

## Relationship between work before the epidemic and having gone out to work during the epidemic among participants in the *Brazilian Longitudinal Study of Aging*: results of the ELSI-COVID-19 initiative

Relação entre trabalho antes da epidemia e ter saído para trabalhar durante esse período entre participantes do *Estudo Longitudinal da Saúde dos Idosos Brasileiros*: resultados da iniciativa ELSI-COVID-19

Relación entre trabajo antes de la epidemia y haber salido a trabajar durante la misma entre participantes del *Estudio Brasileño Longitudinal del Envejecimiento*: resultados de la iniciativa ELSI-COVID-19

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### Abstract

The objective of this study was to examine the prevalence of going out to work during the COVID-19 epidemic, and the factors associated with this, among adults aged 50 years and over who were in paid employment before its onset. We used data from the second wave of the Brazilian Longitudinal Study of Aging (ELSI-Brazil), conducted through face-to-face interviews between August 2019 and March 2020 (before the onset of the epidemic), in a representative national sample of adults aged 50 and over, and data obtained through telephone interviews carried out among the same participants (ELSI-COVID-19 initiative), conducted between May 26 and June 8, 2020 (during the epidemic). The analyses were based on odds ratios (OR) estimated by logistic regression. The participants' mean age was 59.9 years (SD = 6.5). The prevalence of going out to work in the previous seven days was 38.4% (95%CI: 31.3-46.1), 50.2% among men and 25.1% among women (formal work, self-employment, and informal work). The results showed that among men, the likelihood of going out to work was lower among those aged 60 to 69 years compared to those aged 50 to 59 years (OR = 0.27; 95%CI: 0.15-0.48). Among women, the likelihood was lower among those who were self-employed (OR = 0.28; 95%CI: 0.12-0.64) or in informal employment before the epidemic (OR = 0.25; 95%CI: 0.09-0.69), compared to those in formal employment. One of the hypotheses to explain this association is that women in informal employment were more likely to be dismissed, and that self-employed women have stopped working during the epidemic.

Aging; COVID-19; Work; Health Surveys

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## Introduction

The COVID-19 epidemic, caused by SARS-CoV-2<sup>1</sup>, spread rapidly among countries and has been declared a global public health emergency<sup>2</sup>. At the end of July, the total number of confirmed cases of COVID-19 worldwide was more than 18 million, with more than 600,000 recorded deaths<sup>2</sup>. In Brazil, in the same period, there were more than 2.5 million cases, with approximately 90,000 deaths<sup>2</sup>.

To contain the speed of the spread of the disease and its lethality, many governments declared health emergencies, recommending social withdrawal, with guidelines for staying at home, travel restrictions, and the closure of schools and non-essential services<sup>3</sup>. The epidemic has had health and economic impacts on society, families, and the job market. In Brazil, measures such as assistance for informal and self-employed workers, relaxations in labor laws, and reductions in working hours and wages have been announced to minimize these impacts, and to encourage and enable workers, especially those at high risk, to remain at home<sup>4</sup>. However, according to a report on mobility by Google, by the end of June, in the country there had only been a 22% reduction in the mobility on the routes to work<sup>5</sup>.

COVID-19 symptoms tend to disproportionately affect older people<sup>2</sup>. In order to develop effective public policies to prevent or slow the expansion of the epidemic in the country and reduce its consequences for all ages, particularly older adults, it is important to understand the factors that lead older adults to leave home and go to work. Therefore, the aim of this study was to examine the prevalence of going out to work during the COVID-19 epidemic among older Brazilian adults who had been working before the epidemic emerged, as well as investigating the factors associated with this behavior.

## Methods

### Data source and sample

Data from participants in the second wave of the *Brazilian Longitudinal Study of Aging* (ELSI-Brazil), and from a telephone survey on coronavirus (ELSI-COVID-19 initiative) was used. ELSI-Brazil is a home-based cohort, whose sample was designed to represent the Brazilian population aged 50 years and over. The sampling used a complex design, combining stratification by municipalities, census areas, and households. The survey baseline was conducted in 2015-2016, with 9,412 participants. The second wave of ELSI-Brazil started in August 2019, but was interrupted in March 2020 by the epidemic, with 9,144 interviews completed. ELSI-COVID-19 initiative, conducted between 26th May and 8th June 2020, included information on the reasons for leaving the house in the previous week, with one answer option being to go to work. All the participants in ELSI-Brazil who had been in paid employment before the epidemic were eligible to take part. Paid employment was considered to be any activity with remuneration in cash, products, goods or benefits. More details are available in a previous publication<sup>6</sup>.

### Study variables

The dependent variable was leaving home to go to work in the previous week, and was categorized as yes or no, in response to ELSI-COVID-19 initiative. The independent variables included: age (50-59, 60-69 or  $\geq 70$  years); sex; education (0-7, 8-11 or  $\geq 12$  years); marital status (living or not with spouse/partner); per capita income ( $< 2$  minimum wages, or  $\geq 2$  minimum wages); self-rated health, defined by the question "In general, how do you evaluate your health?", categorized as good (excellent/very good/good) and bad (fair/bad/very bad); and type of employment in the previous 12 months, categorized as formal (with a formal contract), self-employed (self-employed or in a family enterprise) and informal (without a formal contract). All of these characteristics were reported in the second wave ELSI-Brazil interview.

## Data analysis

The unadjusted analysis for differences between proportions was based on the chi-square test with Rao-Scott correction. The multivariate analysis was based on the odds ratios (OR) estimated through binary logistic regression. All analyses were performed separately for men and women. The estimates were made using the Stata 14.0 statistical package (<https://www.stata.com>) considering the effect of the study design and the derived weights for the participants who completed the telephone survey.

ELSI-Brazil (CAAE 34649814.3.0000.5091) and the telephone survey ELSI-COVID-19 initiative (CAAE: 33492820.3.0000.5091) were approved by the Research Ethics Committee of the René Rachou Institute of the Oswaldo Cruz Foundation, Minas Gerais.

## Results

Among the 9,144 participants in the second wave of ELSI-Brazil, 1,494 were in paid work at the time of the interview and were selected for this analysis. Of these, 1,431 had complete information for the variables of interest and were included in the analysis. The average age of the participants was 59.9 years (standard deviation – SD = 6.5) and the male gender predominated (52.9%). The prevalence of leaving home to work in the last week was 38.4% (95% confidence interval – 95%CI: 31.3-46.1), 50.2% among men and 25.1% among women ( $p < 0.001$ ). Leaving home to work was significantly associated with age among men, and with the type of employment among women (Table 1).

As shown in Table 2, after adjustments for potential confounding variables, age showed a statistically significant association with going to work among men (OR = 0.27; 95%CI: 0.15-0.48 for the age group of 60-69 years, compared to 50-59 years). Women who were self-employed (OR = 0.28; 95%CI: 0.12-0.64) and those in informal employment (OR = 0.25; 95%CI: 0.09-0.69) were less likely to have gone to work in the last week.

## Discussion

The results showed a higher prevalence of going out to work during the epidemic among male participants. Among men, going work was not associated with the type of employment. However, it showed a significant association with age. Among women, the likelihood of going out to work was greater among those in formal employment, compared to those with informal employment or self-employment.

In this study, the likelihood of going to work was lower among men aged 60 -69 compared to those aged 50-59 years. Self-employment tends to increase with age, especially for men <sup>7</sup>. This fact may partially explain the results. These workers may have chosen not to leave the house to work during the epidemic, as they are part of the at-risk group. Another possible explanation is the fact that they are carrying out their activities remotely.

In Brazil, after the epidemic started, informal work dropped from 51.6% in April to 49.7% in May 2020<sup>8</sup>. The people most affected by the epidemic are the self-employed, those with low incomes, those who cannot work remotely, and women <sup>8</sup>. The present study partially corroborates these findings by showing that the likelihood of going out to work during the epidemic, was lower for women in informal employment or who were self-employed.

The COVID-19 epidemic in Brazil exposed the vulnerability of informal workers, shown by the lack of social protection and the impossibility of receiving social security. Women are doubly vulnerable, as they make up the majority of workers in the informal sector, in jobs such as housekeepers, and caregivers for older people <sup>9</sup>. According to a survey conducted by the Brazilian Institute for Applied Economic Research (IPEA), 70% of female domestic professionals are employed on an informal basis or are or self-employed <sup>9</sup>.

The lower likelihood found in this study of Brazilian female workers aged 50 years and over who are in informal work, or are self-employed, going out to work during the epidemic can be explained by the fact that these women were made dismissed from their jobs as they were not deemed essential

**Table 1**

Sociodemographic characteristics, self-rated health and type of employment among participants in the telephone survey of the *Brazilian Longitudinal Study of Aging* (ELSI-COVID-19 initiative), according to sex and the condition of going out to work in the last week. May 26<sup>th</sup> to June 8<sup>th</sup>, 2020.

Variables	Total (%) [n = 1,431]	Men [n = 762]		p-value	Women [n = 669]		p-value
		Out to work			Out to work		
		No (%) [n = 408]	Yes (%) [n = 354]		No (%) [n = 524]	Yes (%) [n = 145]	
Age (years)							
50-59	69.9	40.8	59.2	< 0.001	72.5	27.5	685.000
60-69	25.2	73.2	26.8		79.1	20.9	
≥ 70	4.9	54.8	45.2		86.3	13.7	
Education (years)							
0-7	30.3	51.1	48.9	0.525	81.3	18.7	0.378
8-11	24.6	44.1	55.9		74.7	25.3	
≥ 12	45.1	53.1	46.9		72.3	27.7	
Marital status				0.848			0.484
Without partner	31.2	50.7	49.3		77.9	22.1	
With partner	68.8	49.6	50.4		72.3	27.7	
Per capita income (minimum wages)				0.170			0.309
< 2	62.9	45.2	54.8		78.1	21.9	
≥ 2	37.1	58.5	41.5		70.0	30.0	
Self-rated health							
Bad	31.8	58.9	41.1	0.112	78.0	22.0	0.475
Good	68.2	45.8	54.2		73.3	26.7	
Type of employment relationship							
Formal	35.6	48.1	51.9	0.636	58.4	41.6	0.002
Self-employed	30.3	54.0	46.0		83.1	16.9	
Informal	34.1	48.0	52.0		84.6	15.4	

Note: all estimates considered the sample parameters and the weights of individuals specifically derived for those who answered the telephone interview.

p-value: chi-square test with Rao-Scott correction for differences between proportions.

activities. Another possible explanation is that these women may have been receiving emergency financial aid, which compensated for a large part of the potential loss of household income caused by the epidemic in the country <sup>10</sup>. According to IPEA data, the average amount of aid received by Brazilian families was BRL 846.50, which corresponds to 77.5% of the average income of self-employed workers, and is 21.2% higher than the average income of domestic workers <sup>10</sup>.

Forecasts suggest that the post-epidemic job market will be characterized by an increase in telework and informal activities, together with an increase in unemployment and a significant drop in family income, impacting the most vulnerable <sup>10</sup>. The findings of this study highlight the importance of continuing public policies that guarantee adequate social protection for informal and self-employed workers, especially women.

**Table 2**

Results of the multivariate analyses of the associations between going out to work in the last week, sociodemographic characteristics, self-rated health and type of employment among participants in the telephone survey of the *Brazilian Longitudinal Study of Aging* (ELSI-COVID-19 initiative), according to sex. 26<sup>th</sup> May to 8<sup>th</sup> June 2020.

Variables	Men		Women	
	OR	95%CI	OR	95%CI
Age (years)				
50-59	1.00	-	1.00	-
60-69	0.27	0.15-0.48 *	0.64	0.23-1.72
≥ 70	0.57	0.25-1.33	0.52	0.07-3.90
Education (years)				
0-7	1.00	-	1.00	-
8-11	1.21	0.79-1.84	1.11	0.55-2.25
≥ 12	0.92	0.42-2.00	0.97	0.45-2.10
Marital status				
Without partner	1.00	-	1.00	-
With partner	0.98	0.64-1.51	1.28	0.55-2.98
Per capita income (minimum wages)				
< 2	1.00	-	1.00	-
≥ 2	0.62	0.29-1.33	1.10	0.50-2.41
Self-rated health				
Bad	1.00	-	1.00	-
Good	1.89	0.85-4.21	1.51	0.68-3.39
Type of employment relationship				
Formal	1.00	-	1.00	-
Self-employed	0.87	0.47-1.62	0.28	0.12-0.64 **
Informal	1.09	0.64-1.87	0.25	0.09-0.69 **

95%CI: 95% confidence interval; OR: odds ratio, estimated by binary logistic regression.

Note: number of respondents = 1,431 (762 men and 669 women)

\*  $p < 0.001$ ;

\*\*  $p < 0.05$ .

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All authors contributed to data analysis, writing and final revision of the text.

## Additional informations

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## Resumo

O objetivo do estudo foi examinar a prevalência e fatores associados a ter saído para trabalhar durante a epidemia da COVID-19, entre adultos com 50 anos ou mais que exerciam trabalho remunerado antes do seu início. Foram utilizados dados da segunda onda do Estudo Longitudinal da Saúde dos Idosos Brasileiros (ELSI-Brasil), conduzida por meio de entrevista face a face, entre agosto de 2019 e março de 2020 (antes do início da epidemia), em amostra nacional representativa de adultos com 50 anos ou mais, e dados obtidos por meio de entrevistas telefônicas realizadas entre esses participantes (iniciativa ELSI-COVID-19), conduzidas entre 26 de maio e 8 de junho de 2020 (durante a epidemia). As análises foram baseadas nas odds ratios (OR) estimadas pela regressão logística. A média de idade dos participantes foi 59,9 anos (DP = 6,5). A prevalência de ter saído para trabalhar nos sete dias anteriores foi de 38,4% (IC95%: 31,3-46,1), 50,2% entre os homens e 25,1% entre as mulheres (trabalho formal, por conta própria e informal). Os resultados mostraram que, entre os homens, a chance de ter saído para trabalhar foi menor entre aqueles de 60 a 69 anos em comparação com aqueles de 50 a 59 anos (OR = 0,27; IC95%: 0,15-0,48). Entre as mulheres, a probabilidade de ter saído para trabalhar foi menor entre aquelas que trabalhavam por conta própria (OR = 0,28; IC95%: 0,12-0,64) ou tinham vínculo informal de trabalho antes da epidemia (OR = 0,25; IC95%: 0,09-0,69), em comparação àquelas com vínculo formal de trabalho. Uma das hipóteses para explicar essa associação é que as mulheres com vínculo informal tenham sido dispensadas e aquelas que trabalhavam por conta própria tenham deixado de trabalhar durante a epidemia.

Envelhecimento; COVID-19; Trabalho; Inquéritos Epidemiológicos

## Resumen

El objetivo del estudio fue examinar la prevalencia y factores asociados a haber salido para trabajar durante la epidemia de la COVID-19, entre adultos con 50 años o más, que ejercían trabajo remunerado antes del inicio de la misma. Se utilizaron datos de la segunda fase del Estudio Brasileño Longitudinal del Envejecimiento (ELSI-Brasil), llevada a cabo mediante una entrevista cara a cara, entre agosto de 2019 y marzo de 2020 (antes del inicio de la epidemia), en una muestra nacional representativa de adultos con 50 años o más, y datos obtenidos por medio de entrevistas telefónicas realizadas entre estos participantes (iniciativa ELSI-COVID-19), realizadas entre el 26 de mayo y 8 de junio de 2020 (durante la epidemia). Los análisis se basaron en las odds ratios (OR) estimadas por regresión logística. La media de edad de los participantes fue 59,9 años (DP = 6,5). La prevalencia de haber salido para trabajar durante los siete días anteriores fue de un 38,4% (IC95%: 31,3-46,1), 50,2% entre hombres y un 25,1% entre las mujeres (trabajo formal, por cuenta propia e informal). Los resultados mostraron que, entre los hombres, la oportunidad de haber salido a trabajar fue menor entre aquellos con edades comprendidas entre los 60 a 69 años, en comparación con aquellos de 50 a 59 años (OR = 0,27; IC95%: 0,15-0,48). Entre las mujeres, la probabilidad de haber salido a trabajar fue menor entre aquellas que trabajaban por cuenta propia (OR = 0,28; IC95%: 0,12-0,64) o tenían un vínculo laboral informal antes de la epidemia (OR = 0,25; IC95%: 0,09-0,69), en comparación con aquellas con un vínculo laboral formal. Una de las hipótesis para explicar esta asociación es que las mujeres con un vínculo informal fueron dispensadas del servicio y aquellas que trabajaban por cuenta propia hayan dejado de trabajar durante la epidemia.

Envejecimiento; COVID-19; Trabajo; Encuestas Epidemiológicas

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