

COVID-19 and outpatient care: a nationwide household survey

COVID-19 e assistência ambulatorial: uma pesquisa domiciliar de abrangência nacional

COVID-19 y atención ambulatoria: una encuesta domiciliar a escala nacional

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Abstract

We aimed to assess the proportion of the population in 133 Brazilian municipalities who – from March to August 2020 – had a health problem but failed to seek care or failed to attend to a health service for routine appointment or examination. We conducted a household survey from August 24-27 in 133 Brazilian cities by asking the subjects if, since the beginning of the COVID-19 pandemic in March 2020, they had suffered from a health problem but did not seek care or failed to attend to a routine or screening examination. Poisson regression was used for the analyses. We interviewed 33,250 subjects and 11.8% (95%CI: 11.4-12.1) reported that, since March 2020, they failed to seek care despite being ill, 17.3% (95%CI: 16.9-17.7) failed to attend to a routine or screening examination and 23.9% (95%CI: 23.4-24.4) reported one or both outcomes. Health service closure and fear of the COVID-19 infection were the main reasons for not seeking care. Women and the poorest were more likely to not look for a health service, despite having a health problem or a scheduled routine appointment. On the other hand, those subjects who self-identified as white were less likely to not look for a health service. The COVID-19 pandemic is more critical for the indigenous people and the poorest, and these people are also more likely to not seek care for other health conditions during the pandemic.

Epidemiology; COVID-19; Survey; Social Inequity; Outpatient Care

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Introduction

The COVID-19 pandemic has had consequences beyond the death due to the infection. In Brazil, since March 2020, states and municipalities have implemented policies to minimize the risk of transmission and have strengthened the health system capacity to treat COVID-19. Although of using slightly different approaches, most of the country adopted social distancing policies, with short- or long-term closures of non-essential businesses, schools, churches, and other activities and venues that lead to crowding¹. Moreover, due to the risk of infection, staff shortage and overwhelming COVID-19 cases, the use of most health services was restricted and non-essential procedures were postponed.

Studies conducted in high-income countries have reported sharp declines in health services visits, either for illness management or screening for diseases. Although later rescheduling are usually reported, current estimates suggest that some patients did not reschedule missed appointments, and the intensity of the decline and rescheduling varied according to the disease^{2,3,4,5}. Mehrotra et al.⁶ reported that the extent of rescheduling in the United States varied according to age and type of health insurance, with children presenting a smaller rescheduling, whereas Medicare patients showed a faster rescheduling. A survey conducted among breast cancer survivors in the United States reported that 44% of the subjects delayed their treatment, especially among younger patients³. Also in the United States, Ziedan et al.⁵ observed that State closure policies were associated with a decline in ambulatory visits, laboratory tests, and outpatient procedures, but these policies did not explain all the decline, and suggested that patient's fear should be considered as another possible explanation.

Because delays in the care of chronic conditions may have short- and long-term consequences, ranging from late diagnosis to delays in starting treatment, it is important to assess the proportion of the population who failed to seek health care since the onset of the COVID-19 pandemic. We could not identify any population-based study from middle-income countries addressing this issue. We aimed to assess the proportion of the population in 133 Brazilian municipalities who had a health problem but failed to seek care or who failed to attend to a health service for a routine appointment examination, as part of the EPICOVID study, from March to August 2020⁷.

Methods

The data used were from the fourth round of a repeated population-based serological survey conducted from August 24-27, 2020 in 133 Brazilian sentinel cities. The cities included Brasília, 26 state capitals and the largest municipalities in each of the country's regions, as defined by the Brazilian Institute of Geography and Statistics (IBGE). Within each city, 25 urban census tracts were selected with probability proportionate to size, and 10 households were randomly sampled in each tract using households lists elaborated by the IBGE. In each household, all residents were enrolled using a smartphone app and one was randomly selected to be interviewed and tested for the presence of antibodies for SARS-CoV-2, using the WONDFO SARS-CoV-2 Antibody Test (Wondfo Biotech Co., <https://en.wondfo.com.cn/>). If the selected resident refused to provide a finger prick blood sample, a second household member was randomly selected. If this person also refused, the interviewers moved on to the next household. The next household to the right was also selected in case of absent residents. Further details on the study methodology have been previously published⁷.

The interview included a short questionnaire for collecting sociodemographic information (gender, age, schooling, race/skin color, household size, and household assets) and compliance with social distancing measures. The Brazilian race/skin color classification recognizes five groups based on the question: "How do you classify yourself regarding skin-color or race?". The five response options are "white", "mixed-race" (*pardo*), "black", "yellow (Asian)", and "indigenous". Interviewers were instructed to check the "yellow" option when the subject mentioned being of Asian descent, and "indigenous" when any of the multiple indigenous nations were mentioned. The "mixed-race" category reflects mixed ancestry including European, African, and/or indigenous backgrounds. Socioeconomic position was assessed using a wealth index by analyzing household assets⁸. The first component was divided into quintiles. The highest grade successfully completed was recorded as schooling level. The

subjects were asked about the presence of the following chronic conditions: hypertension, diabetes, asthma, cancer, chronic kidney disease, heart disease, or other chronic condition.

Considering health services, the subjects were asked if, since the onset of the pandemic in March 2020, they had suffered from a health problem but did not seek care or failed to attend to a routine or screening examination. For positive answers, the reason for failing to seek care was also recorded.

The Stata 15 software (<https://www.stata.com>) was used for the analyses. Numbers were compared using the chi-square test. For ordinal variables, the p-value for linear trend and for heterogeneity were estimated and the one with the lower value was presented. Poisson regression with robust variance was used to estimate prevalence ratios, and all analyses controlled for the cluster-sampling design using *svy* prefix.

Interviewers wore individual protection equipment (aprons, gloves, surgical face masks, and shoe and hair covers) that were discarded as hospital waste after each interview. They were tested for COVID-19 prior to the field work and every two days thereafter. The study was approved by the Brazilian National Research Ethics Committee (process n. CAAE 30721520.7.1001.5313), with written informed consent form from all participants; for children and adolescents, consent was provided by parents or guardians.

Results

We interviewed 33,250 subjects in the fourth round of the seroprevalence survey. In this round, the response rate was 59.1%, and non-response was mostly due to whole families being away from home. Compared with the overall Brazilian population, men and young individuals were less likely to be interviewed. Concerning race/skin color, indigenous individuals were overrepresented in the studied sample, whereas the proportion of subjects who reported being white was lower than the national estimates (Table 1).

Table 2 shows that 11.8% (95% confidence interval – 95%CI: 11.4-12.1) of the individuals in the sample reported that since March 2020 they failed to seek care despite being ill, 17.3% (95%CI: 16.9-17.7) failed to attend to routine or screening examinations, and 23.9% (95%CI: 23.4-24.4) reported one or both outcomes. Concerning the main reason for not seeking care, 21.4% (95%CI: 20.4-22.5) reported that the service was closed, whereas 45.9% (95%CI: 44.6-47.1) reported being afraid of getting COVID-19 infection.

Women were more likely than men to not look for a health service, despite having a health problem or skipped a scheduled appointment. Regarding age, the risk of not seeking health care slightly increased for individuals aged 40-59 years and then declined, whereas for routine examination the risk of missing the visit increased steadily according to age. Wealth was inversely associated with the risk of not seeking care or failing to attend to a routine examination. The number of subjects who did not seek health services was higher in the North and Northeast regions. Finally, both outcomes were positively related to the number of previous chronic conditions (Table 3).

Concerning the reasons for not seeking care, closure of health services was less frequently reported among the wealthiest, while fear of getting COVID-19 infection was positively associated with wealth. Subjects who self-reported being white were more likely to mention being afraid of getting COVID-19 infection as a reason for failing to seek care. The number of chronic conditions was not associated with fear of getting COVID-19 infection as a reason for failing to seek care, whereas closure of health services was more frequently reported among those with one or more preexisting chronic condition (Table 4).

Table 1

Distribution of the study sample according to socioeconomic and demographic characteristics.

Characteristics	Study sample		Brazilian population (2019)
	n	%	%
Region of Brazil			
North	5,500	16.5	8.8
Northeast	10,500	31.6	27.2
Southeast	8,250	24.8	42.1
South	5,250	15.8	14.3
Central-West	3,750	11.3	7.8
Gender			
Men	12,847	38.6	51.7
Women	20,403	61.4	48.3
Age group (years)			
≤ 9	1,803	5.4	12.9
10-19	3,072	9.2	15.3
20-39	9,931	29.9	33.2
40-59	10,152	30.6	24.8
60+	8,292	24.9	13.7
Race/Skin color *			
White	11,678	36.0	45.2
Mixed-race	14,856	45.8	45.1
Black	4,481	13.8	8.9
Asian	914	2.8	0.5
Indigenous	511	1.6	0.4
Wealth quintiles			
Poorest	8,211	24.7	
2nd	6,424	19.3	
3rd	6,437	19.4	
4th	6,448	19.4	
Richest	5,730	17.2	
Total	33,250		

* For race/skin color, the total does not sum to 33,250 because of missing data (n = 810).

Table 2

Proportion of subjects who failed to seek health care, or missed a routine or screening examination.

	% (95%CI)
Since March 2020, had a health problem and failed to seek health care	11.8 (11.4-12.1)
Since March 2020, failed to attend to a health service for a routine or screening examination	17.3 (16.9-17.7)
Main reason for not seeking health care	
Health service was closed	21.4 (20.4-22.5)
Fear of getting COVID-19 infection	45.9 (44.6-47.1)
Considered unnecessary	10.3 (9.6-11.0)
Other	22.4 (21.5-23.5)

95%CI: 95% confidence interval.

Table 3

Proportion and prevalence rate of subjects who failed to seek health care, or missed a routine or screening examination, according to socioeconomic, demographic, and number of preexisting chronic diseases.

	Since March 2020, had a health problem and failed to seek health care		Since March 2020, failed to attend to a health service for a routine or screening examination	
	%	PR (95%CI)	%	PR (95%CI)
Gender		p < 0.001		p < 0.001
Men	9.4	1.00 (Reference)	12.8	1.00 (Reference)
Women	13.3	1.41 (1.32-1.50)	20.1	1.58 (1.49-1.66)
Age group (years)		p < 0.001 *		p < 0.001 *
< 10	8.6	1.00 (Reference)	13.8	1.00 (Reference)
10-19	10.7	1.24 (1.04-1.48)	11.5	0.83 (0.72-0.97)
20-39	12.2	1.42 (1.22-1.67)	14.8	1.07 (0.94-1.21)
40-59	12.8	1.50 (1.28-1.75)	19.6	1.42 (1.26-1.61)
≥ 60	11.0	1.29 (1.09-1.51)	20.5	1.49 (1.31-1.68)
Wealth quintiles		p < 0.001 **		p < 0.001 **
Poorest	14.1	1.64 (1.48-1.81)	18.8	1.18 (1.09-1.28)
2nd	12.7	1.47 (1.32-1.64)	18.0	1.13 (1.04-1.23)
3rd	11.8	1.38 (1.23-1.54)	16.3	1.02 (0.94-1.11)
4th	10.7	1.25 (1.11-1.40)	17.0	1.06 (0.98-1.16)
Richest	8.6	1.00 (Reference)	15.9	1.00 (Reference)
Region of Brazil		p < 0.001 *		p < 0.001 *
North	17.2	2.04 (1.83-2.26)	20.9	1.56 (1.43-1.71)
Northeast	13.4	1.58 (1.43-1.75)	18.7	1.40 (1.29-1.53)
Southeast	9.1	1.07 (0.96-1.20)	16.3	1.22 (1.12-1.33)
South	8.5	1.00 (Reference)	13.4	1.00 (Reference)
Central-West	9.9	1.17 (1.02-1.34)	15.8	1.18 (1.06-1.31)
Race/Skin color		p < 0.001 *		p < 0.001 *
White	9.9	1.00 (Reference)	16.0	1.00 (Reference)
Mixed-race	12.9	1.31 (1.22-1.40)	17.7	1.10 (1.04-1.17)
Black	12.0	1.22 (1.11-1.35)	18.1	1.13 (1.05-1.22)
Asian	14.9	1.51 (1.28-1.78)	21.1	1.31 (1.15-1.50)
Indigenous	14.8	1.50 (1.21-1.86)	20.3	1.26 (1.05-1.52)
Preexisting conditions		p < 0.001 **		p < 0.001 **
None	9.8	1.00 (Reference)	13.2	1.00 (Reference)
1	12.4	1.28 (1.19-1.37)	19.7	1.50 (1.41-1.58)
2	14.3	1.47 (1.34-1.60)	23.5	1.78 (1.66-1.90)
≥ 3	18.6	1.91 (1.73-2.10)	28.0	2.12 (1.97-2.29)
Total	11.8		17.3	

95%CI: 95% confidence interval; PR: prevalence ratio.

* Test for heterogeneity;

** Test for linear trend.

Table 4

Proportion and prevalence rate of subjects who failed to seek health care because the service was closed or due to fear of getting COVID-19 infection according to socioeconomic, demographic, and number of previous chronic diseases.

	Health service was closed		Fear of getting COVID-19	
	%	PR (95%CI)	%	PR (95%CI)
Gender		p = 0.03		p < 0.001
Men	19.8	1.00 (Reference)	39.3	1.00 (Reference)
Women	22.1	1.11 (1.01-1.23)	48.6	1.24 (1.17-1.31)
Age group (years)		p < 0.001 *		p = 0.38 *
< 10	25.0	1.00 (Reference)	49.7	1.00 (Reference)
10-19	16.8	0.67 (0.51-0.89)	44.7	0.90 (0.78-1.04)
20-39	17.2	0.69 (0.55-0.86)	45.9	0.92 (0.81-1.05)
40-59	23.4	0.94 (0.76-1.15)	44.8	0.90 (0.80-1.02)
≥ 60	23.7	0.95 (0.77-1.17)	46.9	0.94 (0.83-1.07)
Wealth quintiles		p < 0.001 *		p < 0.001 **
Poorest	22.1	1.36 (1.17-1.59)	38.0	0.65 (0.61-0.71)
2nd	22.8	1.41 (1.20-1.66)	42.5	0.73 (0.68-0.79)
3rd	23.3	1.44 (1.22-1.69)	47.2	0.81 (0.75-0.87)
4th	21.3	1.32 (1.12-1.55)	49.2	0.85 (0.79-0.91)
Richest	16.2	1.00 (Reference)	58.0	1.00 (Reference)
Region of Brazil		p = 0.005 *		p = 0.20 *
North	19.2	0.85 (0.71-1.01)	45.8	1.01 (0.91-1.11)
Northeast	22.6	1.00 (0.85-1.17)	45.1	1.00 (0.91-1.09)
Southeast	23.1	1.02 (0.86-1.21)	45.2	1.00 (0.90-1.10)
South	22.6	1.00 (Reference)	45.3	1.00 (Reference)
Central-West	16.5	0.73 (0.57-0.93)	50.4	1.11 (0.99-1.24)
Race/Skin color		p = 0.138 *		p = 0.003 *
White	21.0	1.00 (Reference)	49.3	1.00 (Reference)
Mixed-race	22.1	1.05 (0.95-1.17)	44.2	0.90 (0.85-0.95)
Black	22.1	1.05 (0.92-1.21)	45.0	0.91 (0.84-0.99)
Asian	18.3	0.87 (0.66-1.15)	42.7	0.87 (0.74-1.01)
Indigenous	13.3	0.63 (0.40-1.02)	43.3	0.88 (0.71-1.09)
Preexisting conditions		p < 0.001 **		p = 0.63 **
None	19.3	1.00 (Reference)	45.3	1.00 (Reference)
1	22.1	1.14 (1.03-1.28)	46.3	1.02 (0.96-1.09)
2	24.8	1.28 (1.14-1.45)	46.7	1.03 (0.96-1.11)
≥ 3	23.5	1.21 (1.05-1.41)	47.6	1.05 (0.97-1.14)
Total	21.4		45.9	

95%CI: 95% confidence interval; PR: prevalence ratio.

* Test for heterogeneity;

** Test for linear trend.

Discussion

In the fourth round of a large population-based serological survey of prevalence of antibodies against SARS-CoV-2, we observed that about one out of four subjects either failed to seek care due to a health problem or missed a routine examination. Among these subjects, about half did not attend to a health service for fear of getting COVID-19 infection, whereas the closure of health services was reported by two out of ten subjects. The likelihood of not seeking care was higher among women, the poorest, those living in the North or Northeast regions and those who reported having preexisting chronic conditions.

In the United States, Ziedan et al.⁵ reported that state closure policies and suspension of non-elective medical procedures were not the major explanation for the decline in seeking health care, and suggested that patients' fear of COVID-19 infection should be considered as an alternative explanation. By asking about reasons for not seeking care, we could identify that fear of getting COVID-19 infection was the main factor for avoiding health care, but public policies related to the pandemic also affected the use of health services. Individuals who failed to attend to a health service may look for it in the future. Studies conducted in high-income countries have reported a later rescheduling, but it seems that the analysis is incomplete^{2,3,4,5}. A study conducted in Italy⁹, evaluating cases of delayed access to health care, identified that fear of COVID-19 infection was the main reason for not seeking care. The delay in seeking health care may have current or future negative consequences, as shown by a modelling study based on data from the National Health Service (United Kingdom) on the impact of COVID-19 on cancer diagnosis delay and cancer survival¹⁰. Compared with pre-pandemic figures, the authors suggested that the mortality rate would increase from 7.9 to 9.6% for breast cancer, 15.3 to 16.6% for colorectal cancer, and 5.8 to 6% for esophageal cancer¹⁰.

We observed that the highest number of subjects who failed to seek health care were in the North and Northeast regions of Brazil. We expected this result because these regions showed the highest seroprevalence¹¹ and hospital case-fatality¹² at the time of the survey. Moreover, in Manaus, capital of the state of Amazonas, a large mortality rate due to respiratory diseases and other causes was observed in the first weeks of the pandemic¹³, which could indicate a collapse of the health care system. Our result could also be due to lower access and use of health services that were presented before the pandemic. Stopa et al.¹⁴, using data from the *Brazilian National Health Survey*, reported that people living in the South and Southeast regions had greater access to health services than residents in the other regions of Brazil. This difference can be explained by a greater offer of health services, both public and private, as well as the socioeconomic level of the population¹⁵. Medina et al.¹⁶ suggest the need for a more territorialized, community-based, and home-based approach on primary health care to face any epidemic. This approach could accurately identify those people who are failing to seek health care during the pandemic and consequently failing to treat other diseases. Medina et al. also indicated the need to strengthen primary care to fight epidemics, guaranteeing services that have a more territorialized, community-based and home-based approach, aiming to achieve greater success in dealing with health crises and maintaining the continuity of care for other pre-existing conditions.

The COVID-19 pandemic is more critical for indigenous and the poorest^{17,18}, and our study suggests that these individuals are also more likely to not seek care for other health conditions during the pandemic. This association continued after controlling for regions of the country as a confounding factor, since poor and indigenous Brazilians are concentrated in the North and Northeast. Lately, socioeconomic and health inequalities have diminished in Brazil, but not all ethnic groups have benefited from such advances, and wide inequalities in health and nutrition among Brazilian indigenous populations have been reported^{19,20}. The negative consequences of delaying care or diagnosis of some conditions may increase social and health inequalities in the near future.

Contributors

B. L. Horta, M. F. Silveira, and P. C. Hallal contributed to the study design, data analysis, and manuscript writing and review. A. J. D. Barros, F. P. Hartwig, M. S. Dias, and A. M. B. Menezes contributed to the data analysis, results interpretation, and manuscript review. All the authors approved the final version of the manuscript.

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Resumo

O estudo teve como objetivo avaliar a proporção da população de 133 cidades brasileiras que apresentou algum problema de saúde entre março e agosto de 2020, mas que deixou de procurar atendimento, ou que deixou de buscar um serviço de saúde para consultas ou exames de rotina. Foram realizadas entrevistas domiciliares entre 24 e 27 de agosto de 2020 em 133 áreas urbanas brasileiras. Perguntava-se aos indivíduos se, desde o início da pandemia de COVID-19 em março de 2020, haviam sofrido algum problema de saúde mais não haviam procurado atendimento, ou se haviam deixado de realizar consultas ou exames de rotina. A regressão de Poisson foi utilizada para as análises. Foram entrevistados 33.250 indivíduos, entre os quais 11,8% (IC95%: 11,4-12,1) relataram que desde março de 2020 haviam deixado de procurar atendimento apesar de estarem doentes, 17,3% (IC95%: 16,9-17,7) haviam deixado de comparecer a consultas de rotina ou triagem e 23,9% (IC95%: 23,4-24,4) relataram um ou ambos os desfechos. O fechamento dos serviços de saúde e o medo da infecção pelo SARS-CoV-2 foram os principais motivos para não buscar atendimento. As mulheres e os indivíduos com menor nível socioeconômico mostraram maior probabilidade de não procurarem serviços de saúde em caso de doença, ou de faltar a consultas de rotina previamente agendadas. Por outro lado, indivíduos que se identificavam como brancos eram menos propensos a deixar de procurar os serviços de saúde. A pandemia da COVID-19 está afetando mais duramente os indígenas e as pessoas com menor nível socioeconômico, que também são mais propensas a deixar de procurar atendimento para outras condições de saúde durante a pandemia.

Epidemiologia; COVID-19; Inquérito; Iniquidade Social; Assistência Ambulatorial

Resumen

Se realizó un estudio con el fin de evaluar la proporción de población en 133 ciudades brasileñas que -de marzo a agosto 2020- tuvieron un problema de salud, pero no consiguieron buscar cuidados, o presentarse en un servicio de salud para consultas de rutina o exámenes. Se llevó a cabo una encuesta domiciliar entre el 24 y 27 de agosto en 133 áreas urbanas brasileñas. A los encuestados se les preguntó si, desde el principio de la pandemia de COVID-19 en marzo de 2020, habían sufrido algún problema de salud, pero no habían buscado asistencia, o no consiguieron presentarse a exámenes de rutina o de exploración. Se utilizó una regresión de Poisson para los análisis. Se entrevistó a 33.250 individuos, y un 11,8% (IC95%: 11,4-12,1) informaron que desde marzo de 2020 no consiguieron buscar asistencia, a pesar de estar enfermos, un 17,3% (IC95%: 16,9-17,7) no consiguieron presentarse a exámenes de rutina o visitas de exploración, y un 23,9% (IC95%: 23,4-24,4) informaron de uno o ambos resultados. El cierre de los servicios de salud y el miedo a contraer COVID-19 fueron las razones principales para no buscar cuidados. Las mujeres y aquellos que tenían un estatus socioeconómico bajo eran más propensos a no buscar asistencia sanitaria, tanto si tenían un problema médico, como para un chequeo rutinario o se saltaban una cita médica programada. Por otro lado, estas personas que se autoidentificaron como blancas eran menos propensas a no buscar asistencia sanitaria. La pandemia de COVID-19 está golpeando duramente a los indígenas y a quienes tienen un estatus socioeconómico bajo, y estas personas también son más propensas a no conseguir buscar asistencia sanitaria relacionada con otros problemas de salud durante la pandemia.

Epidemiología; COVID-19; Encuesta; Iniquidad Social; Atención Ambulatoria

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