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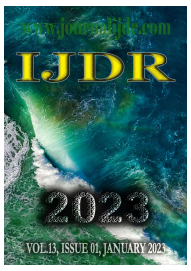

RESEARCHARTICLE OPENACCESS

COVID-19 IN THE STATE OF CEARÁ: SOCIAL IMPACT ON THE POPULATION DURING THE FIRST WAVE OF THE DISEASE

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ABSTRACT

The aim of this study was to assess the social impact on the first wave of the COVID-19 pandemic in the state of Ceará. This is a cross-sectional, descriptive and analytical study that is part of a larger project entitled "From the new coronavirus SARS CoV-2 to the COVID-19 pandemic: The burden of disease and its consequences for preventive actions in Collective Health in the Brazilian state". A total of 1958 participants answered the questionnaire. The reality of the world changes in the face of the new coronavirus. By March 2020, the virus had spread to 203 countries and was officially declared a pandemic by the World Health Organization. In a short period of time, social distancing became mandatory in order to minimize the speed of the virus spread, both to protect the entire population - especially the most vulnerable - and to avoid the overload and consequent collapse of health systems. It is possible to affirm that the COVID-19 approach in the state of Ceará generated significant impacts in relation to social isolation, which are reflected in the various segments of society.

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INTRODUCTION

In December of 2019, a new virus causing Severe Acute Respiratory Syndrome (SARS), originating in Wuhan, China; officially named by the International Committee on Taxonomy of Viruses as SARS-CoV-2. This infectious agent is responsible for the disease Coronavirus, popularly known as COVID-19, which rapidly becomes physiological all over the world, initiating a pandemic (WHO, 2019; SOHRABI *et al*., 2019). COVID-19 arrived in Latin America on February 25, 2020, when the Brazilian Ministry of Health confirmed the first case of the disease, a 61-year-old Brazilian male, who was registered from February 9 to 20, 2020 for the Lombardy, northern Italy, where a significant outbreak was occurring. Until March 26, 2020, according to data from the Ministry of Health, Brazil already had 2,915 confirmed cases of COVID-19 and 77 deaths. Meanwhile, there was an increase in the number of cases and deaths in the world, reaching 526,006 people infected with 23,720 deaths (BRASIL-MINISTÉRIO DA SAÚDE, 2020; LIMA *et al*., 2020). Meanwhile, on May 30, 5,796,257 cases of COVID-19 and 362,483 deaths were recorded worldwide, of which 2,698,714 were registered in the Americas, with 76,253 deaths (WHO, 2020).

On the national scene, on June 11, 2020, Brazil already registered 498,440 confirmed cases and 100,000 new ones in three days. In this period, the State of Ceará accumulated more deaths than China, when it reached 4,708 fatal victims resulting from COVID-19, which means that the disease was in uncontrolled transmission (BRASIL-MINISTÉRIO DA SAÚDE, 2020).Researchers found that in Brazil, 40.4% of respondents, during the COVID-19 pandemic, perceived themselves as sad or depressed, and 52.6% as anxious or nervous; 43.5% reported sleep problems, while 48.0%, this sleep problem was aggravated after the pandemic (BARROS *et al*., 2020).Bezerra *et al*. (2020) inferred significant differences regarding fear of being infected; concern if someone had to leave the house; routine changes; feel sad; inability to imagine a solution to this problem; and changes in sleep patterns among people who were socially isolated due to the COVID-19 pandemic and those who were not.In the same understanding, Souza *et al*. (2021) showed that the prevalence of severe stress was 21.5%, anxiety 19.4% and depression 21.5%, mainly among women with a history of anxiety and depression, increased use of medication and symptoms of COVID-19.Consequently, the high rate of dissemination of COVID-19 has aroused the curiosity of the scientific community, since one of the most important factors in assessing the danger represented by an

epidemic is the transmissibility of its pathogens (MORAES *et al*., 2021). Since the outbreak of this pandemic, social distancing has been proposed by local governments as a fundamental public health measure to control the spread of COVID-19 (ADALJA; TONER; INGLESBY, 2020). In Brazil, the Quarantine Law n. 13979 (Presidency of the Republic, 2020), with the aim of stopping the transmission of the virus (RABELO *et al*., 2021).In this context, the Government of the State of Ceará, through a state decree starting on March 20, 2020, determined social distancing in order to contain the spread of the first wave (GOVERNMENT OF THE STATE OF CEARÁ, 2020; LIMA *et al*., 2020) of COVID-19 which, at that time, had 20 reported cases, being the state in the Northeast Region with the highest number of infected patients and fourth among all Brazilian states. In 26.03.2020, positive cases for COVID-19 rise to 235 people, with 3 deaths, moving the state to occupy the third position in the country. Despite being one of the most effective measures to combat the spread of the pandemic, distancing can have direct and indirect social and psychological influences now and in the future, which requires attention from health authorities (HOLMES *et al*., 2020).The COVID-19 pandemic that has led public health authorities to impose lockdown measures as an epidemiological control strategy can affect people's physical and mental health and therefore has a strong negative impact on healthy lifestyle behaviors (BALANZÁ - MARTÍNEZ *et al*., 2020). For example, prolonged stay at home can lead to an increase in sedentary behaviors due to a reduction in the amount of daily physical activity performed (CHEN *et al*., 2020). Likewise, it has been suggested that due to this period of abrupt attenuation of physical activity, changes in eating attitudes such as overeating will begin to emerge (MARTINEZ-FERRAN *et al*., 2020), putting people at risk of developing or exhibiting an eating disorder. This lack of daily physical exercise due to social isolation was also considered a potential risk factor that negatively affects sleep quality (CELLINI *et al*., 2020).

Social distancing causes changes in the pattern of coexistence in work and family environments, incresing feelings of loneliness, fear, depression and generalized anxiety, along with the fear caused by the high rate of viral transmission, due to the speed, invisibility, and morbidity and mortality of COVID -19 (LIN, 2020). Consequently, viral contamination induces other psychosocial challenges, including stigmatization and discrimination of infected people, (PAPPAS *et al*., 2009), in addition to developing dehumanization fueled by the distance between people (HUANG; ZHAO, 2020). With this, it is necessary to incite a timely understanding that maintaining mental health status is urgently needed by society (XIANG *et al*., 2020).A review of the literature shows such social effects, mainly psychological, such as post-traumatic stress, anger and confusion, resulting from the effects of the quarantine on 11 million residents or doctors affected by the virus that causes Middle East Respiratory Syndrome MERS, Severe Acute Respiratory Syndrome SARS , Influenza H1N1 and Ebola (BROOKS *et al*., 2020). Two studies felt that depression during the period of the coronavirus pandemic had an increase, according to the following variables: lower level of education, unemployment, being a woman, having an acquaintance infected with COVID-19, having a history of stressful situations and problems doctors. (DUARTE *et al*., 2020; MAZZA *et al*., 2020). Know the effects of a pandemic, considering the high speed of dissemination of COVID-19, which caused the collapse of public health systems around the world, are still essential to better elucidate the relationship between COVID-19 and the factors associated with the its consequent psychosocial stress (BEZERRA *et al*., 2020). In this way, tuis study aimed to evaluate the social impact in the first wave of the COVID-19 pandemic in the state of Ceará.Becoming relevant by purpose to rescue and analyze the set of variables that affected communities.

MATERIAL AND METHODS

Cross-sectional, descriptive and analytical study that is part of a larger project, entitled “From the new coronavirus SARS CoV-2 to the COVID-19 pandemic: The burden of the disease and its consequences for preventive actions in Collective Health in the Brazilian State”, approved by the Notice 01/2020 and developed with the support of the Board of Research, Development and Innovation, of the University of Fortaleza– UNIFOR. This research was made possible in a virtual environment, through social networks Instagram and/or WhatsApp, whose method is justified as a result of the pandemic state of COVID-19. The questionnaire was made available on social networks from June 24 to July 1, 2020, complying with all ethical criteria, having been approved by the Research Ethics Committee of the University of Fortaleza, Opinion 4,074,087, ensuring compliance with the standards contained in Resolutions 466/12 and 510/16 of the National Health Council of Brazil (BRASIL 2012, BRASIL, 2016).

DATA COLECT: For this study, a clipping of the main questionnaire was carried out, covering the population of the State of Ceará. The questionnaire was built from closed questions containing sociodemographic aspects and six questions dealing with the health characteristics of the participants during the first wave of COVID-19 in Ceará. The following were investigated: gender (male/female), age group (18/19 years, 20-29 years, 30-39 years, 40-49 years, 50-59 years, 60 years or more), marital status (married/union stable, divorced, single or widower), level of education (primary complete/incomplete, secondary complete/incomplete, higher education complete/incomplete, postgraduate degree complete/incomplete), employment relationship (retired/pensioner, self-employed, unemployed, formal employment signed, public servant), family income (1 and 2 minimum wages, 2 and 5 minimum wages, 5 and 8 minimum wages, more than 8 minimum wages, less than 1 minimum wage) and whether you needed any financial support due to the COVID-19 pandemic COVID-19 (yes/no).The questions asked were: Q1: People are isolated where you live? (many are not complying with social isolation / yes, all / just not workers in essential functions); Q2: Has any family member had COVID-19? (Yes No); Q3: Did you have a death from COVID-19 in the family? (Yes No); Q4: Related to your health, do you have chronic disease(s)? (Yes No); Q5: How do you feel about your current health? (I am satisfied with my state of health/I am not satisfied with my state of health); Q6: Were you hospitalized? (Yes No).

STATISTICAL ANALYSIS: Data analysis was performed using the SPSS version 24.0 “Statistical Package for Social Science” software (SPSS Inc., Chicago, IL, USA), with absolute and relative frequencies calculated for qualitative variables, as well as mean and standard deviation, minimum and maximum for the quantitative ones. Associations between variables were verified using the qui-square test. The magnitude of the association between explanatory variables and outcome was expressed in point and interval estimates of prevalence ratios (PR). To obtain PR estimates adjusted for confounding variables, multivariate analysis was performed using the Poisson regression model. Variables that were associated with the outcome in the bivariate analysis, with a value of $p<0.20$, were selected for the multivariate analysis, and only those with a significant association at the level of $p<0.05$ were maintained in the final model.

RESULTS

A total of 1958 participants answered the questionnaire. There was a predominance of females (74.8%), married/stable union (54.5%), aged between 30 and 39 years (30.5%), complete or incomplete postgraduate studies (54.1%), employment in the public service (28.2%) and income of 8 minimum wages (32.4%)(Table 1). Table 2 presents the results related to the questions asked with the total number of participants (n=1540), the fact that 39.0% did not comply with social isolation because they were workers in essential functions; 58.5% had a relative with COVID-19; 10.7% had a death in the family; 77.3% did not have chronic diseases; 81.3% were satisfied with their health status.Table 3 shows a bivariate analysis on the outcome of having had COVID-19, according to the sociodemographic characteristics of people during the first wave in

Table 1. Frequency distribution of sociodemographic characteristics of people during the first wave of COVID-19.(N=1,540). Ceará - Brazil, 2020

Variables	N	%
Age		
Upto 19 yearsold	41	2,1
20 a 29 yearsold	541	27,6
30 a 39 yearsold	598	30,5
40 a 49 yearsold	393	20,1
50 a 59 yearsold	265	13,5
60 ormore	120	6,1
Gender		
Male	493	25,2
Female	1465	74,8
Scholaritylevel?		
Complete or incomplete fundamental level	24	1,2
Complete or incomplete secondary level	162	8,3
Complete or incomplete higher education	713	36,4
Completedorincompletepostgraduate	1059	54,1
Maritual status?		
Marriedorstableunion	1068	54,5
Divorced	132	6,7
Single	746	38,1
Widower	12	,6
What is your employment relationship?		
Retiree/pensioner	77	3,9
Autonomous	523	26,7
Unemployed	276	14,1
Employment with a formal contract	530	27,1
Publicserver	552	28,2
What is your family income?		
Between1and 2 minimumwages	360	18,4
Between2 e 5 wages	566	28,9
Between5 e 8 wages	313	16,0
Between de 8wages	635	32,4
Bewteen de 1minimumwage	84	4,3
Did you needed financial support due to the consequences of the COVID-19 pandemic?		
Yes	531	27,1
No	1427	72,9

Source: survey data

Table 2.Frequency distribution of health characteristics of people affected by COVID-19 during the first wave.Ceará - Brazil, 2020

Variables	N	%
Where you live people are in social isolation?		
Many are not complying with social isolation	711	36,3
Yes, all	483	24,7
Only workers in essential functions are not	764	39,0
Has any family member had-19?		
Yes	1145	58,5
No	813	41,5
Did you have a death from COVID-19 in the family?		
Yes	209	10,7
No	1749	89,3
Related to your health, do you have any chronic diseases?		
Yes	445	22,7
No	1513	77,3
How do you feel about your current health?		
I am satisfied with my current health	1591	81,3
I am not satisfied with my health	367	18,7

Source: data research

the State of Ceará, Brazil 2020. Regarding the 'age group' variable, it was observed that the age most affected by COVID-19 was 30-39 years old. The variable 'marital status', married/stable union was the most affected group and the variable 'employment relationship' with a formal contract, the type of job most affected by the disease. In the analysis of the other independent variables, no significant differences were found when comparing the groups.Table 4 shows a bivariate analysis on the outcome of having had COVID-19, according to the health characteristics of people during the first wave of the pandemic in the State of Ceará - Brazil, 2020.

The variable 'some family member had COVID-19' resulted in 446 responses (77.1%) of respondents had COVID-19, against 699 responses (50.9%) did not develop the disease caused by the SARS-CoV-2 virus. In the variable 'how do you feel about your current health' of the 456 participants (77.8) they say they are satisfied with their health status against 1135 (82.7%) who did not have COVID-19 and are satisfied with their health status health. In the analysis of the other variables, no significant differences were found in the comparison of health characteristics.Table 5 presents final results of the conventional multivariate logistic regression analysis. Among the five variables that obtained significance in the bivariate analysis and that, therefore, were included in the multivariate model, three of them remained in the final model: age group; employment and family relationship that had COVID-19.

DISCUSSION

Starting in the city of Wuhan, in the province of Hubei, located in southeastern China, COVID-19 had its first patients diagnosed in November 2019 and soon spread to the rest of the country (WHO, 2019). Soon, nearby countries that receive large numbers of travelers from China, such as Japan and South Korea, presented their first cases. However, the greatest spread occurred from east to west, reaching Asian countries and, later, European ones (ZHUANG *et al*., 2020).The reality of the world changes in the face of the new coronavirus (WHO, 2020) By March 2020, the virus had spread to 203 countries and was officially declared a pandemic by the World Health Organization. In a short period of time, social distancing became mandatory so that the speed at which the virus spread was minimized, both to protect the entire population — especially the most vulnerable — and to avoid overload and consequent collapse of health systems (STEFANA and others, 2020). Aiming at flattening the curve of hospitalizations due to COVID-19, the almost consensual discourse for isolation and social distancing, despite conflict between the municipal, state and federal spheres in Brazil, reverberated as the most potent prevention strategy of the pandemic , and this is how the world responded (SOHRABI *et al*., 2020).Protective measures were instituted, especially directed at the high-risk group, people with chronic diseases, but this relevant intervention has its potential deleterious effects.

The reduction in the frequency of physical activities is an example of what was already foreseen; the increase in domestic violence, an example of the unexpected. Among these unintentional harms, effects on mental health and barriers to monitoring and managing chronic diseases are two of the biggest problems for geriatricians and specialists in gerontology (SOHRABI *et al*., 2020).The community's great responsibility in containing the progression of the pandemic lay in the fact that many health systems could collapse, as indeed happened in some countries. In a study of 182 countries, it was found that 33% had low capacity to respond to a public health event and 24% had little functional capacity available, even with the support of resources from other places. These events include infectious diseases (KANDEL *et al*., 2020; LIMA *et al*., 2020).In this present study, out of a total of 1958 participants, 39.0% did not comply with social isolation because they were workers in essential functions (Table II). There is a discussion in the media and common sense that the portion with the lowest income is practicing less social isolation in relation to the one with the highest income, mainly due to the need to commute to work, since the poorest population is linked to essential activities that have not stopped, and the population with higher income is, in general, more linked to activities that have stopped and/or established remote work (BEZERRA *et al*., 2020).Pandemics have caused serious damage throughout history. In the last three centuries, there have been at least ten major pandemics, which in just a few weeks have had a major impact on morbidity and mortality, affecting mainly children and young adults and causing situations of social disruption. The city of Fortaleza had a thousand deaths in a single day in the smallpox epidemic that occurred in 1868 (REIS, 2001; BRASIL, MINISTÉRIO DA SAÚDE, 2005). People of all ages can be infected by coronavirus (CHENG; SHAN, 2019).

Table 3. Bivariate analysis of the outcome having had COVID-19, according to sociodemographic characteristics of people during the first wave in the State of Ceará - Brazil, 2020

Variables	Had COVID-19		Didn´thad COVID-19		PR (IC 95%)	Valor p
	n	%	Não	%		
Age						**<0,001**
Upto 19 yearsold	13	2,2	28	2,0	1	
20 a 29 yearsold	140	23,9	401	29,2	0,82 (0,51 - 1,31)	
30 a 39 yearsold	191	32,6	407	29,7	1,01 (0,63 - 1,6)	
40 a 49 yearsold	147	25,1	246	17,9	1,18 (0,74 - 1,88)	
50 a 59 yearsokd	75	12,8	190	13,8	0,89 (0,55 - 1,45)	
60 ormore	20	3,4	100	7,3	0,53 (0,29 - 0,96)	
Gender						0,780
Male	150	25,6	343	25,0	1	
Female	436	74,4	1029	75,0	0,98 (0,84 - 1,14)	
Scholaritylevel?						0,197
Complete or incomplete fundamental level	7	1,2	17	1,2	1	
Complete or incomplete secondary level	60	10,2	102	7,4	1,27 (0,66 - 2,44)	
Complete or incomplete higher education	215	36,7	498	36,3	1,03 (0,55 - 1,95)	
Completedorincompletepostgraduate	304	51,9	755	55,0	0,98 (0,52 - 1,85)	
Maritual status?						**<0,001**
Marriedorstableunion	358	61,1	710	51,7	0,67 (0,38 - 1,19)	
Divorced	28	4,8	104	7,6	0,42 (0,22 - 0,82)	
Single	194	33,1	552	40,2	0,52 (0,29 - 0,93)	
Widower	6	1,0	6	0,4	1	
What is your employment relationship?						**0,007**
Retiree/pensioner	24	4,1	53	3,9	1	
Autonomous	170	29,0	353	25,7	1,04 (0,73 - 1,49)	
Unemployed	69	11,8	207	15,1	0,8 (0,54 - 1,18)	
Employment with a formal contract	181	30,9	349	25,4	1,1 (0,77 - 1,56)	
Publicserver	142	24,2	410	29,9	0,83 (0,58 - 1,18)	
What is your family income?						0,494
Between1and 2 minimumwages	111	18,9	249	18,1	1,44 (0,93 - 2,23)	
Between2 e 5 wages	167	28,5	399	29,1	1,38 (0,9 - 2,11)	
Between5 e 8 wages	98	16,7	215	15,7	1,46 (0,94 - 2,27)	
Between de 8wages	192	32,8	443	32,3	1,41 (0,92 - 2,16)	
Bewteen de 1minimumwage	18	3,1	66	4,8	1	
Did you needed financial support due to the consequences of the COVID-19 pandemic?						0,314
Yes	168	28,7	363	26,5	1	
No	418	71,3	1009	73,5	0,93 (0,8 - 1,07)	

Source: survey data PR = Prevalence Ratio. qui-square test. CI= Confidence Interval.

Table 4. Bivariate analysis of the Outcome Having had COVID-19 according to the health characteristics of people during the first wave of the pandemic in the State of Ceará - Brazil, 2020

Variables	HadCOVID-19		Didn´thadCOVID-19		PR (IC 95%)	p Value
	n	%	Não	%		
Where you live people are isolated?						0,952
Many are not complying with social isolation	213	36,3	498	36,3	1,02 (0,85 - 1,22)	
Yes, all	142	24,2	341	24,9	1	
Only Workers in essential functions are not	231	39,4	533	38,8	1,03 (0,86 - 1,23)	
Any Family member had COVID-19?						<0,001
Yes	446	76,1	699	50,9	2,26 (1,91 - 2,67)	
No	140	23,9	673	49,1	1	
Did you had any death from COVID-19 in the family?						0,570
Yes	59	10,1	150	10,9	1	
No	527	89,9	1222	89,1	1,07 (0,85 - 1,34)	
Related to your health, do you have any chronic disease?						0,740
Sim	136	23,2	309	22,5	1	
Não	450	76,8	1063	77,5	0,97 (0,83 - 1,14)	
How do your about your current health?						0,011
I am satisfied with my current health	456	77,8	1135	82,7	0,81 (0,69 - 0,95)	
I am not satisfied with my health	130	22,2	237	17,3	1	

Source: survey data PR = Prevalence Ratio. qui-square test

The search results show that 58.5% had a family member with COVID-19 (Table II) and that in relation to the variable “age group”, a greater involvement was observed in the age group of 30-39 years old (Table III). The data obtained in the current study show the same prevalence, this can be explained by the profile of the Brazilian population, which is mostly composed of young adults and that this probably occurs because this age group has a low adherence to social isolation (RENTE *et al*., 2020; CRODA *et al*., 2020; SANTOS *et al*., 2020; GIRÃO *et al*., 2020).

CONCLUSION

It is possible to state that the approach of COVID-19 in the state of Ceará generated significant impacts in relation to social isolation, which are reflected in the various segments of society, whether due to income, gender, education, housing conditions, etc. This research sought to do this by establishing some correlations between variables that can guide different strategies for different audiences.

It is notorious, and the data also revealed, that the poorest populations suffer a greater impact from isolation, especially in relation to income.Even in the face of the social vulnerability that the pandemic has generated, a key point for tackling it is the decrease in the movement of people on the streets and in collective public spaces. The survey data showed that the most affected age group were young adults aged 30 to 39 years old, that the variable "employment relationship" with a formal contract was the type of employment most affected by SARS-CoV-2, as well as the variable "some family member had COVID-19". In view of this situation, it is necessary to have the best possible understanding of how the social isolation strategy is perceived by society and what the impacts of this strategy are on people's lives. So, too, investigating different forms of action so that isolation affects less the social well-being and financial condition, being a challenge to be faced from now on.

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