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Resilience against the covid-19 pandemic among indigenous Kichwa communities in Ecuadorian Amazonia

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Abstract

There has been very widespread contagion of covid-19 in Kichwa indigenous communities in Ecuadorian Amazonia, but the peak of contagion has already passed, and total mortality has been remarkably low. The Kichwa people themselves typically attribute this to the widespread use of medicinal plants.

Background

Certain authors have expressed grave concern about the potential impacts of Covid-19 among Amazonian indigenous peoples and argued that indigenous peoples are particularly vulnerable to this disease (*1,2*). To our knowledge, however, no quantitative data has hitherto been published that could confirm or refute this affirmation. The purpose of this study was to make a quantitative estimate of the mortality caused by the covid-19 pandemic in Kichwa indigenous communities in Ecuadorian Amazonia, as well as to describe how the people in these communities coped with the pandemic.

Methods

Our study sites consisted of 13 Kichwa indigenous communities in the Ecuadorian Amazonia, with a total of approximately 10 300 inhabitants, ranging from peri-urban communities to remote villages far from the road network (Fig. 1). In mid-August we recorded the estimated proportion of contagion and the deaths apparently caused by covid-19 in these communities as well as the ways the communities had coped with the pandemic. This was based on our own experience living and working in some of the communities, and interviews with community leaders in others. We also conducted antibody tests on 34 subjects from one community

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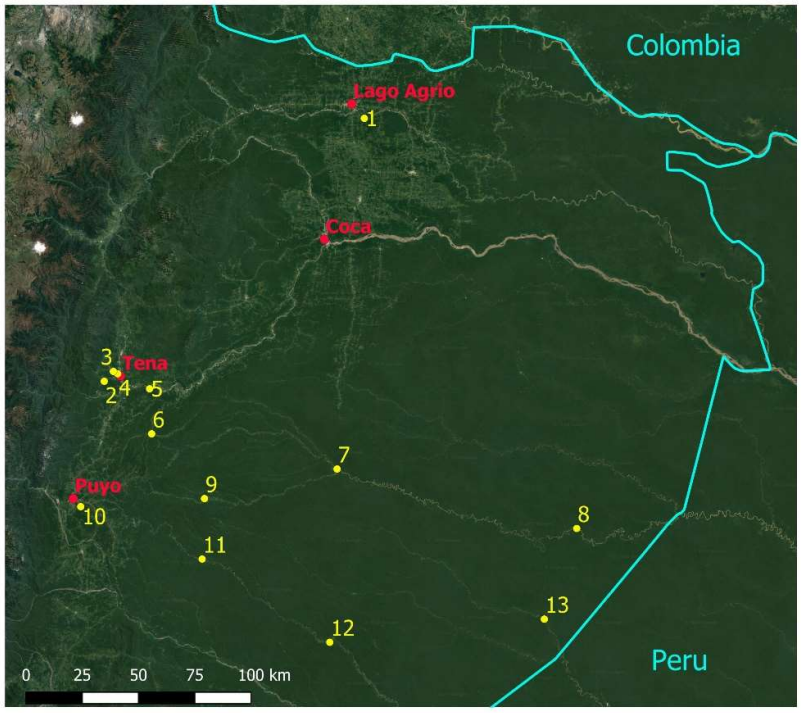

Figure 1. The study sites (yellow circles) and major urban centers (red circles) in the region. Study sites: 1. Sarayaku-Sucumbíos, 2. Pano, 3. Chambira, 4. Barrio Amazonas, 5. Tiyuyacu - Venezia - Santu Urku, 6. Arajuno – Cabecera cantonal, 7. Curaray, 8. Lorocachi, 9. Villano, 10. Union Base, 11. Sarayaku, 12. Montalvo, and 13. Yanayaku. All communities except 4 and 13 had experienced a major covid outbreak with widespread contagion. Dark green color on the background image (Google satellite) indicates old growth forest, whereas ligher green indicates rivers or deforested areas along roads.

Results

11 of the 13 communities we examined had experienced an outbreak with widespread contagion (Table 1). In most of these communities people took little precautions in order to avoid contagion. The first cases with symptoms typical of covid-19, appeared between February and June, with most communities experiencing onset in April. On average there was a peak of disease prevalence about a month after the first case appeared followed by a rapid decline, such that by August there were few or no new cases.

Out of the antibody tests, 77% resulted positive. Based on estimates from each of the 11 communities we conclude that 79% of the inhabitants had had the disease. We recorded a total of 14 deaths caused by Covid-19, which corresponds to a mortality rate of 0.14% for the entire population. This figure is approximately twice as high as the mortality rate recorded to date at the national level in Ecuador, or in other countries such as the U.S. or Spain. However, whereas the pandemic continues in these countries, the people in our 11 communities consider it as something of the past, given that most people have already had the disease and there are now few if any new cases.

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Table 1. The communities studied

Number on map	Community	Road access	Est. Population	Month of first covid cases	Month(s) of contagion peak	Month of latest new cases	Est. % of adult population that has had covid-19 symptoms	Deaths
1	Sarayaku-Sucumbíos	YES	60	5	6	6	100	0
2	Pano	YES	1620	4	4 - 5	7	80	2
3	Chambira	YES	630	6	7	7	60	1
4	Barrio Amazonas	YES	376	4	5	5	10	0
5	Tiyuyacu-Venecia -SantuUrku	YES	1500	4	5	7	90	0
6	Arajuno Llacta (Cabecera cantonal)	YES	800	3	4 - 5	8	40	4
7	Curaray	NO	975	2	3	8	80	3
8	Lorocachi	NO	200	4	4 - 5	7	80	0
9	Villano	YES	1500	4	5	5	90	1
10	Union Base	YES	200	4	5	8	80	1
11	Sarayaku	NO	1400	4	6	7	93	2
12	Montalvo	NO	1000	6	6	8	70	0
13	Yanayaku	NO	20	8	8	8	5	0

Very few people were hospitalized, and none were admitted to intensive care. Many people in the communities attribute their recovery from covid-19 to the use of various medicinal plants, particularly *Zingiber officinale*, *Maytenus* spp., and *Mansoa Alliacea*.

Discussion

There is no hard evidence for that the medicinal plants had any major therapeutic effect, but it may be noted that all three of the principal medicinal plants people used for treating covid contain compounds (*3,4,5*) that affect the production and action of cytokines (*5,7,8,9,10*), which potentially might explain their alleged efficacy in combating covid-19. Other factors that may have contributed to the relatively low mortality rate are the low prevalence of obesity, high level of physical activity, or cross-immunity acquired by frequent exposition to other viral infections (*11*). The relative youth of

our populations, with half of the population being under 15 years of age, definitively plays a role, as may also the fact that people are hardly ever indoors, except for when they sleep. A likely path of transmission is the common custom of sharing the same drinking bowl among dozens of people. Our numbers should be interpreted with caution, given that there might have been additional fatalities caused by Covid-19 which were not recognized as such because of lack of the typical symptoms of this disease. Nevertheless, our data show that the most prominent characteristic of these Amazonian indigenous communities in relation to the pandemic has not been their vulnerability, but rather their resilience.

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