

Original article

Population study to assess adherence to public health measures and their impact on the covid-19 pandemic

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ABSTRACT

The covid-19 pandemic has both impacted and been impacted by the economy. Objectives: This study aimed to understand the relationship between the work life of Brazilians and their level of adherence to restrictive measures imposed by the government during the covid-19 pandemic. **Material and Methods:** We have analyzed some data from the ICPCovid project questionnaire, shared online in the first half of 2020. The analysis is based on recently published literature on the subject. **Results:** Altogether, 23,896 people were surveyed; 5,235 (21.9%) of which declared to be self-employed; 7,748 (32.4%) claimed not to be working from home at the time of the survey; and, when asked why, 3,974 (16.6%) said the nature of their job did not make remote work possible. **Discussion:** We could observe that a high percentage of the surveyed Brazilians could not work remotely. Such can be justified both by the high informality rate in the Brazilian labor market, around 40% according to IBGE (2021), and the inability of unskilled workers to adapt to the health requirements the pandemic brought about. Moreover, we could notice significant differences in the pandemic numbers among the distinct Brazilian regions, especially in the North and Northeast; which, despite being the most socioeconomically disadvantaged regions, showed better numbers on the pandemic than other regions, in the considered period. **Conclusion:** A considerable portion of Brazilians put their health at greater risk due to their job.

KEYWORDS: Economy, pandemics, covid-19, Brazil, cross-sectional analysis.

RESUMO

A pandemia de covid-19 tanto impactou a economia quanto foi impactada por ela. **Objetivos** – Este trabalho objetivou compreender a relação entre a vida profissional dos brasileiros e seu nível de adesão às medidas restritivas impostas pelo governo durante a pandemia, a fim de elucidar essa problemática e fornecer mais informações aos gestores. **Material e métodos** – Para isso, foram analisados os dados do questionário do projeto ICPCovid compartilhado virtualmente no primeiro semestre de 2020, sendo tal análise embasada na literatura publicada recentemente sobre o tema. **Resultados:** Ao todo, foram entrevistadas 23.896 pessoas, das quais 5.235 (21,9%) afirmaram ser trabalhadoras autônomas; 7.748 (32,4%) alegaram não estar trabalhando em casa no momento da entrevista e, quando questionadas sobre o motivo, 3.974 (16,6%) disseram que não podiam devido ao tipo de profissão. **Discussão:** Nesse sentido, observou-se uma elevada porcentagem de brasileiros entrevistados que não podiam exercer trabalho remoto, tanto pela alta taxa de informalidade do mercado de trabalho, em torno de 40%, segundo o IBGE (2021), quanto pela incapacidade dos menos qualificados de se adaptarem às exigências sanitárias trazidas pela crise pandêmica. Ademais, notou-se diferenças significativas nos números da covid-19 entre as diferentes regiões brasileiras, com destaque para o Norte e o Nordeste. Apesar de menos favorecidos socioeconomicamente, ambos apresentaram, no período analisado, melhor desempenho que as outras regiões. **Conclusão:** Uma parcela significativa da população brasileira expôs sua saúde a maiores riscos devido à profissão exercida.

PALAVRAS-CHAVE: Economia, pandemias, covid-19, Brasil, análise transversal.

INTRODUCTION

The novel coronavirus (SARS-CoV-2) pandemic, which struck in late 2019 in the city of Wuhan, Hubei province, in China, led to an unprecedented public health crisis in recent human history.¹ One of the most affected sectors was the economy, to the extent that experts like Kristalina Georgieva, director of the International Monetary Fund (IMF), declared the world is facing its worst economic crisis since the Great Depression, in 1929.

Such happened because preventative measures against covid-19, the illness caused by the pandemic virus, included—besides the extended social distancing, and people awareness of personal care (use of facial masks, respiratory etiquette, and hand hygiene)—restrictions upon goods and service trades, which disturbed professional activities and, consequently, directly damaged the economy. Among those interventions were the regular interdiction of retail marketplaces; the need for setting up remote work; the containing of circulating people, crowds, and the restriction of national and international trips; and others.¹

In the case of underdeveloped, or developing countries such as Brazil, the consequences of those measures were highly intense, and affected mostly the socioeconomic vulnerable population. According to the International Labour Organization (ILO), African and Latin-American informal workers lost an average of 81% in their income at the beginning of the pandemic.²

OBJECTIVES

There is a fundamental question to be raised: which is the impact of economic and social vulnerability on people's adherence to the restrictive measures that governments imposed?

We must examine that question, as many Brazilians, unable to work remotely, may have been exposed to the SARS-CoV-2, raising the potential of virus spread, in their pursuit of earning their living, as well as their families', who financially depend on them. Such an issue could be observed in the study by Natividade et al. (2020),³ which identified lower isolation levels in low-income neighborhoods. Thus, it becomes urgent to scientifically assess that complex scenario, especially in a country as contrasting as Brazil.

So, the aim of this paper is to comprehend the impact of the covid-19 pandemic on the Brazilian economy, regarding people's adherence degree to the restrictive measures imposed by federal and subnational levels of government.

METHODS

This is a cross-sectional, descriptive study, conducted between August 2020 and August 2021. We have assessed data obtained from a section in the questionnaire drawn up for the “ICPCovid* – International Citizen Project Covid-19” survey, containing 15 questions about the participants’ professional life during the pandemic. Moreover, in order to substantiate the analysis, we have also carried out a literature review on the subject.

The questions in Sections 1 and 3 were used as a basis for the development of this project. Section 1 inquired about: age; sex; Brazilian region and state of residence; nationality; country of origin; religion, highest educational level; marital status; number of housemates (and their attributes, such as kinship and age); housing location in the city; and what kind of environment they lived in at the time.

Section 3 focused on work activity during the pandemic period. The questions concerned: the nature of their job; whether they were healthcare workers or students; their current working and studying conditions; days of the week when they went to school/college or work; how often they physically attended classes or work in the week before responding the survey; whether they were working from home on the day they answered the questionnaire, and, if not, why; and, finally, the transportation means transportation they used to get to work.

RESULTS

We shall initially point out the main social and demographic characteristics of the population answering the ICPCovid project questionnaire. Altogether, 23,896 Brazilian males and females took part in the survey. The average age was 47.4 years old, and 71.8% respondents were female. They lived mainly in the Southeast region (61.2%), followed by the South (15.3%), Central-West (11.3%), Northeast (10.5%), and North (1.4%) regions. The two most representative states were Sao Paulo (32.1%), and Minas Gerais (16.6%). Regarding the highest educational level, 57.6% declared having a postgraduate degree; and 31.8%, an undergraduate degree. As for housing, 54.6% claimed to live in central areas in their city; 19%, in the outskirts; 2.6%, in rural areas; and 23.8% in low-income neighborhoods.

The first question used in this study, from Section 1, was: “What do you do for a living?” Out of the total, 938 (3.9%) respondents claimed to be jobless; 1,551 (6.5%) were students; 5,235 (21.9%) declared to be self-employed; 7,028 (29.4%) worked for the

government, and 5,200 (21.8%), for a person or a private company; and 3,944 (16.5%) marked the option “none of the above”. The second query, from Section 3, asked: “What are your current working and studying conditions?” To that, 9,894 (41.4 %) respondents answered they were working from home; 5,697 (23.8%), in a closed indoor space with several people; 1,847 (7.7%), in a closed indoor space alone; and 4,994 (20.9%) replied the question did not apply to them, as they were jobless, or students.

The third question was: “Are you working from home today?” Out of all the surveyed, 7,748 (32.4%) answered “no”, while 12,216 (51.1%) answered “yes”; to 3,932 (16.5%) respondents, the question did not apply, as they were jobless, or students. The fourth query—“Why are you not working from home?”—was addressed to those who had answered “no” to the third question. Out of those 7,748 (100%) respondents, 3,974 (51.3%) claimed the nature of their job did not make remote work possible; 548 (7.1%) declared it to be possible, but the employer had not allowed it; 1,699 (21.9%) answered they were home but not working; 77 (1.0%) didn’t think going out posed a risk; 301 (3.9%) had to leave the house to make money to support their families; and, finally, 1,149 (14.8%) gave another reason for it.

Apart from those results, we shall acknowledge the data regarding the pandemic which were collected until August 2021, through the Coronavirus Panel⁴ —made available online by the Brazilian Department of Health. On our first collecting, compiled during the second week of August 2020, we could notice the Northeast region had 1,018,476 cases, and the North, 473,725. The data from August 2021 showed the occurrence of 1,798,297 cases in the North region, incidence of 9,756.9 cases, and mortality of 246.1 cases, both per 100,000 inhabitants. The Northeast, by its turn, had 4,668,372 cases, incidence of 8,179.8, and mortality of 198.7 cases per 100,000 inhabitants.

Table 1. Answers to the question “What do you do for a living?” in the ICPCovid questionnaire, Brazil, 2020.

	N	%
Jobless	938	3.9%
Student	1,551	6.5%
Self-employed	5,235	21.9%
Working for government	7,028	29.4%
Working for a person or company	5,200	21.8%
None of the above	3,944	16.5%
Total	23,896	100.00%

Source: drawn up by the authors

Table 2. Answers to the question “What are your current working or studying conditions?” in the ICPCovid questionnaire, Brazil, 2020.

	N	%
Worker from home	9,894	41.4%
Worker in an open space	1,464	6.1%
Worker in a closed indoor space with several people	5,697	23.8%
Worker in a closed indoor space alone	1,847	7.7%
Not applicable (jobless or student)	4,994	20.9%
Total	23,896	100.00%

Source: drawn up by the authors

Table 3. Answers to the question “Are you working from home today?” in the ICPCovid questionnaire, Brazil, 2020.

	N	%
No	7,748	32.4%
Yes	12,216	51.1%
Not applicable	3,932	16.5%
Total	23,896	100.00%

Source: drawn up by the authors

Table 4. Answers to the question “Why are you not working from home?” in the ICPCovid questionnaire, Brazil, 2020.

	N	%
It is not possible with my job	3,974	51.3%
It is possible, but is not allowed by my employer	548	7.1%
I am at home but not working	1,699	21.9%
I don't think there is a risk to go out	77	1.0%
I have to leave the house to make money to support my family	301	3.9%
Other	1,149	14.8%
Total	7,748	100.00%

Source: drawn up by the authors

DISCUSSION

In regard to the respondents' jobs, we could verify there was a significant amount of self-employed professionals (21.9%), therefore, more vulnerable to circumstances of economic and health crisis, as the current one (Table 1). Such findings confirms the studies by Costa (2020)⁵, according to whom the pandemic has deteriorated many types of services. Furthermore, the situation of those who worked for a person or a company (21.8%) were not so different from the self-employed ones—as the odds were their employer had a decreased income, leading to cost-cutting through wage reductions, or layoffs. Such was the case, for instance, of the American crisis: within only two weeks, the pandemic left 10 million people jobless in the United States.⁶

Thus, we can realize how important the implementation of public health policies financially assisting both companies and individuals are, especially in Brazil, a country full of small and microbusinesses. Such an understanding confirms the statement by Lima and Freitas (2020):⁷ the government aid was essential for preventing many businesses from closing down. The authors, however, warn against the government over issuing banknotes, as that disruptive behavior may lead to a fiscal imbalance and, consequently, to a rapid increase in inflation. They recommend privatizations and concessions in order to finance expenditures with public policies aiming financial support.

When questioned about their working/studying conditions, 41.4% of the respondents said they perform their labor activities from home—a considerable number demonstrating a successful adaptability of both employers and employees to the changes the pandemic brought about (Table 2). Thus, we may learn how significant that effort was, since professional adaptation had a probable positive influence on the pandemic

numbers—i.e., it prevented incidence, hospitalization, and mortality rates to be even higher. In second position, the proportion of 23.8% respondents working in closed indoor spaces with several people attracted attention, as it showed a higher risk certain jobs represent to the health of such professionals at times of health crisis. For that reason, as Dingel and Neiman (2020)⁸ have stated, the government must know in detail which jobs the pandemic mostly affected, so as to develop public policies aiming them, and their hiring companies.

Regarding the answers to questions like “Are you working from home today?” (Yes; No; or Not applicable), and “Why are you not working from home?” (It is not possible with my job; It is possible, but is not allowed by my employer; I am at home but not working; I don’t think there is a risk to go out; I have to leave the house to make money to support my family; other), 32.4% respondents declared they were not working from home during the pandemic, of which 51.3% claimed the nature of their job did not make remote work possible (Tables [3](#) and [4](#)).

Therefore, we may conceive that a considerable portion of those who responded the survey were hampered from performing their labor activity at home, even when having a high educational level – as most of the respondents (89.4%) declared to have at least undergraduate schooling. The majority of the Brazilian population experience a quite different situation, since, according to IBGE⁹ (Brazilian Institute of Geography and Statistics), only 17.4% Brazilians had complete undergraduate education in 2019. In addition, according to most recent data, around 40% of labor market constituents are informal. And they probably represent the highest percentage of Brazilians who could not perform their jobs at home during more intense social distancing periods, as it happened in the beginning of the pandemic. Such a fact may have had a more profound impact on the arising of the health crisis, which could have been even worse if emergency aid were not made available by the federal government.

Another meaningful fact regarding pandemic and labor market was the intensified early 2021 pandemic wave, in Manaus, which might have been favored by the nature of its inhabitants’ job. We may find that correlation when observing that, about three weeks before the health plight in the Amazonas capital had reached extremely critical levels—such as the lack of hospital beds, oxygen cylinders, and cemetery plots—, there was a huge popular march against the closing of commerce business, imposed by the local government as a defensive strategy against the pandemic¹⁰. Furthermore, in that period, crowds might also have encouraged the spread of the P.1 SARS-CoV-2 variant, found by researchers from the Leônidas and Maria Deane Institute, at the Oswaldo Cruz

Foundation (LMDI/Fiocruz Amazon). The variation played a relevant part in the Manaus pandemic resurgence. In that specific case, the key role of work life in the low adherence to restrictive measures like social distancing becomes evident; consequently, so does the aggravation of covid-19.

The pandemic progress causes great concern. In a first analysis, the Northeast and North regions showed the second (1,018,476) and third (473,725) highest numbers of covid-19 cases, until the second week of August 2020. According to Demenech et al. (2020)¹¹, because both regions had limited financial resources, as well as the lowest HDI in the country (0.663 and 0.667, respectively), such parameters could have had impact in the virus spreading. However, as the health crisis deepened, that relation tended to fade away. The North region, according to August 2021 data from the Brazilian Department of Health, had the lowest number of confirmed cases since the counting started (1,798,297), and the second lowest incidence per 100,000 inhabitants (9,756.9). The Northeast, despite being the second most affected region (4,668,372 cases), had the lowest incidence (8,179.8). That means the two most socially and economically unprivileged regions have been showing better numbers than more economically advantaged regions, like the Central-West. The same can be seen with the covid-19 mortality per 100,000 inhabitants: the North and Northeast regions had the two lowest rates (246.1 and 198.7, respectively). Thereby, we could not observe any significant impact on the work life in both localities within the pandemic progress.

Finally, it's worth mentioning that, in developing countries, where social and economic inequality is historically great, like Brazil, tended to feel the pandemic effects more strongly, and to reveal the great vulnerability of their more impoverished population. We should acknowledge the importance of implementing and improving public policies granting the human right to adequate nutrition in contexts of poverty.¹² In the Brazilian case, the emergency aid was not able to comprise the entire population in need, working as a palliative measure, once it provided a minimum value for millions of people to survive, during a short period of time.

Within that scope, a key factor in the Brazilian pandemic scenario was the fact that low-income populations, so diversely distributed throughout the country, were the most exposed to the virus, due to their poor sanitation conditions, limited healthcare access, urban crowds, and heavy dependence on public transport.¹³ Moreover, we must consider the Brazilian informal worker, and the dilemma between economy and health in the pandemic context. We come to the conclusion that either one of the two options, if chosen in their totality, with no actual government analysis of the situation, and with no public policies, will eventually become harmful to millions of Brazilians.

Conclusion

This study exposes mainly two realities in the Brazilian work life during the covid-19 pandemic. The first one regards to the plight of fragility experienced by individuals who are disadvantaged, and more vulnerable to the SARS-CoV-2: the self-employed, informal workers, and those responsible for strictly presential work. As shown in IBGE data, and in the ICPCovid survey, a large portion of Brazilians living in that situation made it difficult to implement stronger, long-term lockdowns. It also demonstrates the need for implementing public policies ensuring good living conditions to workers the pandemic impacted the most; e.g. the emergency aid. All because the economic instability can hinder the fulfilling of key collective preventive actions against the disease.

The second relevant circumstance refers to the fact that the socioeconomically disadvantaged regions of North and Northeast showed better numbers on the pandemic than more advantaged regions. Which clearly reveals the significant influence of other factors besides work life on the adherence to restrictive measures imposed by local government and, consequently, on the virus spreading.

Therefore, this paper contributes to the scientific debate over the complex relationship between pandemic and economy, bringing a deeper comprehension of the current Brazilian scenario, and guiding the decision-making on the part of several social agents (like government and universities), now or in the future. Undoubtedly, the adoption of restrictive measures is essential to controlling the experienced pandemic, but for that purpose we need a practical approach on the part of the Brazilian government, and Brazilian governors. It means we need to introduce effective public policies supporting both workers and businesses in moments of social and economic struggles like the current one. We must not face the relationship between economy and health as a struggle, as they are both keys to each other; and that is why we should expect balance, substantially reducing the number of lost lives both to poverty, and the virus.

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Estudo populacional para avaliar a adesão às medidas de saúde pública e seu impacto na pandemia de covid-19

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