with 12.5% (n=18)[23] and 9.5% (n=23)[24]. The use of ivermectin has no scientific evidence to support its use for preventing or treating COVID-19[25].

In this study, 491 responses were obtained regarding the use of over-the-counter medication for the symptomatic treatment of cold, flu, or other symptoms (fever, fatigue, cough, sneezing, muscle pain, nasal congestion, runny nose, sore throat, headache, or lack of air). Therefore, the most used drug classes were analgesics and antipyretics (17%; n=83), muscle relaxants (10%), medication for flu-like illnesses (8%), and anti-inflammatory drugs (8%). Other studies cited the same pharmacological classes, but in higher amounts compared to our research, such as analgesics (56%; n=291) and antipyretics (34%; n=177)[26], anti-inflammatory drugs (31.5%; n=95)[27], and medication for flu-like illnesses (44%; n=150)[28].

Also, in the present study, patients who tested positive for COVID-19 used over-the-counter medications (n=14). The main drug classes were vitamins and biosimilar drugs (6%), ivermectin or nitazoxanide (4%), analgesics and antipyretics (4%), and antibiotics (2%). Previous studies reported using these classes in exacerbated proportions compared to the current research, such as ivermectin in 85.5% (n=266) and the antibiotic azithromycin in 71.5% (n=222)[27]. Observed differences between this study and the present may be due to the previous research taking place in a hospital environment. It is known that the use of azithromycin is insufficient for the treatment of COVID-19, and, in addition, it can cause resistance to antibiotics[29].

Still, in the current study, the use of over-the-counter medications to treat non-respiratory symptoms, such as stomach pain, poor digestion, insomnia, anxiety, allergies, nausea, vomiting, cramps, headache, and diarrhea, among others, were cited in 609 responses. Thus, the most frequent drug classes were analgesics and antipyretics (14%), laxatives (9%), and muscle relaxants (9%). Self-medication of the classes mentioned above was also the most common in previous studies[26,30,31].

Although little represented by the studied population (n=14), the use of antimicrobials (antibiotics, antifungals, and antiparasitic drugs) without prescription was present; however, other studies reported greater use[32-35]. It is known that the increase in microbial resistance due to the inappropriate use of antibiotics after the pandemic may have occurred due to indiscriminate use[36].

Furthermore, despite being very poorly represented (n=2) but still of potential concern was the use of labeled drugs (fluoxetine and sumatriptan) obtained without a medical prescription, described in the open field of the form. Other studies have also described the self-medication of psychotropic drugs during the COVID-19 pandemic attempting to improve mental health and sleep quality[37].

## CONCLUSION

More than half of the adults from Paraná who participated in the survey demonstrated self-medicating activity during the COVID-19 pandemic, including medication for disease prevention, treatment of respiratory symptoms or not, and even after positivity for SARS-CoV-2. Self-medication was mainly encouraged by participants themselves because they had the medication at home or because of previous medical prescriptions. The primary source of information about the drug was the leaflet. The most frequent drug

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classes were analgesics/antipyretics, muscle relaxants, laxatives, vitamins, and ivermectin, despite lacking proof of efficacy against COVID-19 infections. Thus, it is necessary to provide health education to control the consequences of self-medication.

**Author Statement CREdiT**

Conceptualization: Pianca, CZ; Silva, FC; Marques, ACR. Methodology: Pianca, CZ; Silva, FC; Marques, ACR. Validation: Pianca, CZ; Silva, FC; Marques, ACR. Statistical analysis: Pianca, CZ; Silva, FC; Marques, ACR. Formal analysis: Marques, ACR. Research: Pianca, CZ; Silva, FC; Marques, ACR. Resources: Pianca, CZ; Silva, FC; Marques, ACR. Writing-elaboration of the original draft: Pianca, CZ; Silva, FC; Marques, ACR. Writing-review and editing: Marques, ACR. Viewing: Pianca, CZ; Silva, FC; Marques, ACR. Supervision: Marques, ACR. Project administration: Marques, ACR.

All authors read and agreed to the published version of the manuscript.

## REFERENCES

1. Montastruc J-L, Bondon-Guitton E, Abadie D, et al. Pharmacovigilance, risks and adverse effects of self-medication. Therapies. 2016; 71: 257–262. Diponível em: http://dx.doi.org/10.1016/j.therap.2016.02.012.
2. Quincho-Lopez A, Benites-Ibarra CA, Hilario-Gomez MM, et al. Self-medication practices to prevent or manage COVID-19: A systematic review. PLoS One. 2021; 16: 1–12. Disponível em: https://doi.org/10.1371/journal.pone.0259317.
3. Yáñez JA, Chung SA, Román BR, et al. Prescription, over-the-counter (OTC), herbal, and other treatments and preventive uses for COVID-19. Environmental Managemento of COVID-19. 2021. Cap. 14. ISBN 978-0-323-85780-2. Disponível em: https://doi.org/10.1016/B978-0-323-85780-2.00001-9.
4. Onchonga D. A Google Trends study on the interest in self-medication during the 2019 novel coronavirus (COVID-19) disease pandemic. Saudi Pharm J. 2020; 28: 903–904. Disponível em: https://doi.org/10.1016/j.jsps.2020.08.003.
5. Lei X, Jiang H, Liu C, et al. Self-medication practice and associated factors among residents in Wuhan, China. Int J Environ Res Public Health. 2018; 15(68):1-10. Disponível em: http://doi.org/10.3390/ijerph15010068.
6. Makowska M, Boguszewski R, Nowakowski M. Self-Medication-Related Behaviors and Poland's. Int J Env Res Salud Pública. 2020; 17, 8344. Disponível em: http://doi.org/10.3390/ijerph17228344.
7. García-Albéniz X, Amo J, Polo R, et al. Systematic review and meta-analysis of randomized trials of hydroxychloroquine for the prevention of COVID-19. Eur J Epidemiol. 2022; 37: 789–796. Disponível em: https://doi.org/10.1007/s10654-022-00891-4.
8. Cheng Q, Zhao G, Chen J, Jia Q, Fang Z. Comparative efficacy and safety of pharmacological interventions for severe COVID- 19 patients. Medicine. 2022; 101:41 Disponível em: http://doi.org/10.1097/MD.0000000000030998.
9. Ylä-Rautio H, Siissalo S, Leikola S. Drug-related problems and pharmacy interventions in non-prescription medication, with a focus on high-risk over-the-counter medications. Int J Clin Pharm 2020; 42: 786–795. Disponível em: https://doi.org/10.1007/s11096-020-00984-8.
10. Baracaldo-Santamaría D, Pabón-Londoño S, Rojas-Rodriguez LC. Drug safety of frequently used drugs and substances for self-medication in COVID-19. Ther Adv Drug Saf. 2022; 13: 1–14. Disponível em: https://doi.org/10.1177/20420986221094141.
11. Rabelo Melo JR, Duarte EC, Moraes MV, et al. Self-medication and indiscriminate use of medicines during the COVID-19 pandemic. Cad Saude Publica. 2021; 37: 0–4. Disponível em: http://doi.org/10.1590/0102-311X00053221.
12. Mota IA, Oliveira-Sobrinho GD, Morais LPS, et al. Impact of COVID-19 on eating habits, physical activity and sleep in Brazilian healthcare professionals. Arq Neuropsiquiatr. 2021; 79: 429–436. Disponível em: https://doi.org/10.1590/0004-282X-ANP-2020-0482.
13. Alonso-Castro AJ, Ruiz-padilla AJ, Ortiz-cortes M, et al. Self-treatment and adverse reactions with herbal products for treating symptoms associated with anxiety and depression in adults from the central-western region of Mexico during the Covid-19 pandemic. J Ethnopharmacol. 2021; 23;272:113952. Disponível em: https://doi.org/10.1016/j.jep.2021.113952.
14. Goldlin ATJ; Prakash M. Cyberchondria and its Impact on Self-Medication and Self Care in Covid-19 Pandemic - A Cross Sectional StudyNo Title. Biomed Pharmacol J. 2021; 14: 2235–2244. Disponível em: https://dx.doi.org/10.13005/bpj/2322.
15. Gaviria-Mendoza A, Mejía-Mazo DA, Duarte-Blandón C, et al. Self-medication and the 'infodemic' during mandatory preventive isolation due to the COVID-19 pandemic. Ther Adv Drug Saf. 2022; 13: 1–12. Disponível em: https://doi.org/10.1177/20420986211072376.
16. Albarrán KF, Zapata LV. Analysis and quantification of self-medication patterns of customers in community pharmacies in southern Chile. Pharm World Sci. 2008; 30: 863–868. Disponível em: https://doi.org/10.1007/s11096-008-9241-4.
17. Barakat A, Mohasseb M. Self-Medication with Antibiotics Based on the Theory of Planned Behavior among an Egyptian Rural Population during the Era of COVID-19 Pandemic. Egypt J Community Med. 2023;40(1): 51-60. Disponível em: https://doi.org/10.21608/ejcm.2022.139501.1220.
18. Acharya A, Shrestha MV, Karki D. Self-medication among Medical Students and Staffs of a Tertiary Care Centre during COVID-19 Pandemic: A Descriptive Cross-sectional Study. J Nepal Med Assoc. 2022; 60: 59–62. Disponível em: https://doi.org/10.31729/jnma.7247.
19. Alexander J, Tinkov A, Tor AS, et al. Early Nutritional Interventions with Zinc , Selenium Against Progressive COVID-19. Nutrients.

DOI: 10.15343/0104-7809.202347e12992022I

2020; 12: 1–12. Disponível em: https://doi.org/10.3390/nu12082358.
20. Mercola J, Grant WB, Wagner CL. Evidence regarding vitamin d and risk of covid-19 and its severity. Nutrients. 2020; 12: 1–24. Disponível em: https://doi.org/10.3390/nu12113361.
21. Ruiz-Padilla AJ, Alonso-Castro AJ, Preciado-Puga M, et al. Use of allopathic and complementary medicine for preventing SARS-CoV-2 infection in Mexican adults: A national survey. Saudi Pharm J. 2021; 29: 1056–1060. Disponível em: https://doi.org/10.1016/j.jsps.2021.07.009.
22. Ruiz-Padilla AJ, Alonso-Castro AJ, Preciado-Puga M, et al. Use of allopathic and complementary medicine for preventing SARS-CoV-2 infection in Mexican adults: A national survey. Saudi Pharm J. 2021; 29: 1056–1060. Disponível em: https://doi.org/10.1016/j.jsps.2021.07.009.
23. Amuzie CI, Kalu KU, Izuka M, et al. Prevalence, pattern and predictors of self-medication for COVID-19 among residents in Umuahia, Abia State, Southeast Nigeria: policy and public health implications. J Pharm Policy Pract. 2022; 15: 1–9. Disponível em: https://doi.org/10.1186/s40545-022-00429-9.
24. Okoye OC, Adejumo OA, Opadeyi AO, et al. Self medication practices and its determinants in health care professionals during the coronavirus disease-2019 pandemic: cross-sectional study. Int J Clin Pharm. 2022; 44: 507–516. Disponível em: https://doi.org/10.1007/s11096-021-01374-4.
25. Formiga FR, Leblanc R, Rebouças JS, et al. Ivermectin : an award-winning drug with expected antiviral activity against. J Control Release. 2021; 10;329:758-761. Disponível em: https://doi.org/10.1016/j.jconrel.2020.10.009
26. Saleem RT, Butt MH, Ahmad A, Amin M, Amir AAA et al. Practices and Attitude of Self-medication during COVID-19 Pandemic in University Students with Interventional Role of Pharmacist: a Regional Analysis. Lat Am J Pharmacy. 2021; 40: 1946–53.
27. Vasquez-Elera LE, Failoc-Rojas VE, Martinez-Rivera RN, et al. Self-medication in hospitalized patients with COVID-19: A crosssection study in northern Peru. Germs. 2022; 12: 46–53. Disponível em: https://doi.org/10.18683/germs.2022.1305.
28. Heshmatifar N, Quchan ADM, Tabrizi ZM, et al. Prevalence and Factors Related to Self-Medication for COVID-19 Prevention in the Elderly. Iran J Ageing. 2021; 16: 112–127. Disponível em: https://doi.org/10.32598/sija.16.1.2983.1.
29. Kournoutou GG, Dinos G. Azithromycin through the Lens of the COVID-19 Treatment. Antibiotics. 2022; 11: 1063. Disponível em: https://doi.org/10.3390/antibiotics11081063.
30. Tobaiqi MA, Mahrous KW, Batoot AM, et al. Prevalence and association of self-medication on patient health in Medina. Med Sci. 2021; 25: 2685–2697.
31. Shrestha AB, Aryal M, Magar JR, et al. The scenario of self-medication practices during the covid-19 pandemic; a systematic review. Ann Med Surg. 2022; 82: 104482. Disponível em: https://doi.org/10.1016/j.amsu.2022.104482.
32. Zhang A, Hobman EV, Barro P, et al. Self-medication with antibiotics for protection against COVID-19: The role of psychological distress, knowledge of, and experiences with antibiotics. Antibiotics. 2021; 10: 1–14. Disponível em: https://doi.org/10.3390/antibiotics10030232.
33. Heydargoy MH. The Effect of the Prevalence of Covid-19 on Arbitrary Use of Antibiotics. Iran J Med Microbiol. 2020; 14(4): 374-378. Disponível em: http://doi.org/10.30699/ijmm.14.4.374
34. Choudhary N, Lahiri K, Singh M. Increase and consequences of self-medication in dermatology during COVID-19 pandemic: An initial observation. Dermatol Ther. 2021; 34: 2–4. Disponível em: http://doi.org/10.1111/dth.14696.
35. Zhang C, Jin H, Wen YF, et al. Efficacy of COVID-19 Treatments: A Bayesian Network Meta-Analysis of Randomized Controlled Trials. Front Public Heal. 2021; 9: 1–18. Disponível em: http://doi.org/10.3389/fpubh.2021.729559.
36. Langford BJ, Soucy JR, Leung V, et al. Antibiotic resistance associated with the covid-19 pandemic: a systematic review and meta-analysis. Clin Microbiol Infect. 2023; 29: 302–309.
37. Sikdar KMYK, Anjum J, Bahar NB, et al. Evaluation of sleep quality, psychological states and subsequent self-medication practice among the Bangladeshi population during Covid-19 pandemic. Clin Epidemiol Glob Heal. 2021; 12: 100836. Disponível em: https://doi.org/10.1016/j.cegh.2021.100836.

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