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Older adults in the context of the COVID-19 pandemic in Brazil: effects on health, income and work

Idosos no contexto da pandemia da COVID-19 no Brasil: efeitos nas condições de saúde, renda e trabalho

Ancianos en el contexto de la pandemia de COVID-19 en Brasil: efectos en las condiciones de salud, renta y trabajo

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Abstract

The goal of this study is to characterize the population of older adults in Brazil during the COVID-19 pandemic with regard to health, socioeconomic conditions, gender inequality, adherence to social distancing and feelings of sadness or depression. It is a cross-sectional study carried out with Brazilian older adults who responded to an online health survey (N = 9,173), using a "virtual snowball" sampling method. Data were collected online via a self-administered questionnaire. Prevalence and confidence interval estimates were performed and verified for independence using Pearson's chi-square test. During the pandemic there was a fall in household income among almost half of older adults. Extreme social distancing was practiced by 30.9% (95%CI: 27.8; 34.1) and 12.2% (95%CI: 10.1; 14.7) did not adhere to it. Older adults who were not working before the pandemic adhered in greater numbers to extreme social distancing measures. Most of them presented comorbidities associated with a higher risk of developing the severe form of COVID-19. Feelings of loneliness, distress and sadness were frequent among older adults, especially women. The COVID-19 pandemic widened the inequality gap by affecting the most vulnerable older people. Strategies to mitigate loneliness and social distancing should consider social vulnerability and the marked difference between men and women in terms of household composition and socioeconomic and working conditions. The development of representative surveys of Brazilian older adults is recommended, investigating the impact of the pandemic on this population.

COVID-19; Health of the Elderly; Loneliness; Income; Socioeconomic Factors

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Introduction

COVID-19 was declared a pandemic by the World Health Organization on March 11, 2020 [1]. Since the first analyses it was ascertained in several countries that people over 60 are more vulnerable to the disease [2]. In Brazil, data from the Influenza Epidemiological Surveillance Information System (SIVEP-Gripe) show that 35,126 elderly people had died by June 3, 2020, accounting for 71% of total deaths from COVID-19 in the period (Instituto de Comunicação e Informação Científica e Tecnológica em Saúde, Fundação Oswaldo Cruz. MonitoraCovid-19. https://bigdata-covid19.icict.fiocruz.br/, acessed on 13/Jun/2020). According to the United Nations (UN), as the virus spreads in countries with weak social protection systems, the mortality rate for older adults may grow even more [4]. Besides the great threat to life, the pandemic can place older people at greater risks of poverty, loss of social support, stigma-related trauma, discrimination and isolation [4].

In this context, the loss of household income during the pandemic may aggravate social and health inequalities [5]. The influence of job loss on psychosocial disorders has also been documented in the international literature [6] and may affect healthy life expectancy. The pandemic coincides with population aging, considered the main demographic event of the 21st century at global [7] and national levels [8]. Article 230 of the *Brazilian Constitution* provides that, besides the family, society and the state also have the duty to assist older adults, *"defending their dignity and well-being and guaranteeing their right to life"*. In addition, Brazil, as a signatory to the *2002 International Plan of Action on Aging* [9] is committed to recognizing the vulnerability of older people in humanitarian emergencies such as a pandemic.

In his book *The Loneliness of the Dying: Followed by Aging and Dying*, sociologist Norbert Elias [10] says that aging is related to social distancing, invisibility, mourning and abandonment. These issues are of even greater concern in the current context of the unexpected COVID-19 pandemic.

The goal of this study is to characterize the population of older adults in Brazil during the COVID-19 pandemic with regard to health, socioeconomic conditions, gender inequality, adherence to social distancing and feelings of sadness or depression.

Methods

Data source

This is a descriptive study based on data from *ConVid – Behavior Survey* (ConVid) [11] a cross-sectional nationwide health survey carried out in Brazil by the Oswaldo Cruz Foundation in partnership with the Federal University of Minas Gerais and the University of Campinas during the period of social distancing/quarantine resulting from the pandemic. Data were collected via a self-administered questionnaire answered on a cell phone or computer with Internet connection between April 24 and May 24, 2020. The project was approved by the National Research Ethics Committee (CONEP) on April 19, 2020, Opinion n. 3,980,277.

ConVid aimed to describe the adherence of the Brazilian population to social distancing, investigate changes in work and income, analyze difficulties to execute routine activities, examine health conditions and describe behavioral changes during the COVID-19 pandemic. ConVid uses questions validated in health surveys previously administered in Brazil. All answers were anonymous, with no identification whatsoever of the participants, and stored on the server of the Institute of Scientific and Technological Communication and Information in Health of the Oswaldo Cruz Foundation (ICICT/Fiocruz).

The inclusion criteria for participating in the survey were: being 18 years old or above when answering the questionnaire and residing in Brazil during the COVID-19 pandemic. Further details of the ConVid survey are on the survey website (https://convid.fiocruz.br/) and in a recent publication on the methodology [11].

Sample

A "virtual snowball" sampling method was used, with invitations to answer the electronic questionnaire sent out via social media. In the first stage, 15 researchers linked to the study selected approximately 200 other researchers from different states in Brazil. Each researcher selected 20 people from their social media sites, totaling about 500 people (first wave), called seeds. To diversify the sample [12] the seeds invited people from their social media sites, following stratification by gender, age group and educational level. Their invitees made up the second wave of recruitment and sent out new invitations, reaching a final sample of 45,161 people.

In order to obtain a representative sample of the population, weighting was performed using post-stratification procedures [13], according to: Brazilian region, capital city, gender, age group, educational level and race/skin color based on the estimates of the 2019 *Brazilian National Household Sample Survey* (PNAD 2019). Further details on the post-stratification procedures can be found in Szwarcwald et al. [11].

This study analyzed the information on the population of older adults (aged 60 or over), totaling 9,173 participants, which accounts for 20.3% of the total research sample.

Variables

The demographic characteristics considered were gender and family composition, with the variables presence of spouse or partner and household situation (lives alone; lives with one person; lives with two or more people).

The labor-related variables were: working before the pandemic (yes; retired; not working for any other reason or working without pay) and employment relationship (yes – which includes civil servants, formally employed workers and business owners; no – workers not formally employed and self-employed workers). It was investigated whether during the pandemic the work done was an essential activity (such as health care, security, transport, banking, etc.) and whether there was a change in working status (not working before and continued not working; continued working normally; continued working from home; started working after the pandemic; took paid time off; lost job; stopped working).

Household per capita income in minimum wages was classified as: less than 1; 1 to less than 2; 2 to less than 4; 4 or more. The effect on household income was ascertained by the question: "How did the COVID-19 pandemic affect the household income?" (increase or no change; slight decrease; significant decrease or total loss). It was also investigated whether anyone in the household received government financial aid related to the COVID-19 pandemic.

Adherence to social distancing in the pandemic was estimated by the question: "During the new coronavirus pandemic, to what extent did you practice (or are still practicing) social distancing?" (extreme distancing: stayed home, leaving only for health care needs; intense distancing: stayed home, leaving only to buy groceries and medicine; and no distancing or barely altered routine: led a normal life or tried to take care, keeping a distance from others, avoiding social contact, not visiting the elderly, but continued working and going out).

The chronic non-communicable diseases (NCDs) considered risk factors for severe COVID-19 were: diabetes, high blood pressure, asthma/emphysema/chronic respiratory disease or other lung disease, heart disease and cancer [14], verified by a positive answer to the question: "Have you ever been diagnosed with any of these diseases?". The number of NCDs associated with risk for severe COVID-19 was verified by counting the self-declared NCD risk factors for COVID-19. The prevalence of smokers was obtained by a positive answer to the question: "Do you smoke?".

The effects on health status were analyzed by two questions: "Did the pandemic cause changes in your health status?" (no change; improved; worsened), and a positive answer to: "Did you seek health care during the pandemic?".

Symptoms associated with COVID-19 were verified by a positive answer to at least one of the following symptoms: fever, chills, headache, dry or chesty cough, fatigue, tiredness, sore throat, runny nose, nasal congestion, nausea, vomiting, diarrhea or joint pain. In addition, the answer to the question about testing was used to find out whether there had been contagion and its results. Feelings of

distress or nervousness were verified by the following question: "During the pandemic, how often did you feel distressed or nervous?" (never; seldom; often/always). Similar questions were used to analyze feelings of depression, sadness and loneliness due to being distant from family and friends, as in Barros et al. [15]. Also investigated was a positive answer to the question: "Did any family member, friend or colleague suffer from a serious case of COVID-19?".

The effect of the pandemic on the income of older adults (increase or no change; slight decrease; significant decrease or total loss) was related to working conditions, household per capita income and frequent feelings of distress or nervousness during the pandemic.

Analysis

The variables described above were analyzed according to gender and level of adherence to social distancing during the pandemic, through their percentage distribution and respective 95% confidence intervals (95%CI) of the estimated proportions. Pearson's chi-square test was used to verify the independence of the estimates.

The analyses were performed in SPSS (https://www.ibm.com/), considering the sample weighting obtained for sample calibration.

Results

Among the 9,173 older adults who took part in the ConVid survey, 3,969 were men and 5,204 were women.

Household situation was markedly different between older men and women. More men live with a spouse compared to women, 81.3% (95%CI: 76.3; 85.5) and 46% (95%CI: 42.0; 50.0), respectively. In turn, more women live on their own (23.8%; 95%CI: 20.6; 27.3) than men (Table 1).

Economic activity is frequent among older adults. Half of them were working before the pandemic (95%CI: 47.0; 53.9), 42.1% of them (95%CI: 37.4; 47.0) without a formal employment relationship. The percentage of those formally employed was higher among men (62.6%; 95%CI: 55.5; 69.2) compared to women (53.1%; 95%CI: 46.7; 59.3). During the pandemic, only 8.3% (95%CI: 6.4; 10.7) continued working normally and 21.2% (95%CI: 18.4; 24.4) worked from home. One third of older adults (33.9%; 95%CI: 27.8; 40.6) worked in essential activities (Table 1).

Household income was less than one minimum wage for 31.9% (95%CI: 28.4; 35.6) of older adults. During the pandemic there was a fall in household income for almost half of older adults, 23.5% (95%CI: 20.6; 26.6) with a small decrease and 23.6% (95%CI: 20.7; 26.7) with a sharp decrease or total income loss. Financial aid related to the COVID-19 pandemic was received by 12% (95%CI: 9.4; 15.3) of families living with older adults (Table 1).

Extreme social distancing was practiced by 30.9% (95%CI: 27.8; 34.1) of older adults, 56.9% (95%CI: 53.5; 60.3) practiced intense social distancing and 12.2% (95%CI: 10.1; 14.7) did not adhere (or hardly adhered) to social distancing measures. Extreme distancing was higher among women (39.1%; 95%CI: 35.3; 42.9) compared to men (20.2%; 95%CI: 15.6; 25.8). It is noteworthy that only 7% (95%CI: 5.4; 8.8) of women practiced little or no social distancing (Table 2).

Older adults who were retired or no longer working before the pandemic showed greater adherence to extreme social distancing (40.4%; 95%CI: 34.8; 46.3 and 41.7%; 95%CI: 33.8; 50.0). About 10% of those who continued working from home did not adhere to social distancing (95%CI: 5.4; 17.4). Of those who performed some kind of essential activity during the pandemic, 44.2% (95%CI: 33.9; 55.1) did not adhere to social distancing. Income did not significantly affect social distancing and was similar between all analyzed brackets (Table 2).

The health conditions of older adults during the pandemic, according to gender, are shown in Table 3. High blood pressure is the most prevalent NCD among older adults (43.8%; 95%CI: 38.5; 45.2). More than 58% (95%CI: 55.3; 61.9) of them have at least one NCD that is a risk factor for severe COVID-19. When adding smoking as a risk factor for severe COVID-19, it is observed that 64.1% (95%CI: 60.8; 67.3) of older adults are part of the high-risk group, either for having at least one

Table 1

Breakdown (%) of household composition, income and work among older adults by gender during the COVID-19 pandemic. Brazil, 2020.

Socioeconomic and demographic situation	Male (n = 3,969)		Female (n = 5,204)		Total (N = 9,173)		p-value
	%	IC95%	%	IC95%	%	IC95%	
Lives with spouse or partner?							< 0.001
Yes	81.3	76.3; 85.5	46	42.0; 50.0	61.3	57.9; 64.6	
No	18.7	14.5; 23.7	54	50.0; 58.0	38.7	35.4; 42.1	
Household situation							< 0.001
Lives alone	10.8	7.8; 14.8	23.8	20.6; 27.3	18.2	15.8; 20.8	
Lives with one person	39.8	34.4; 45.5	43.3	39.3; 47.3	41.8	38.5; 45.2	
Lives with two or more people	49.4	43.5; 55.3	32.9	29.3; 36.8	40.1	36.6; 43.6	
Working before the pandemic?							< 0.001
Yes	59.3	53.3; 65.1	43.8	39.8; 47.9	50.5	47.0; 53.9	
Retired	37.5	31.8; 43.6	39.7	35.8; 43.7	38.7	35.4; 42.2	
Not working for other reason	3.2	2.0; 5.1	16.6	13.9; 19.5	10.8	9.1; 12.7	
If working, was there employment relationship? (n = 4,588)							0.048
Yes	62.6	55.5; 69.2	53.1	46.7; 59.3	57.9	53.0; 62.6	
No	37.4	30.8; 44.5	46.9	40.7; 53.3	42.1	37.4; 47.0	
How did the pandemic affect the work/job?							< 0.001
Not working before or during the pandemic	35.9	30.5; 41.8	49.6	45.5; 53.8	43.6	40.3; 47	
Continued working normally	11.3	7.6; 16.4	6.0	4.6; 7.9	8.3	6.4; 10.7	
Continued working but from home	27.6	22.6; 33.3	16.2	13.3; 19.6	21.2	18.4; 24.4	
Started working after the pandemic	0.2	0.0; 0.8	0.8	0.4; 1.4	0.5	0.3; 0.9	
Took paid time off	3.1	1.9; 5.2	2.7	1.6; 4.4	2.9	2.0; 4.1	
Lost job	1.8	0.6; 5.1	0.6	0.3; 1.2	1.1	0.5; 2.4	
Stopped working	20.1	15.8; 25.1	24.1	20.2; 28.4	22.3	19.4; 25.6	
Worked on an activity considered essential during the pandemic? (n = 2,645)							0.385
Yes	31.5	23.4; 41.0	37.1	28.8; 46.3	33.9	27.8; 40.6	
No	68.5	59.0; 76.6	62.9	53.7; 71.2	66.1	59.4; 72.2	
Household per capita income (minimum wages)							0.348
< 1	29.3	23.5; 35.8	34.0	30.0- 38.4	31.9	28.4; 35.6	
1 < 2	28.2	22.9; 34.2	28.9	25.1; 33.0	28.6	25.4; 32.0	
2 < 4	25.3	20.8; 30.4	23.2	20.2; 26.5	24.2	21.5; 27.0	
≥ 4	17.2	14.1; 20.9	13.8	11.8; 16.2	15.3	13.5; 17.4	
How did the pandemic affet the househild income?							0.431
Increase or no change	53.6	47.6; 59.4	52.5	48.4 ; 56.6	53.0	49.5; 56.4	
Slight decrease	23.8	18.8; 29.6	23.2	20.1; 26.6	23.5	20.6; 26.6	
Significant decrease or total loss	22.7	18.4; 27.7	24.3	20.5; 28.4	23.6	20.7; 26.7	
Did any household member receive government aid related to the pandemic?							0.843
Yes	12.4	8.1; 18.5	11.8	8.7; 15.7	12.0	9.4; 15.3	
No	87.6	81.5; 91.9	88.2	84.3; 91.3	88.0	84.7; 90.6	

95%CI: 95% confidence interval.

Source: *ConVid – Behavior Survey*.

Table 2

Breakdown (%) of socioeconomic, household and work situation of older adults by adherence to social distancing during the COVID-19 pandemic. Brazil, 2020.

Socioeconomic and demographic situation	Extreme distancing		Intense distancing (left home to buy food etc.)		No distancing or barely altered routine		p-value
	%	95%CI	%	95%CI	%	95%CI	
Total older adults (n = 9,102)	30.9	27.8; 34.1	56.9	53.5; 60.3	12.2	10.1; 14.7	-
Gender							< 0.001
Men	20.2	15.6; 25.8	61.0	54.7; 66.5	19.0	14.7; 24.2	
Women	39.1	35.3; 42.9	54.0	50.0; 57.9	7.0	5.4; 8.8	
Lives with spouse or partner ?							0.001
Yes	26.8	23.0; 30.9	58.7	54.3; 63.1	14.5	11.6; 17.9	
No	37.7	32.8; 42.8	54.2	49.0; 59.4	8.1	5.4; 12.1	
Household situation							0.087
Lives alone	35.1	28.5; 42.4	58.4	51.1; 65.4	6.5	3.8; 10.7	
Lives with one person	29.6	25.8; 33.8	58.3	53.5; 63.0	12.1	8.8; 16.2	
Lives with two or more people	30.2	24.8; 36.2	54.8	48.9; 60.7	15.0	11.4; 19.6	
Working before the pandemic?							< 0.001
Yes	20.8	17.6; 24.3	58.8	54.0; 63.3	20.5	16.6; 25.0	
Retired	40.4	34.8; 46.3	56.3	50.4; 62.0	3.3	2.1; 5.4	
Not working for other reason	41.7	33.8; 50.0	54.3	46.0; 62.4	4.0	2.3; 6.9	
How did the pandemic affect the work/job?							< 0.001
Not working before or during the pandemic	37.4	33.1; 41.8	56.1	51.4; 60.7	6.5	4.3; 9.9	
Continued working normally	15.2	5.0; 37.8	18.3	12.2; 26.5	66.6	51.1; 79.2	
Continued working but from home	26.3	20.5; 33.0	63.8	56.1; 70.9	9.8	5.4; 17.4	
Started working after the pandemic	19.0	5.2; 50.1	39.3	17.4; 66.6	41.7	17.7; 70.3	
Took paid time off	18.4	8.7; 34.8	74.5	57.6; 86.3	7.1	2.4; 19.4	
Lost job	11.3	3.1; 33.5	82.7	57.8; 94.4	6.0	1.3; 24.0	
Stopped working	29.4	22.4; 37.5	64.1	56.0; 71.5	6.5	3.9; 10.7	
Worked on an activity considered essential during the pandemic?							< 0.001
Yes	12.2	7.6; 19.2	43.5	33.4; 54.2	44.2	33.9; 55.1	
No	28.0	20.5; 36.9	54.1	45.4; 62.5	17.9	12.1; 25.8	
Household per capita income (minimum wages)							0.159
< 1	33.5	27.0; 40.8	52.3	45.2; 59.4	14.1	10.1; 19.4	
1 < 2	24.1	19.2; 29.9	63.8	56.9; 70.1	12.1	7.8; 18.3	
2 < 4	29.1	23.9; 34.9	59.1	52.9; 65.1	11.8	8.0; 16.9	
≥ 4	35.6	29.9; 41.7	53.8	47.4; 60.0	10.7	6.8; 16.5	
How did the pandemic affect the household income?							0.218
Increase or no change	32.7	28.8; 36.9	56.7	52.2; 61.1	10.6	8.0; 13.9	
Slight decrease	33.3	26.3; 41.2	53.2	45.6; 60.6	13.5	8.6; 20.5	
Significant decrease or total loss	24.0	18.4; 30.7	61.8	54.7; 63.9	14.2	10.4; 19.3	

95%CI: 95% confidence interval.

Source: *ConVid – Behavior Survey*.

Table 3

Breakdown (%) of non-communicable diseases (NCD) risk factors for COVID-19, comorbidities, health status and symptoms of COVID-19 and feelings of sadness, distress and loneliness by gender. Brazil, 2020.

Health status	Male		Female		Total		p-value
	%	95%CI	%	95%CI	%	95%CI	
Prevalence of NCD considered risk factors for COVID-19							
Diabetes	18.7	14.6; 23.5	15.6	12.6; 19.1	16.9	14.4; 19.7	0.267
High blood pressure	43.8	38.1; 49.7	40.3	36.5; 44.3	41.8	38.5; 45.2	0.331
Asthma/Emphysema/Chronic respiratory disease or other lung disease	9.3	5.7; 14.9	9.6	7.7; 12.0	9.5	7.4; 12.0	0.899
Heart disease	15.6	11.5; 20.9	7.8	5.4; 11.2	11.2	8.8; 14.1	0.004
Cancer	6.4	4.1; 9.8	7.0	5.5; 8.9	6.7	5.3; 8.4	0.711
Risk factors for COVID-19							
Smoking	12.0	8.8; 16.1	13.3	10.9; 16.0	12.7	10.7; 15.0	0.578
At least one NCD risk factor for COVID-19	60.2	54.3; 65.8	57.5	53.5; 61.3	58.6	55.3; 61.9	0.442
At least one NCD risk factor for COVID-19 or smoking	64.2	58.4; 69.6	64.1	60.2; 67.7	64.1	60.8; 67.3	0.966
Number of NCDs associated with risk for COVID-19							0.047
None	39.8	34.2; 45.7	42.5	38.7; 46.5	41.4	38.1; 44.7	
One	33.9	28.5; 39.7	38.4	34.4; 42.6	36.5	33.2; 39.9	
Two	19.1	15.0; 24.1	15.5	12.9; 18.5	17.1	14.7; 19.8	
Three	7.1	4.3; 11.7	3.5	2.6; 4.8	5.1	3.6; 7.1	
Health status altered by the pandemic?							0.062
No change	82.2	75.6; 78.5	82.2	77.4; 86.2	75.6	72.0; 78.9	
Improved	1.6	2.5; 2.1	1.6	0.7; 3.3	2.5	1.6; 3.9	
Worsened	16.2	21.9; 19.4	16.2	12.3; 21.0	21.9	18.7; 25.4	
Health care sought during the pandemic?	15.7	12.6; 19.4	19.5	16.6; 22.7	17.9	15.7; 20.3	0.111
Symptoms associated with COVID-19?	12.9	9.6; 17.2	18.4	15.3; 22.0	16.1	13.7; 18.8	0.040
Tested for COVID-19 infection?	2.4	0.8; 7.2	2.0	1.1; 3.9	2.2	1.2; 3.9	0.798
Test result (n = 79)							0.011
Positive	23.2	6.1; 58.2	2.4	1.1; 5.2	6.0	2.8; 12.4	
Negative	27.0	7.7; 62.1	83.6	60.2; 94.5	73.9	49.6; 89.1	
Not released	49.9	11.6; 88.3	14.0	4.1; 38.5	20.1	6.9; 46.2	
Felt isolated from family or friends during the pandemic?							< 0.001
Never	21.1	16.6; 26.6	15.5	12.5; 19.1	18.0	15.3; 21.0	
Seldom	37.8	32.2; 43.8	26.6	23.7; 29.8	31.5	28.5; 34.7	
Often/Always	41.0	35.4; 46.9	57.8	53.9; 61.7	50.6	47.1; 54.0	
Felt distressed or nervous during the pandemic?							< 0.001
Never	29.3	24.2; 34.9	18.5	15.6; 21.7	23.1	20.4; 26.2	
Seldom	47.5	41.6; 53.5	43.4	39.5; 47.4	45.2	41.8; 48.6	
Often/Always	23.2	18.8; 28.4	38.1	34.2; 42.2	31.7	28.6; 34.9	
Felt sad or depressed during the pandemic?							< 0.001
Never	38.8	33.2; 44.8	20.8	17.5; 24.5	28.5	25.4; 31.9	
Seldom	43.7	37.9; 49.7	44.1	40.2; 48.1	43.9	40.6; 47.4	
Often/Always	17.5	13.7; 22.1	35.1	31.3; 39.1	27.5	24.6; 30.6	
Family member, friend or colleague with severe case of COVID-19?	10.9	8.2; 14.4	15.6	12.6; 19.2	13.6	11.4; 16.1	0.044

95%CI: 95% confidence interval.

Source: *ConVid – Behavior Survey*.

NCD or for being an active smoker. Men have more comorbidities associated with risk for severe COVID-19 compared to women, with 7.1% of them reporting three or more diseases (95%CI: 4.3; 11.7) (Table 3).

Worsening of health conditions during the pandemic was reported by 21.9% (95%CI: 18.7; 25.4) of older adults, and 17.9% (95%CI: 15.7; 20.3) saw a doctor, dentist or other health professional (Table 3).

Symptoms associated with COVID-19 were reported by 16.1% (95%CI: 13.7; 18.8) of older adults who answered the survey, 18.4% (95%CI: 15.3; 22.0) among women and 12.9% (95%CI: 9.6; 17.2) among men. Only 2.2% (95%CI: 1.2; 3.9) were tested for COVID-19 (Table 3).

A frequent feeling of loneliness due to being away from friends and family during the pandemic was reported by half of older adults (95%CI: 47.1; 54.0), more often by women 57.8% (95%CI: 53.9; 61.7) than men (41%; 95%CI: 35.4; 46.9). Habitual distress or nervousness during the pandemic was reported by 1/3 of the elderly population (31.7%; 95%CI: 28.6; 34.9), also being higher among women (38.1%; 95%CI: 34.2; 42.2) compared to men (23.2%; 95%CI: 18.8; 28.4). A recurring feeling of sadness and depression (27.5%; 95%CI: 24.6; 30.6) was also more frequent among women (35.1%; 95%CI: 31.3; 39.1) than men (17.5%; 95% CI: 13.7; 22.1). Serious cases of COVID-19 among family, close friends or co-workers were reported by 13.6% (95%CI: 11.4; 16.1) of older adults (Table 3).

Inequality and impact of the pandemic on the income of older adults can be seen in Table 4. In Brazil, 23.7% (95%CI: 20.8; 26.8) of them had a sharp decrease or total loss of income in the surveyed period. This percentage is higher among those who were working before the pandemic, 36.4% (95%CI: 31.8; 41.3). It is observed that 52.4% (95%CI: 46.1; 58.7) of older adults who were formally employed maintained their income, and only 20.3% (95% CI: 15.1; 26.7) of those who had no formal employment relationship were not negatively affected. A large number of older adults with no formal employment suffered a sharp drop in income (55.3%; 95% CI: 47.8; 62.5).

A significant decrease in income was observed even among part of those who continued working normally (19.4%; 95%CI: 13.0; 27.9) or from home (23.0%; 95%CI: 16.8; 30.7). Adults with a household per capita income below one minimum wage were the most affected by a fall in income (36.2%; 95%CI: 29.5; 43.6).

The number of residents in the household had no significant impact on feeling of sadness. Recurrent sadness or depression was more pronounced in households with lower incomes (32.3%; 95%CI: 26.2; 39.0) compared to the other brackets. Likewise, during the pandemic, the greater the income decrease, the greater the number of older adults who felt persistently or frequently sad, reaching 38.5% (95%CI: 31.7; 45.7). In general, older adults with a family member, friend or colleague who had fallen seriously ill or died from COVID-19 felt sad more often (37.1%; 95%CI: 28.4; 46.7) (Table 5).

The feeling of isolation from family and friends was related to sadness and depression among older adults, since 66.3% (95%CI: 51.1; 74.4) of those who never felt isolated were not sad or depressed either. Among those who never felt isolated from their social circle, for example, only 3.5% (95%CI: 1.8; 6.9) felt sad always or often. When sadness is analyzed in relation to the degree of social distancing, older adults who adhered to extreme distancing felt sad more often (30.5%; 95%CI: 25.9; 35.6).

Discussion

This article presents evidence of the high and uneven impact of the COVID-19 pandemic on the health, income and care of older adults in Brazil. These effects are less visible than the high rates of lethality and mortality [16], but they cause serious consequences for older adults and their families. Also shown was a marked difference between older men and women in terms of household composition, socioeconomic conditions, family income and insertion in the labor market. This reinforces the fact that gender inequality must always be considered in studies and initiatives related to aging [17]. During the COVID-19 pandemic, any kind of household composition poses risks for older adults. Older people living alone may need help to buy food, emotional and economic support, health care and others, and older adults who live with other people are at risk of being infected by household members in contact with the outside world [18]. Living with other people is more common among men, while living alone is much more frequent among women. Similar results have been found in previous studies [19,20].

Table 4

Breakdown (%) of working conditions and household per capita income during the COVID-19 pandemic by impact on older peoples' income. Brazil, 2020.

Socioeconomic condition	Income change during the pandemic						p-value
	Increase or no change		Slight decrease		Significant decrease or total loss		
	%	95%CI	%	95%CI	%	95%CI	
Total older adults (n = 9,173)	52.9	49.4; 56.3	23.4	20.5; 26.6	23.7	20.8; 26.8	-
Working before the pandemic?							< 0.001
Yes	38.9	34.3; 43.7	24.7	20.9; 29.0	36.4	31.8; 41.3	
Retired	70.0	63.9; 75.5	21.6	16.7; 27.4	8.4	5.5; 12.6	
Not working for other reason	57.3	48.8; 65.3	23.9	17.7; 31.5	18.8	13.1; 26.3	
If working, was there employment relationship? (n = 4,588)							< 0.001
Yes	52.4	46.1; 58.7	24.9	19.8; 30.7	22.7	17.7; 28.6	
No	20.3	15.1; 26.7	24.5	18.9; 31.1	55.3	47.8; 62.5	
How did the pandemic affect the work/job?							< 0.001
Not working before or during the pandemic	74.6	70.2; 78.5	18.0	14.4; 22.3	7.4	5.6; 9.6	
Continued working normally	44.3	31.9; 57.5	36.3	22.9; 52.1	19.4	13.0; 27.9	
Continued working but from home	46.7	39.0; 54.6	30.3	23.3; 38.3	23.0	16.8; 30.7	
Started working after the pandemic	55.9	28.8; 80.0	14.7	3.1; 48.1	29.3	11.0; 58.1	
Took paid time off	30.3	17.4; 47.3	36.4	20.5; 56.1	33.3	18.7; 51.9	
Lost job	0.2	0.0; 1.1	9.6	3.0; 26.4	90.2	73.4; 96.8	
Stopped working	25.3	18.5; 33.7	22.1	17.3; 27.8	52.6	44.6; 60.5	
Worked on an activity considered essential during the pandemic?							0.625
Yes	43.0	32.4; 54.4	30.7	21.4; 41.9	26.2	16.6; 38.8	
No	47.2	39.0; 55.7	32.4	24.1; 42.0	20.3	15.2; 26.7	
Household per capita income (minimum wages)							< 0.001
< 1	38.5	31.8; 45.5	25.3	19.2; 32.5	36.2	29.5; 43.6	
1 < 2	56.5	49.5; 63.2	26.0	20.3; 32.8	17.5	13.6; 22.3	
2 < 4	65.2	59.2; 70.7	17.0	13.1; 21.8	17.8	13.6; 23.0	
≥ 4	61.4	55.0; 67.5	21.7	16.9; 27.6	16.9	12.4; 22.5	

95%CI: 95% confidence interval.
Source: *ConVid – Behavior Survey*.

Living alone and aging are considered the most relevant demographic phenomena of the last decades [21]. The current pandemic and the ensuing social distancing recommendations have raised public awareness of the psychological impacts of social distancing measures and the loneliness that many people are experiencing [22,23]. Although this feeling is common in the daily life of many older persons, it is silenced by society [24].

Loneliness, an important predictor of mortality and clinical risk factors in old age, such as reduced functional capacity, should be treated as a serious risk factor and health issue [25,26]. It is known that loneliness in old age can precipitate death and diseases, as it is associated with risks of developing heart disease and stroke, regardless of the traditional risk factors for cardiovascular diseases [26].

Older people may be socially isolated without feeling lonely, or may feel lonely even without social distancing, but both conditions can harm their physical and mental health [2,22]. Thus, social distancing should not be confused with loneliness [27]. The feeling of sadness is what most contributes to loneliness [28] and feeling alone is not just about having no company at home. In this work it was found that older people in Brazil often or always feel alone. This feeling is usually linked to the structural issue of mourning, social abandonment and stigma in old age [10,29], which can worsen in the pandemic when

Table 5

Breakdown (%) of socioeconomic, household, work and health condition and distancing of older adults by self-perceived sadness and depression during the COVID-19 pandemic. Brazil, 2020.

Socioeconomic, demographic and health situation	Felt sad or depressed during the pandemic?						p-value
	Never		Seldom		Often/Always		
	%	95%CI	%	95%CI	%	95%CI	
Total older adults (n = 9,133)	28.5	25.4; 31.9	43.9	40.6; 47.4	27.5	24.6; 30.6	-
Gender							< 0.001
Male	38.8	33.2; 44.8	43.7	37.9; 49.7	17.5	13.7; 22.1	
Female	20.8	17.5; 24.5	44.1	40.2; 48.1	35.1	31.3; 39.1	
Household situation							0.101
Lives alone	25.9	12.9; 45.1	46.8	27.8; 66.8	27.3	14.4; 45.5	
Lives with one person	28.7	23.9; 34.0	43.0	37.9; 48.3	28.3	23.8; 33.3	
Lives with two or more people	28.4	24.3; 32.9	44.6	40.1; 49.2	26.9	23.3; 30.9	
Household per capita income (minimum wages)							0.032
< 1	23.3	17.8; 30.0	44.4	37.2; 51.8	32.3	26.2; 39.0	
1 < 2	33.9	27.3; 41.3	37.3	31.1; 43.9	28.7	22.6; 35.7	
2 < 4	27.7	22.3; 33.8	47.9	41.7; 54.1	24.4	19.7; 29.8	
≥ 4	28.4	23.2; 34.1	50.0	43.7; 56.2	21.7	17.1; 27.1	
How did the pandemic affect the household income?							< 0.001
Increase or no change	33.7	29.3; 38.4	42.3	37.9; 46.7	24.0	20.5; 28.0	
Slight decrease	20.8	16.2; 26.4	54.9	47.7; 62.0	24.2	18.7; 30.8	
Significant decrease or total loss	24.9	18.3; 33.0	36.6	30.1; 43.7	38.5	31.7; 45.7	
Family member, friend or colleague with severe case of COVID-19?							0.007
Yes	17.4	11.4; 25.6	45.5	36.7; 54.7	37.1	28.4; 46.7	
No	30.4	26.9; 34.1	43.7	40.0; 47.4	26.0	23.0; 29.2	
Felt isolated from family and friends during the pandemic?							< 0.001
Never	66.3	57.1; 74.4	30.2	22.3; 39.5	3.5	1.8; 6.9	
Seldom	33.7	28.4; 39.4	56.4	50.6; 62.0	9.9	7.4; 13.3	
Often/Always	11.9	8.5; 16.3	41.0	36.5; 45.6	47.1	42.4; 51.9	
Social distancing practiced during the pandemic?							0.006
Yes, extreme distancing	22.1	17.5; 27.6	47.4	41.4; 53.5	30.5	25.9; 35.6	
Yes, intense distancing (left home to shop, etc.)	29.9	25.6; 34.6	45.2	40.8; 49.7	24.9	21.3; 28.8	
No social distancing or barely altered routine	39.7	30.2; 49.9	31.2	23.2; 40.5	29.1	20.0; 40.4	

95%CI: 95% confidence interval.

Source: *ConVid – Behavior Survey*.

the elderly experience collective mourning, the high lethality of their age group, government neglect – in comments about the fragility of those infected – and lack of public policies for social protection [30].

In this survey, feelings of distress, loneliness and sadness during the pandemic were more pronounced among older women than among older men. These results may be a consequence of women's burden of housework, which was increased during the pandemic when many older women became responsible for caring for grandchildren, husbands, other older people and even their children [31]. The greater economic vulnerability of women stemming from their background, the devaluation of their work and fewer opportunities of formal employment [32] when compared to men may also lead to greater feelings of distress in periods of increased unemployment and poverty.

However, authors point out that culturally imposed stereotypes [33] lead to gender differences in emotional experience and expression [34], with women expressing more feelings and men having

stronger emotional experiences such as anger and aggression. Although the reports of sadness and loneliness are less intense among men, their effects can be more fatal, as shown by a meta-analysis study on mortality from all causes [35].

Identifying and caring as early as possible for older people living alone during the pandemic is one of the recommendations of the UN [3]. Strategies to provide closeness and support networks to mitigate loneliness and social distancing include using the Internet and cell phones [36] (ICICT/Fiocruz. Sistema de Indicadores de Saúde e Acompanhamento de Políticas Públicas do Idoso (SISAP-Idoso). https://sisapidoso.icict.fiocruz.br/, acessed on 13/Jun/2020). However, this option is limited in a country like Brazil with a high percentage of illiterate older adults (reaching more than 40% in some states, according to the last census) [37], of poor families with no Internet access [38] and with mobile devices that are not adapted to the limitations of aging [39].

According to a recent report of the US National Academies of Sciences, Engineering and Medicine, the only efficient connection between older adults and the community is a health care system that includes home visits [40]. Results of the *English Longitudinal Study of Ageing* (ELSA) show how primary prevention strategies aimed at reducing the impact of loneliness and social isolation can help prevent chronic diseases among older persons [26]. In Brazil, community health agents (ACS) of the Family Health Strategy play an important role in identifying and monitoring older people who live alone and need support [41]. However, changes in the Brazilian National Primary Care Policy since 2017 have weakened local teams and disqualified the work of those agents, aggravating the risk of lack of care for a significant part of the population [41], especially during the pandemic. A retrogression is feared in the important role of primary care in reducing hospitalizations and mortality from preventable causes in older adults observed since the early 21st century [42].

In a recent study comparing the periods 2008/2014 and 2014/2018, the Economic Commission for Latin America and the Caribbean (ECLAC) showed that Brazil is among the worst performing countries regarding poverty, inequality and unemployment compared to other countries in the region [43]. The risk of falling into poverty due to loss of household income and inadequate pensions to support living standards forces older adults to continue working even after retirement, or to make family arrangements to ensure minimally decent living conditions [44].

The fragile labor and economic conditions of older Brazilians [45] is evidenced in this survey by the high percentage of older people who were still working, most of them in informal activities (self-employed or with no employment relationship). In addition, the survey found a marked decrease in income during the pandemic among older adults with poorer socioeconomic conditions.

The changes in working conditions among older adults during the pandemic affected men and women unequally, which is probably related to the fact that the female labor force in Brazil is concentrated in self-employment activities, such domestic workers, the vast majority of whom have no employment relationship and are in a situation of greater vulnerability [46].

Employment relationships and labor rights are decisive factors to ensure secure and dignified living conditions [47]. The growth of informal employment, as well as the relaxation of labor rights in recent years [48,49], places the population in a condition of great vulnerability in the context of economic deterioration. The loss of household per capita income of older people during the pandemic was frequent among those who had no formal employment, which may be related to the increased economic vulnerability of the Brazilian population since 2014 indicated in the ECLAC study [43], and the growing unemployment in the country during the first quarter of 2020, when the first case of COVID-19 was reported in Brazil [50]. Therefore, guaranteeing the survival of older people and ensuring the sustainability and effectiveness of measures to control COVID-19 requires implementing policies for the social protection and support of vulnerable populations, such as the basic income program [51].

Researchers have compared measures to control the epidemic in different countries and the levels of adherence to them, concluding that extreme social distancing measures, extended to the entire population, are the most efficient option for survival, especially for older people, despite the difficulty of this choice in many social contexts [52]. However, such measures must be accompanied by economic protection and face-to-face social interaction or other mitigating measures such as home and community support from health care services [4].

It should be considered that the health profile of older adults in Brazil places them at high risk for severe COVID-19, since the prevalence of chronic diseases is high. Consequently, socioeconomic pro-

tection of older people, especially those with risk factors, diseases and comorbidities, is of paramount importance in all countries [4]. This survey found a high prevalence of NCDs associated with a risk for severe COVID-19, such as diabetes, high blood pressure, chronic respiratory disease, heart disease or cancer, a result that is consistent with the risk analysis based on the 2013 *National Health Survey* (PNS) [52]. Furthermore, the lack of timely diagnosis of the new coronavirus [53] is a major obstacle in Brazil to the protection and prevention of the severe form of the disease among the older population, which is confirmed by the low percentage of older adults who have been tested for COVID-19.

Some limitations of the ConVid survey should be stressed. It is noteworthy that the findings presented here relate to a population that has greater access to information and communication resources. People with less education and no access to the Internet were unable to take part in the survey. Due to the involuntary exclusion of people with less education the percentage of people who did not practice social distancing might be underestimated. Moreover, the reliance on observations resulting from snowball sampling [54] may have led to biased estimates. However, these limitations have been minimized due to the large sample size and the calibration with data from the 2019 PNAD, considering Brazilian region of residence, gender, age group, educational level and race/skin color as weighting factors.

Another limitation of the survey is not identifying older people who live in long-term care homes, facilities that house thousands of older adults, with higher risk of contagion and death from COVID-19 [55].

The use of a question about distress and depression without the administration of a validated instrument may have caused prevalence to be overestimated, since the answer might refer to a momentary feeling rather than an established disease. As for income, the answer categories "significant decrease" and "total loss" were combined, which creates a limitation in assessing loss intensity. However, any kind of loss in family income was considered serious.

Given the above, an increase in situations of vulnerability can be expected in representative studies of the older population. Thus, despite the limitations described, this study contributes important elements to the diagnosis of problems related to the living conditions of older people during the COVID-19 pandemic. Representative studies of the older population in Brazil are recommended, besides more in-depth research on the impact of the pandemic on the health of this population.

Contributors

D. E. Romero participated in the study design, planning, writing, data analysis and interpretation, critical review of the content and approval of the final version. J. Muzy and G. N. Damacena contributed to writing, data analysis and interpretation, and approval of the final version. N. A. Souza, W. S. Almeida, C. L. Szwarcwald, D. C. Mallta, M. B. A. Barros, P. R. B. Souza Júnior, L. O. Azevedo, R. Gracie, M. F. Pina, M. G. Lima, I. E. Machado, C. S. Gomes, A. O. Werneck and D. R. P. Silva collaborated on data analysis, planning and critical review of the manuscript.

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Resumo

O presente estudo tem o objetivo de caracterizar a população idosa brasileira durante a pandemia de COVID-19, considerando suas condições de saúde, socioeconômicas, desigualdade de sexo, adesão ao distanciamento social e sentimento de tristeza ou depressão. Estudo transversal realizado com idosos brasileiros que participaram de um inquérito de saúde virtual (N = 9.173), com método de amostragem "bola de neve virtual". Os dados foram coletados via web*, por meio de questionário autopreenchido. Foram estimadas prevalências, intervalos de confiança e, para verificar a independência das estimativas, utilizou-se o teste quiquadrado de Pearson. Durante a pandemia, houve diminuição da renda em quase metade dos domicílios dos idosos. O distanciamento social total foi adotado por 30,9% (IC95%: 27,8; 34,1) e 12,2% (IC95%: 10,1; 14,7) não aderiram. Idosos que não trabalhavam antes da pandemia aderiram em maior número às medidas de distanciamento social total. Grande parte apresentou comorbidades associadas ao maior risco de desenvolvimento da forma grave de COVID-19. Sentimentos de solidão, ansiedade e tristeza foram frequentes entre os idosos, especialmente entre as mulheres. A pandemia da COVID-19 aprofundou a desigualdade ao afetar os idosos mais vulneráveis. Estratégias para mitigar a solidão e o distanciamento social devem ser feitas levando-se em conta a vulnerabilidade social e a acentuada diferença entre homens e mulheres quanto à composição domiciliar e às condições socioeconômicas e de trabalho. Recomenda-se o desenvolvimento de pesquisas representativas da população idosa brasileira e que investiguem o impacto da pandemia nesta população.*

COVID-19; Saúde do Idoso; Solidão; Renda; Fatores Socioeconômicos

Resumen

El objetivo de este estudio es caracterizar a la población anciana brasileña durante la pandemia de COVID-19, considerando sus condiciones de salud, socioeconómicas, desigualdad de sexo, adhesión al distanciamiento social y sentimiento de tristeza o depresión. Es un estudio transversal realizado con ancianos brasileños que participaron en una encuesta de salud virtual (N = 9.173), con un método de muestra "bola de nieve virtual". Los datos fueron recogidos vía web*, mediante un cuestionario autocompletado. Se estimaron las prevalencias, intervalos de confianza y, para verificar la independencia de las estimaciones, se utilizó el test chi-cuadrado de Pearson. Durante la pandemia, hubo una disminución de la renta en casi la mitad de los domicilios de los ancianos. El distanciamiento social total fue adoptado por un 30,9% (IC95%: 27,8; 34,1) y 12,2% (IC95%: 10,1; 14,7) no se adhirieron. Los ancianos que no trabajaban antes de la pandemia se adhirieron en mayor número a las medidas de distanciamiento social total. Gran parte presentó comorbilidades asociadas a un mayor riesgo de desarrollo de la forma grave de COVID-19. Sentimientos de soledad, ansiedad y tristeza fueron frecuentes entre los ancianos, especialmente entre las mujeres. La pandemia de COVID-19 profundizó la desigualdad al afectar a los ancianos más vulnerables. Se deben elaborar estrategias para mitigar la soledad y el distanciamiento social, teniéndose en cuenta la vulnerabilidad social y la acentuada diferencia entre hombres y mujeres, respecto a la composición domiciliaria y las condiciones socioeconómicas y de trabajo. Se recomienda el desarrollo de investigaciones representativas de la población anciana brasileña, que investiguen el impacto de la pandemia en esta población.*

COVID-19; Salud del Anciano; Soledad; Renta; Factores Socioeconómicos