

## PERCEPTION AND COPING WITH THE COVID-19 PANDEMIC IN TWO TRADITIONAL COMMUNITIES IN THE BRAZILIAN AMAZON

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**Highlights:** (1) The pandemic worsened social inequalities in traditional communities of the Amazon. (2) Riverine and quilombola people faced Covid-19 with local support but lacked full assistance. (3) Underreporting and precarious healthcare marked the first year of the pandemic.

PRE-PROOF

(as accepted)

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## **ABSTRACT**

The research aimed to understand the epidemiological information of the first year of the COVID-19 pandemic in traditional communities in the Amazon. Furthermore, it analyzed the perception of the events and reported the leading practices adopted to mitigate the pandemic. The fieldwork was conducted in two communities: one riverside and one quilombola, both in the municipality of Abaetetuba, in the state of Pará. Representatives and local players from the communities participated in the data collection, after which the information was analyzed qualitatively and quantitatively. The novel coronavirus pandemic has damaged traditional communities, such as unemployment, increased social inequalities, declining public health, more expensive food, and psychological problems. Some actions have been taken by local organizations and NGOs to mitigate the impacts. However, it still has not been enough to guarantee people's safety from the virus. Although there were no deaths, the number of people infected was undoubtedly higher than expected; in addition, as these are regions far from urban areas, health and social services have become more precarious and almost non-existent.

**Keywords:** Traditional populations. Economy. Mental health. SARS-CoV-2.

## **INTRODUCTION**

COVID-19 is a disease caused by the coronavirus identified as SARS-CoV-2 (Severe Acute Respiratory Syndrome-Coronavirus). It is recognized for having the genetic origin of a zoonotic virus, belonging to the Coronaviridae Family, responsible for causing severe acute respiratory syndrome<sup>1</sup> At the beginning of 2020, the Brazilian Ministry of Health confirmed the first case of COVID-19 in Brazil in a man from São Paulo who had visited Italy. After three days of this occurrence, the number of suspects reached 182 people spread across more than six Brazilian states<sup>2</sup>.

The first wave of the disease lasted from March to the end of November 2020. As of December, cases of a new variant of SARS-CoV-2 were reported in Manaus - AM, thus starting a second wave of the disease<sup>3</sup>. During this period, on March 12, 2020, the Minister of Health, Dr. Luiz Henrique Mandetta, instituted Ordinance No. 365 to establish

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social isolation measures as a form of emergency public health response of international importance in the face of COVID-19<sup>4</sup>.

It is worth noting that in addition to the collapse in public health, the pandemic has caused a political and economic crisis in the country, from national to local levels<sup>5</sup>. Locations with a low Human Development Index (HDI), especially in rural areas, have been most affected due to their high social vulnerability, where public policies rarely reach<sup>6</sup>. Therefore, because they are in more remote regions, traditional communities have experienced particular problems, and many of these localities have sought low-cost therapeutic alternatives to solve their health problems<sup>7</sup>.

Hence, this research aimed to understand the epidemiological information and the main ways of coping with COVID-19 in the first year of the pandemic in two communities in the municipality of Abaetetuba, in the state of Pará. In addition, we sought to analyze the perception of events from the perspective of local residents and how they took care of their emotional health at the time.

## **MATERIAL AND METHODS**

The research was conducted in two traditional communities in the municipality of Abaetetuba. The riverside community of Ilha do Capim, which is 16 km from Abaetetuba<sup>8</sup>, has around 138 families and 690 inhabitants<sup>9</sup>. The other population studied was the quilombola community of Ramal do Piratuba, which is about 16.5 km from the city center<sup>10</sup> and is home to approximately 176 families and 470 people<sup>11</sup>. In both communities, it can be seen that the inhabitants have a traditional way of life and are directly connected to nature (Figure 1).

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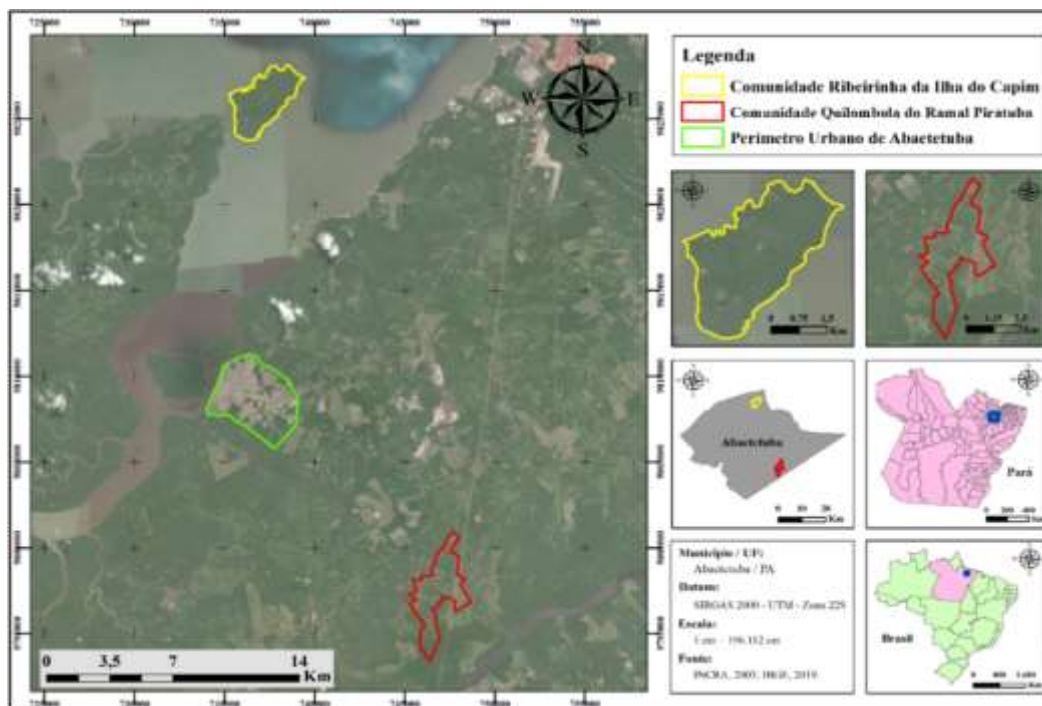


Figure 1 - The riverside community of Ilha do Capim and the quilombola community of Ramal do Piratuba - Abaetetuba, Pará, Amazonia, Brazil.

Source: The authors

The research was first submitted to the ethics committee via the Brazil Platform and was approved under the following CAAE protocol: 44900221000005241. Subsequently, it was sent to the SisGen platform (National System for the Management of Genetic Heritage and Associated Traditional Knowledge), registered as A9CFCAC. Epidemiological information on the communities was collected by the Abaetetuba Health Department, from which a database was extracted using the COVID-19 monitoring system.

From September to December 2020, interviews were conducted via WhatsApp to obtain information, using semi-structured questionnaires with both local representatives and players (e.g., health agents, health technicians, teachers, and political and social representative of the community, to have a general and more collective perspective on the pandemic) and with residents of the communities (to have a more individual understanding of the situation studied)<sup>12-13</sup>.

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The questionnaires were transcribed into a Microsoft Office Excel® 2010 spreadsheet for qualitative and quantitative analysis, according to the standard literature<sup>13</sup>. After this, a preliminary exploratory reading was performed, and all the ideas and reflections the data could provide were open to it.

### **RESULTS AND DISCUSSION**

#### **Evolution of cases**

The Abaetetuba Health Department's monitoring system confirmed that 141 cases of COVID-19 were reported in rural Abaetetuba during the first wave of the pandemic. Ninety-one (91) of these registrations were for communities on islands, and 50 for those along highways and/or unpaved roads. However, these figures are inconsistent with reality since there was a shortage of tests, health workers, and health units to meet the population's needs, making it difficult to effectively monitor the evolution of COVID-19 cases<sup>14</sup>.

One of the health agents in the quilombola community of Ramal Piratuba reported that the first confirmed case in the locality was a 67-year-old woman who had received her sister from Belém (who had “flu-like symptoms”) at the end of April 2020. However, the first case officially registered by the Health Department for the community was on August 11, 2021, where there is a discrepancy in the information. Therefore, it becomes evident that the reports do not faithfully portray reality<sup>15</sup>. As for the number of suspects, according to the health agent in this community, more than 20 people were infected in a short time (Figure 2), with a peak in May 2020, according to the interviewees. Nevertheless, despite showing symptoms of the disease, they did not undergo any tests to prove it. Representatives said that the most significant contamination and concern period was from the end of April to August 2020.

For Ilha do Capim's riverside population, there were 15 confirmed cases (Figure 2), which were identified with the arrival of rapid tests in May after many people showed intense symptoms of the disease. Despite this high number, the Abaetetuba Health Department only knew seven cases. According to the nursing technician who works at the local health center, there have been more than 40 people with suspected cases of

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infection with the new coronavirus, with an overall average of 50 cases and a peak in contamination from May to July 2020. The first case is believed to have occurred in a 60-year-old man after many respiratory complications at the beginning of May. Despite these COVID-19 infections, there have been no deaths from the disease in any of the communities.

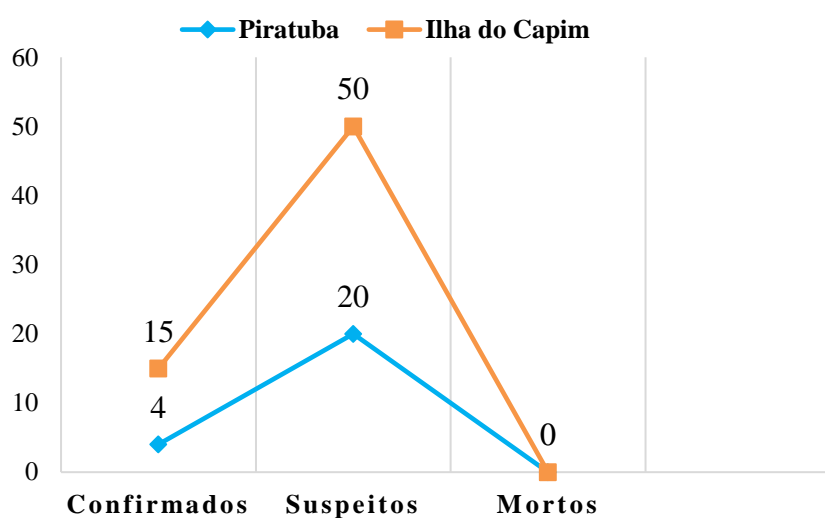


Figure 2 - Numbers of confirmed, suspected, and dead COVID-19 cases in traditional communities. Source: The authors

### Perception and coping with COVID-19

The quilombola community of Ramal do Piratuba characterized COVID-19 as a pandemic disease caused by a virus that has great potential to lead people belonging to the risk group to die, such as asthmatics, hypertensive patients, diabetics, the elderly, and children. The riverside community of Ilha do Capim, in general, noted that it is an unknown disease, highly contagious, with the potential to mutate, of Chinese origin, and, as in the Piratuba community, it was considered to be more harmful to people in the risk group. The communities' understanding of COVID-19 was considered good, as they expressed scientifically proven information<sup>16</sup>.

It is confirmed that there is vulnerability among people with hypertension, heart disease, immunosuppressive and respiratory diseases, as well as diabetes<sup>17</sup>. However, even if mortality is low among people without comorbidities, it is still necessary to take precautions among this group, as this prevents the spread of the virus and its action on

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their bodies<sup>27</sup>. Furthermore, most of the participants from Ilha do Capim and Ramal do Piratuba also considered older people and children at risk. It should also be added that without a vaccine, anyone can develop a severe form of COVID-19<sup>19-20</sup>.

In both communities, the primary source of information about the pandemic came from television news reports and social networks such as Facebook and WhatsApp, which were more popular than the local health center itself. In this respect, it should be said that people tend to turn to means of information that are closer to them, given the fear of contamination in public places such as hospitals and health centers<sup>21</sup>.

**Preventive measures used in communities against COVID-19**

All those interviewed in the two study areas unanimously mentioned the use of masks. Other forms of prevention were also mentioned, such as hand sanitizers, social distancing, and hand washing. It can be inferred that these forms of coping stood out due to the widespread dissemination of prevention information in the media and by health professionals. Since during the first wave of COVID-19 there were not so many studies related to SARS-CoV-2, protective measures served to prevent the spread of the virus<sup>22</sup>.

In addition, the following practices mentioned by the quilombolas of Ramal do Piratuba were observed: the majority adopted social distancing and hand washing. On Ilha do Capim, on the other hand, the same measures were adopted, but social distancing was more prominent. It is important to emphasize that all the recommendations cited by the interviewees are fundamental and validated by the scientific community<sup>23</sup>, further demonstrating that the interviewees understand how the virus spreads and how to combat it.

Social distancing and wearing masks were very challenging forms of protection, especially at the end of the first wave, because according to the reports of health professionals in the communities investigated, these preventive measures brought about changes in the behavior of residents. Consequently, the feeling that the disease was easing due to the apparent drop in the number of infected people triggered new infections, which led to a second wave of COVID-19<sup>24</sup>.

However, applying all these measures in practice was not straightforward, as new lifestyle habits had to be built, especially at the start of the pandemic when some residents

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in both locations were reluctant to protect themselves from the disease, as can be seen in the statements by the president of the Ramal do Piratuba Association and the nursing technician from Ilha do capim: “people did not believe in it, barriers were built to prevent outsiders from entering, for a while, so that we could keep the community stable. But then it did not work out because they said it was a wrong operation and were reluctant. It was closed for 45 days, from April 28 to June 12 (Figure 3). Day and night. At first, people did not give it much importance. Still, after there started to be cases of deaths in Abaetetuba, everyone got scared, and at first, they wore masks and isolated themselves in their homes”.



Figure 3 - Closure of the quilombola community of Ramal do Piratuba by the Quilombola Association of Ramal do Piratuba (ARQUITUBA). Source: The authors

However, as Ilha do Capim is a larger area, traffic management was not as efficient as in the Piratuba community, where Ramal was closed to people outside the community. Nevertheless, many residents did not accept these measures peacefully, which resulted in the reopening after a few months of interdiction. Although this intervention lasted for a short period, from April to July, it was decisive in controlling the total number of infected people. In other traditional communities in the region, where the closure was not carried out immediately, the number of COVID-19 patients was higher, according to the president of ARQUITUBA.

The measures cited by residents of both communities when they fell ill were similar, such as isolating themselves to undergo treatment in their own homes or seeking



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medical help nearby. Yet, according to local health professionals, the inhabitants rarely went to the health center to seek guidance and take COVID-19 tests. Treating illnesses only at home is common in traditional communities because there is a shortage of health services. Over time, people developed home treatment skills<sup>25</sup>. In severe cases, community residents had to be sent to the Emergency Care Unit (UPA) or the São Bento Hospital - a reference point for COVID-19 treatment in Abaetetuba. Residents were also sent to Belém to be treated at the Abelardo Santos Hospital - Pará State Field Hospital<sup>11</sup>. It is worth noting that the Basic Health Unit (UBS) in the riverside community of Ilha do Capim was only opened four months after the pandemic's start; before that, treatment was provided at the home of the local nursing technician. As there was no UBS in the community of Ramal do Piratuba, residents had to go to the nearest health center. The distance between the communities contributed to the lack of access to adequate primary health care<sup>26</sup>.

Economic impacts occurred in both communities due to the reduced number of people traveling to sell products and the closure of shops in the municipal headquarters. As a result, a large part of the population was left without an income since agriculture, fishing, and extractivism are the main occupations of these community members; thus, unemployment affected many of those interviewed. In order to deal with the situation, some measures were implemented by the Federal Government, such as access to emergency aid, which was the primary source of income for these populations at the time. In addition, non-governmental organizations (NGOs) collaborated to distribute basic food baskets to the most vulnerable residents, who were indicated by Social Assistance.

In the Ramal do Piratuba community, all the interviewees claimed to know about the distribution of food baskets, so around 96 of them were distributed, acquired at different stages through partnerships with some institutions, such as ARQUITUBA ("Remnant Quilombo Association of Ramal do Piratuba"), MALUNGO ("Coordination of Associations of Remnant Quilombo Communities of Pará") and CRAS ("Social Assistance Reference Center"). In Ilha do Capim, ten participants said they were aware of this type of action; the distribution took place through a partnership between CRAS and the Coordination of the Santo Antônio Catholic Church, where a total of 15 basic food baskets were purchased. It is worth mentioning that hand sanitizers, soap, and

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detergents were distributed along with the baskets in both communities. In addition, it was only in the Piratuba community that some masks made voluntarily by the community's sewists were distributed.

Other actions were implemented during the pandemic's first few months, such as monitoring COVID-19 cases, distributing hygiene kits, and building a health center. However, the hygiene kit was distributed separately from the basic food baskets only in the Ilha do Capim community, with 5 kits being collected and distributed between the community and the church. In both communities, the construction of the local health center began. In Piratuba, the work was starting, and in Ilha do Capim, it was completed in May (when it was inaugurated). In addition, for some residents, no actions within the community reached them regarding COVID-19 prevention or any assistance. Dialogue with social actors in the communities has shown that these people are not as involved in the community's actions as a whole<sup>8</sup>.

Finally, one of the ways of coping mentioned was using medicinal plants to prevent and treat COVID-19. This care alternative is linked to transmitting knowledge and culture across generations. It is a low-cost and more accessible option<sup>27</sup>.

### **Mental and emotional health and medicinal plants in coping with COVID-19**

Feelings varied among collaborators in the communities studied, as there were reports of residents who developed from anxiety attacks to depressive symptoms accompanied by negative thoughts, causing difficulty sleeping and loss of appetite, especially at the beginning of the quarantine. On the other hand, there were reports of interviewees who remained hopeful. In this context, it is known that mental health directly influences the immune system<sup>29</sup>.

However, a more significant number of cases of anxiety were observed in the Ilha do Capim community, where there was a higher rate of infections. Although the Ramal do Piratuba community residents were worried, they were generally more emotionally stable. Understandably, feelings of instability arise during this period, according to <sup>16</sup>, who mentioned that such psychological and emotional imbalances in light of the pandemic are explained by the fear of getting sick, being unemployed, helpless, socially stigmatized for having the disease, and the fear of death. These authors also point out that

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uncertainty about the future, both economic and educational, has a direct impact on people's mental health.

They also highlight the psychological effects on health professionals, who reported feeling pressured to deal with sick people and the fear of contaminating family members<sup>30</sup>. Thus, the health agent from the community of Ramal do Piratuba and the technician from Ilha do Capim reported that they had an exhausting care routine. Still, it meant a lot because neither of them fell ill.

Medicinal plants were used for anxiolytic purposes in the communities. The main species mentioned were: lemongrass (*Cymbopogon citratus* (DC.) Stapf), colônia (*Alpinia zerumbet* (Pers.) BL Burtt & RM Sm.), lemon balm (*Lippia alba* (Mill.) NE Br. Ex Britton & Wilson, P.), fennel (*Foeniculum vulgare* Mill.), passion fruit (*Passiflora edulis* Sims), and mulungu (*Erythrina mulungu* Mart. Ex Benth.) (Figure 4).

Lemongrass tea (*C. citratus*) was mentioned in both communities studied. It was also used to combat anxiety and reduce muscle tension.<sup>28</sup> This idea is corroborated by the fact that the plant has a proven sedative and calming effect, as well as relieving uterine and intestinal cramps, and there are no contraindications. It is also worth mentioning the account of a resident who used a tea made from a mixture of lemongrass, soursop leaves, coconut water, and lemon drops, which was fundamental in her recovery when she had symptoms of COVID-19, such as a runny nose, cough, malaise, sore throat, and tiredness.

Teas infused with lemon balm (*L. alba*) and fennel (*F. vulgare*) were mentioned in both locations. However, their use was intensified in Ilha do Capim. Lemon balm has anxiolytic properties and helps with migraines; nevertheless, it should be avoided by pregnant women, nursing mothers, and people with diabetes, as it has an alcohol content in its chemical formula<sup>28</sup>. Fennel, in addition to its anxiolytic properties, is also soothing. Therefore, these plants were used to reduce tension and anxiety during quarantine.

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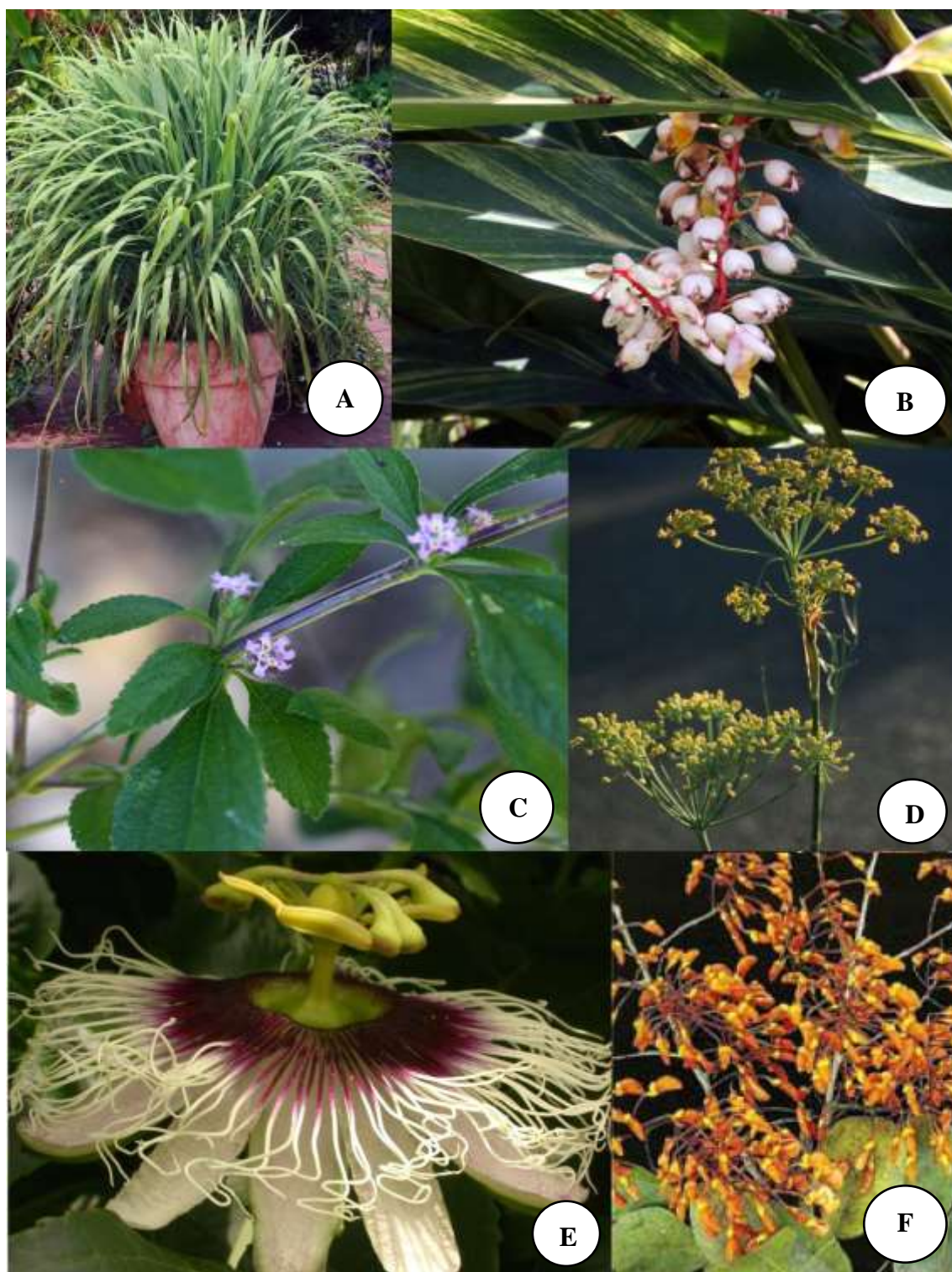


Figure 4 - Plants used as anxiolytics in the two traditional communities surveyed in Abaetetuba, Pará. (A) *Cymbopogon citratus* (DC.) Stapf; (B) *Alpinia zerumbet* (Pers.) BL

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Burt & RM Sm.; (C) *Lippia alba* (Mill.) NE Br. Ex Britton & Wilson, P.; (D) *Foeniculum vulgare* Mill.; (E) *Passiflora edulis* Sims; (F) *Erythrina mulungu* Mart. Ex Benth. Source: Tropicos. Missouri Botanical Garden (2023).

## **CONCLUSION**

Despite belonging to different cultures and regions, the traditional communities investigated had similar conceptions and actions regarding the prevention and treatment of COVID-19. One of the most challenging aspects of the routine of both groups was the habit of wearing masks daily.

The main impacts suffered by the communities include the rise in the cost of food and essential hygiene items, as well as the increase in unemployment and the closure of local businesses. In addition, there are not enough health workers in the regions to talk to and guide the population in adapting to the new reality.

As a result, both physical and mental health were affected by the fear of illness and death. This research encourages creating and implementing measures that meet the demands and urgencies regarding access to public health for traditional populations, guaranteeing interventions and projects for these communities where the health system can hardly reach them efficiently.

## **ACKNOWLEDGEMENTS**

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