

Age and schooling are associated with job loss in the initial months of the COVID-19 pandemic in Brazil

Idade e escolaridade estão associadas à perda de emprego nos meses iniciais da pandemia de COVID-19 no Brasil

La edad y la escuela están asociadas a la pérdida de empleo en los primeros meses de la pandemia COVID-19 en Brasil

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Jéssica Andrade Cardoso Scotti Ferreira

ORCID: <https://orcid.org/0000-0003-2533-8000>

Universidade Federal de São Carlos, Brazil

E-mail: jessica.scotti@estudante.ufscar.br

Marcela Alves Andrade

ORCID: <https://orcid.org/0000-0002-1527-6865>

Universidade Federal de São Carlos, Brazil

E-mail: maandrade@ufscar.br

Cristiane Shinohara Moriguchi de Castro

ORCID: <https://orcid.org/0000-0001-6812-1771>

Universidade Federal de São Carlos, Brazil

E-mail: cristiane.moriguchi@ufscar.br

Vivian Aline Mininel

ORCID: <https://orcid.org/0000-0001-9985-5575>

Universidade Federal de São Carlos, Brazil

E-mail: vivian.aline@ufscar.br

Tatiana de Oliveira Sato

ORCID: <https://orcid.org/0000-0001-8797-8981>

Universidade Federal de São Carlos, Brazil

E-mail: tatisato@ufscar.br

Abstract

Brazil was one of the countries most affected by the social and economic crisis caused by the COVID-19 pandemic. This study aimed to verify the association between job loss and region of the country, sex, age, educational status, marital status, and parenting in Brazilian workers during the initial months of the COVID-19 pandemic. This cross-sectional online study was performed with data from workers aged 18 years or older in any economic sector and different occupations. A sociodemographic and occupational questionnaire was applied. Data collection began on June 2020 and ended on September 2020. To estimate the degree of association between job loss and the region of the country and workers' characteristics, binomial logistic regression analysis was performed to obtain the odds ratio (OR) and confidence intervals. The sample was composed of 1319 participants and of these, 108 (8.2%) lost their jobs in the initial months of the pandemic; 51.6% were female; 53.5% were married; 42.5% reported having children; 80.7% had a complete college education. The age and educational status were associated with job loss, with younger and less educated workers being more affected by unemployment. For women, age and educational status were associated with job loss, for men only educational status showed a significant association. Young workers, mainly women, and with less educational status were the most affected by unemployment at the beginning of the pandemic in Brazil. Thus, this group of workers proved to be more vulnerable and should be prioritized by public policies.

Keywords: Unemployment; Educational status; Occupational health.

Resumo

O Brasil foi um dos países mais afetados pela crise social e econômica causada pela pandemia da COVID-19. Este estudo teve como objetivo verificar a associação entre perda de emprego e região do país, sexo, idade, escolaridade, estado civil e parentalidade em trabalhadores brasileiros durante os meses iniciais da pandemia de COVID-19. Este estudo transversal online foi realizado com dados de trabalhadores com 18 anos ou mais de qualquer setor econômico e diferentes ocupações. Foi aplicado um questionário sociodemográfico e ocupacional. A coleta de dados teve início em junho de 2020 e término em setembro de 2020. Para estimar o grau de associação entre perda de emprego e região do país e características do trabalhador, foi realizada análise de regressão logística binomial para obtenção da odds ratio (OR) e intervalos de confiança. A amostra foi composta por 1.319 participantes e destes, 108 (8,2%) perderam o

emprego nos meses iniciais da pandemia; 51,6% eram do sexo feminino; 53,5% eram casados; 42,5% relataram ter filhos; 80,7% tinham ensino superior completo. A idade e a escolaridade estiveram associadas à perda de emprego, sendo os trabalhadores mais jovens e com menor escolaridade os mais afetados pelo desemprego. Para as mulheres, a idade e a escolaridade estiveram associadas à perda de emprego, para os homens apenas a escolaridade apresentou associação significativa. Os trabalhadores jovens, principalmente mulheres, e aqueles com menor escolaridade foram os mais afetados pelo desemprego no início da pandemia no Brasil. Portanto, esse grupo de trabalhadores mostrou-se mais vulnerável e deveria ser priorizado pelas políticas públicas.

Palavras-chave: Desemprego; Escolaridade; Saúde ocupacional.

Resumen

Brasil fue uno de los países más afectados por la crisis social y económica provocada por la pandemia de COVID-19. Este estudio tuvo como objetivo verificar la asociación entre pérdida de empleo y región del país, género, edad, educación, escolaridad y paternidad en trabajadores brasileños durante los primeros meses de la pandemia de COVID-19. Este estudio transversal en línea se realizó con datos de trabajadores de 18 años o más de cualquier sector económico y diferentes ocupaciones. Se aplicó un cuestionario sociodemográfico y ocupacional. La recolección de datos se inició en junio de 2020 y finalizó en septiembre de 2020. Se realizó un análisis descriptivo; para estimar el grado de asociación entre la pérdida de empleo y la región del país y las características de los trabajadores, se realizó un análisis de regresión logística binomial para obtener odds ratios (OR) e intervalos de confianza. La muestra estuvo compuesta por 1.319 participantes y de estos, 108 (8,2%) perdieron su empleo en los meses iniciales de la pandemia; el 51,6% eran mujeres; el 53,5% estaban casados; el 42,5% refirió tener hijos; el 80,7% había completado la educación superior. La edad y la escolaridad se asociaron con la pérdida de empleo, siendo los trabajadores más jóvenes y con menor escolaridad los más afectados por el desempleo. Para las mujeres, la edad y la escolaridad se asociaron con la pérdida del empleo; para los hombres, solo la escolaridad mostró una asociación significativa. Los trabajadores jóvenes, principalmente mujeres, y aquellos con menor escolaridad fueron los más afectados por el desempleo al inicio de la pandemia en Brasil. Por lo tanto, este grupo de trabajadores resultó ser más vulnerable y debería ser priorizado por las políticas públicas.

Palabras clave: Desempleo; Escolaridad; Salud laboral.

1. Introduction

The COVID-19 pandemic has spread rapidly around the world since late 2019, generating job instability and serious consequences in labor relations and the economy, since physical distancing, social isolation, and quarantine were necessary to control the spread of the virus (Brazil, 2021). In Brazil, the first confirmed death from COVID-19 occurred on March 12nd, and a state of public calamity was decreed on March 18th, 2020. From March on, measures to suppress the pandemic were adopted in a fragmented way by states and municipalities. There was no national coordination; states and municipalities alternate in moments of flexibilization between June and July 2020, despite the increase in the number of deaths that occurred between July and April and some stability between July and November (Bueno et al., 2021).

These measures caused restrictions on the movement of people and economic activities (Galandra et al., 2020; Souza, 2021). The greatest economic impact occurred for small businesses, which account for 27% of Gross Domestic Product (GDP), 98% of formalized businesses, 44% of formal jobs, and 50% of trade sector compensation (Brazil, 2021), as they were less prepared to withstand the abrupt interruption of activities (Schreiber et al., 2021). To minimize the effects of the pandemic, the government implemented a provisional measure (No. 936, April 1, 2020) with several conditions for employees and employers to avoid permanent layoffs. The parties should agree whether there would be a proportional reduction in salary or a temporary suspension of the work contract. The government also released access to unemployment insurance if the worker had suspension or reduced income for two months, with the amount paid equivalent to the employee's salary (Brazil, 2021).

Measures to maintain the population income were applied; workers who had their work contracts suspended, were fired or unable to perform their outsourced and autonomous activities, had financial benefits by the federal government (Brazil, 2021). Even so, the pandemic generated a decrease in family income; outsourced contracts were terminated; many workers were promptly dismissed; self-employed who depended on the movement of people to maintain their income suddenly became unemployed generating an economic and social crisis (Schreiber et al., 2021; Erkkola et al., 2023).

The first most affected region in Brazil was the Southeast region, especially the city of São Paulo, which had the first case of COVID-19 and is also the most populous in Brazil, with about 11% of the national population (Brazil, 2021). The Southeast region is famous for tourism, hospitality, gastronomy, and entertainment, which were the most affected sectors by the pandemic restrictions. This region was the first to have cases of COVID-19 and was also considered the main point of the spread of the pandemic in Brazil. Afterwards, all other regions were affected, mainly the Amazon state (Orellana et al., 2021).

Studies conducted in Europe show that women's jobs were less affected than the men's one in all countries of the continent, since in these countries women occupy more essential activities than men (Palomino et al., 2020). In Brazil, on the other hand, it is noted that essential sectors are mostly occupied by men. Thus, Brazilians' women are expected to be more prone to unemployment during the pandemic (Prates et al., 2020). Workers' educational status, which is generally associated with occupation and income, reveals that extremely low or high educational levels may be associated with unemployment. Other aspects such as marital status and parenting have not yet been investigated (Estrela et al., 2020). Therefore, the objective of this study was to verify the association between job loss at the beginning of the COVID-19 pandemic in Brazil (June to September 2020) and the sociodemographic characteristics of the workers. The study hypothesized that there would be an association between job loss and the investigated variables.

2. Methodology

This is an observational cross-sectional study, reported according to the recommendations of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) initiative (Malta et al., 2010). This study used baseline data from a cohort called "IMPLications of the COVID-19 PANdemic on psychosocial factors and work Capacity of Brazilian workers - IMPPAC" (Andrade et al., 2022). Workers aged 18 years or older who agreed to participate in any economic sector were included. Trainees, students, fellows, workers who did not live in Brazil, retirees, pensioners, and people who were not working before the pandemic were excluded from the study.

The project was approved by the Committee for Ethics in Human Research of the Federal University of São Carlos (CAAE: 31885020.9.0000.5504). The research followed all the norms established by Resolution 510/2016 of the National Health Council (Brazil, 2016).

For data collection, a sociodemographic and occupational questionnaire was used with questions about the city, state, gender, age, number of children, marital status, educational status, work before the pandemic, current job, and unemployment due to the pandemic. The questions were objective to facilitate understanding and agility in the answers.

Data collection began on June 29th and ended on September 29th, 2020. The survey was widely publicized through social networks (Facebook, Instagram, WhatsApp), email, and media (television and local newspapers). The forms were applied via Google Forms. The Informed Consent Form (ICF) was inserted into the form, read by the research participant and he selected an option that informed his consent or refusal to participate in the research, then, he could download a copy of this form signed by the researcher.

A descriptive analysis was performed by calculating the mean, standard deviation, and frequencies. To estimate the degree of association between job loss and the region of the country and workers' characteristics, binomial logistic regression analysis was performed to obtain the odds ratio (OR) and confidence intervals (95% CI). Initially, a univariate regression analysis was performed, considering each of the factors separately. The factors associated with unemployment in the univariate analysis ($P < 0.20$) were included in the multivariate analysis. An analysis stratified by the factors of sex and having children was also performed. The binomial logistic regression analysis assumptions were tested to investigate the presence of multicollinearity and outliers. All statistical analyses were performed using the SPSS software (version 26.0).

3. Results

The sample was composed of 1319 participants, and 108 (8.2%) lost their jobs in the initial months of the pandemic. Most were female (51.6%), aged between 18 to 75 years; 53.5% were married; 42.5% reported having children; 80.7% had a complete college education and 46.2% lived in the Southeast region (Table 1).

Table 1 - Sociodemographic data of the research participants (n=1319).

Characteristics	n	%
Sex		
Female	681	51.6
Male	638	48.4
Age		
18-30 years	389	29.5
31-40 years	487	36.9
41-50 years	260	19.7
51-60 years	151	11.4
>60 years	32	2.4
Marital status		
Married/live with partner	706	53.5
Single/divorced/widowed	613	46.5
Have children	561	42.5
Educational status		
Non-university	254	19.3
University	1065	80.7
Currently working		
Yes	1211	91.8
No	108	8.2
Brazilian Region		
North	53	4.0
North East	115	8.7
Midwest	322	24.4
Southeast	610	46.2
South	219	16.6

Source: Authors (2024).

Table 2 shows the univariate and multivariate logistic regression analysis results indicating the association between job loss at the beginning of the pandemic and the sociodemographic variables. The association between job loss and sociodemographic characteristics showed that age and educational status were associated with job loss. Participants who lost their jobs had a mean age of 32.4 years (SD=9.2), while participants who did not lose their jobs had a mean age of 37.7 years (SD=10.5); thus, younger participants had a greater chance of job loss in the pandemic. Regarding educational status, approximately 20% of the participants with non-university education lost their jobs, while among the participants with a complete university education, job loss was 5%, indicating that job loss was greater among workers with lower educational status.

Table 2 - Uni- and multivariate association between job loss at the beginning of the pandemic and sociodemographic variables.

Variables	Univariate		Multivariate	
	OR (IC 95%)	P	OR (IC 95%)	P
Sex				
Male*	-	-		
Female	0.86 (0.58-1.27)	0.45		
Age	0.94 (0.92-0.97)	<0.01	0.96 (0.94-0.99)	0.01
Marital Status				
Single/divorced/widowed*	-	-		
Married/live with partner	0.55 (0.37-0.82)	<0.01	0.76 (0.47-1.23)	0.26
With children				
No*	-	-		
Yes	0.62 (0.41-0.95)	0.03	1.07 (0.59-1.92)	0.84
Educational status				
Non-university*	-	-		
University	0.24 (0.16-0.35)	<0.01	0.32 (0.20-0.49)	<0.01
Region				
North*	-	0.01	-	0.02
North West	0.17 (0.04-0.71)	0.02	0.25 (0.06-1.03)	0.05
Midwest	0.93 (0.39-2.21)	0.87	1.29 (0.52-3.22)	0.59
Southeast	0.51 (0.22-1.20)	0.12	0.81 (0.32-2.02)	0.65
South	0.45 (0.17-1.17)	0.10	0.59 (0.21-1.62)	0.31

*reference. Source: Authors (2024).

Table 3 presents the results of the logistic regression analysis stratified by gender. Age and educational status were associated with job loss for women. For men, only education was associated with job loss. Women who lost their jobs had a mean age of 32.1 years (SD=10.3), while women who did not lose their jobs had a mean age of 38.8 years (SD=10.3); thus, younger women had a greater chance of losing their jobs during the pandemic. Regarding educational status, approximately 26% of women and 17% of men with no-university education lost their jobs, while among participants with a complete university education, job loss was 5% for women and 6% for men.

Table 3 - Association between job loss at the beginning of the pandemic and sociodemographic variables, stratified by sex.

Stratification by sex	Univariate		Multivariate	
	OR (IC 95%)	P	OR (IC 95%)	P
Women				
Age	0.92 (0.89-0.96)	<0.01	0.95 (0.91-0.99)	0.02
Marital Status				
Single/divorced/widowed*	-	-		
Married/live with partner	0.48 (0.27-0.86)	0.01	0.60 (0.31-1.17)	0.14
With children				
No*	-	-		
Yes	0.61 (0.34-1.10)	0.10	1.20 (0.52-2.78)	0.67
Educational status				
Non-university*	-	-		
University	0.15 (0.08-0.28)	<0.01	0.21 (0.11-0.42)	<0.01
Region				
North*	-	0.09		
North West	0.00 (0.00-0.71)	0.99		
Midwest	1.04 (0.34-3.22)	0.94		
Southeast	0.47 (0.15-1.48)	0.20		
South	0.42 (0.11-1.58)	0.20		
Men				
Age	0.96 (0.93-0.99)	<0.01	0.98 (0.94-1.01)	0.19
Marital Status				
Single/divorced/widowed*	-	-	-	-
Married/live with partner	0.63 (0.36-1.10)	0.10	0.90 (0.45-1.80)	0.77
With children				
No*	-	-	-	-
Yes	0.65 (0.36-1.20)	0.17	1.04 (0.46-2.34)	0.93
Educational status				
Non-university*	-	-	-	-
University	0.33 (0.19-0.58)	<0.01	0.39 (0.22-0.71)	<0.01
Region				
North*	-	0.35		
North West	0.28 (0.05-1.51)	0.14		
Midwest	0.79 (0.21-2.99)	0.73		
Southeast	0.51 (0.14-1.86)	0.31		
South	0.45 (0.11-1.86)	0.27		

*reference. Source: Authors (2024).

Table 4 presents the logistic regression analysis results stratified by the variable having children. Educational status was associated with job loss for both workers with and without children. Among workers without children, 21% with no-

university education and 7% with university education lost their jobs. For workers that are parents, 17% with no-university education and 4% of workers with university education lost their jobs.

Table 4 - Association between job loss at the onset of the pandemic and sociodemographic variables, stratified into having or not having children.

Stratification by parenting	Univariate		Multivariate	
	OR (IC 95%)	P	OR (IC 95%)	P
Without children				
Sex				
Male*				
Female	0.92 (0.57-1.49)	0.73		
Age	0.93 (0.89-0.97)	<0.01	0.97 (0.93-1.01)	0.09
Marital Status				
Single/divorced/widowed*	-	-		
Married/live with partner	0.65 (0.38-1.13)	0.13	0.96 (0.53-1.71)	0.88
Educational status				
Non-university*	-	-		
University	0.26 (0.16-0.42)	<0.01	0.34 (0.19-0.59)	<0.01
Region				
North*	-	0.01	-	0.05
North West	0.11 (0.02-0.59)	0.01	0.19 (0.04-1.07)	0.06
Midwest	0.73 (0.27-1.96)	0.53	1.12 (0.39-3.22)	0.83
Southeast	0.34 (0.13-0.90)	0.03	0.62 (0.22-1.78)	0.38
South	0.32 (0.11-0.94)	0.04	0.49 (0.16-1.52)	0.22
With children				
Sex				
Male*	-	-		
Female	0.86 (0.43-1.71)	0.67		
Age	0.94 (0.91-0.98)	<0.01	0.96 (0.92-1.01)	0.09
Marital Status				
Single/divorced/widowed*	-	-	-	-
Married/live with partner	0.53 (0.25-1.12)	0.10	0.51 (0.23-1.10)	0.09
Educational status				
Non-university*	-	-		
University	0.21 (0.10-0.43)	<0.01	0.27 (0.13-0.58)	<0.01
Region				
North*	-	0.40		
North West	0.54 (0.03-8.95)	0.66		
Midwest	2.30 (0.29-18.2)	0.43		
Southeast	1.45 (0.18-11.5)	0.73		
South	0.96 (0.10-9.67)	0.97		

*reference. Source: Authors (2024).

4. Discussion

The pandemic exacerbated existing social inequities, such as young workers' difficulty in remaining employed, engaged in the work and economically active (Park and Cho, 2022; Pedroso, 2020; Obuobisa-Darko & Sokro, 2023). The findings of the present study indicated that job loss at the beginning of the COVID-19 pandemic in Brazil affected younger and less educated workers more intensely. In Brazil, one in six young people are out of work and/or have stopped working since the start of the pandemic (Pedroso, 2020). Similarly, young Korean workers presented several causes for being economically inactive during the pandemic, such as discouragement in job search, childcare, and household chores and studies (Park and Cho, 2022). In addition to being more affected by unemployment, young people enter the labor market through temporary or precarious bonds that were not favored by social protection policies during the pandemic (O'Keeffe et al., 2022).

Workers with lower educational status were more likely to lose their jobs. This was expected since the lower level of education may be associated with less formal employment relationships, such as found in a study carried out on food delivery drivers in India (Parwez, 2022). However, our findings did not confirm the results of other authors, who observed that very high educational level was associated with higher unemployment (Prates et al., 2020).

The sex was not associated with job loss, indicating that men and women were equally affected by unemployment in the initial months of the pandemic. These findings were not expected, as other studies have estimated that job loss was higher among women compared to men (Cerqueira, 2020; Dang, 2021; Abraham et al., 2022; Kuroishi et al., 2022). The divergence in results between the present study may be related to the recruitment of volunteers, as 80% of our sample had a completed university degree. Studies showing a higher risk of unemployment in women during the pandemic also present educational level as a risk (Kuroishi et al., 2022). In the stratified analysis by sex, job loss was associated with age and education for women. A similar result was found in an Italian and a German study that associated psychosocial vulnerability factors for women, younger age, and lower education with a higher risk of job loss due to pandemic COVID-19 (Pomilli et al., 2022; Bäuerle et al., 2020). On the other hand, women's higher age was associated with job loss in another study with a sample size of over 20.000 participants (Ksinan et al., 2021).

The loss of employment and income among women is worrisome since there was an increase in female-headed households from 25% in 1995 to 45% in 2018 (Melo, 2021). Similarly, other study showed that job loss was more frequent among women, younger people, black people, and those with lower levels of education (Barbosa et al., 2020). For men, only schooling was associated with job loss. In Portugal, a study also showed that men are less affected by unemployment because they are dominant in the labor market, have greater social protection, and are less exposed to informal jobs (Cerqueira, 2020).

The variable having children was not associated with unemployment, a factor that cannot be considered as an indicator of unemployment risk in this study. Similarly, the region of the country was also not associated with a higher risk of unemployment. The findings can be partially explained by the low participation of workers from the North and Northeast regions of the country (Santana et al., 2022). The analysis stratified by the variable parenting showed that educational status was associated with job loss for workers with and without kids. We expected to find a greater association with job loss for women parents because of work-family conflict, as the burden of domestic responsibilities on women increased significantly with the pandemic, especially those with young children (Lonska et al., 2021), which was not confirmed.

The present study did not investigate the type of work, type of employment relationship, workload and race. These factors are relevant to unemployment, so more research must be done to identify the aspects of vulnerability for the proposition of public policies focused on employment and income.

5. Conclusion

The age and educational level of workers were associated with job loss in June-September 2020 in Brazil. The most affected by unemployment were younger workers, especially women with lower educational level. Thus, this group of workers proved to be more vulnerable and, therefore, should be prioritized by public policies for employment and income.

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