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Influence of changes in occupational status during the COVID-19 pandemic on suicidal narrative, suicide crisis syndrome, and suicidal ideation in Brazil

Influências das mudanças no *status* ocupacional durante a pandemia de COVID-19 nos sintomas da narrativa suicida, síndrome da crise suicida e ideação suicida no Brasil

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Abstract *This article aims to examine differences in suicidal narrative and suicide crisis syndrome symptoms, and suicidal ideation among those who maintained, lost, and gained employment or student status during the COVID-19 pandemic. It is a cross-sectional study based on an online and anonymous self-report questionnaire. Participants were recruited through social media platforms between November 2020 and October 2021. Changes in occupational status were assessed in 2,259 individuals. The sample was divided into four groups according to work (full-time/part-time) and study status (1) maintained, (2) lost, (3) gained, and (4) unemployed. Suicide outcomes were investigated by the Suicidal Narrative Inventory, Suicide Crisis Inventory, and Columbia - Suicide Severity Rating Scale Screener version. Changes in occupational status influenced symptoms of the suicide crisis syndrome and suicidal narrative, but not suicidal ideation. Those who maintained their work, such as full-time/part-time scored lower on the total scores of the Suicidal Narrative Inventory and Suicide Crisis Inventory-2 compared to those who lost their employed status and unemployed. Our findings suggest that it is appropriate to consider changes in employed status as a mental health risk factor during pandemics.*

Key words *Changes in occupation, Mental health, Suicidal ideation*

Resumo *O objetivo do artigo é examinar diferenças nos sintomas da narrativa suicida e da síndrome de crise de suicídio e ideação suicida entre aqueles que mantiveram, perderam e ganharam emprego ou status educacional durante a pandemia de COVID-19. Trata-se de um estudo transversal baseado em um questionário online. Os indivíduos foram recrutados por meio de plataformas de mídia social entre novembro de 2020 e outubro de 2021. As mudanças no status ocupacional foram avaliadas em 2.259 indivíduos. A amostra foi dividida em grupos de acordo com as mudanças do status ocupacional: (1) aqueles que mantiveram, (2) aqueles que perderam, (3) aqueles que ganharam e (4) desempregados. Desfechos suicidas foram avaliados através do Inventário da Narrativa Suicida, Inventário da Crise Suicida e Columbia – Escala de Classificação da Gravidade do Suicídio. Mudanças no status ocupacional influenciaram sintomas da síndrome de crise de suicídio e narrativa suicida, mas não a ideação suicida. Aqueles que mantiveram seu emprego apresentaram menos sintomas de narrativa suicida e síndrome de crise de suicídio, comparados aos que perderam o emprego e aos desempregados. Esses achados sugerem que é apropriado considerar mudanças no status ocupacional como fator de risco para saúde mental durante pandemias.*

Palavras-chave *Mudanças na ocupação, Saúde mental, Ideação suicida*

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Introduction

The lockdowns positively controlled the COVID-19 pandemic, with a more significant effect in countries where confinement started early and was more restrictive[1]. Previous studies demonstrated that insecurity at work, long periods of isolation, and uncertainty about the future worsened the psychological situation[2-7]. In Brazil, the outbreak has exacerbated existing health, political, economic, and social problems[8]. In the first quarter of the pandemic, there were 14.805 million unemployed in Brazil[9]. Furthermore, it is estimated that up to 1.7 million jobs were reduced, with the lower socio-economic strata of the population bearing the most problematic consequences[10]. Individuals who lost their jobs and income reduction had to deal with limited resources and change their routines to deal with numerous new challenges[11,12].

Occupational status and educational level are critical markers of success in adulthood[13]. In previous studies, occupational status was a determinant of worse self-rated health, addictions, and poor mental health outcomes[14]. Castelpietra et al. showed that employment is a protective factor for psychiatric hospitalizations and the diagnosis of severe mental disorders[15]. Regardless, certain occupational groups are at elevated risk of suicide compared with the general employed population (e.g., laborers, cleaners, machine operators, and agricultural workers)[16]. Nonetheless, most studies still have not investigated if changes in occupational status can be associated with suicidal ideation in the general population. Understanding the impacts of occupational status changes (e.g., work and study) through a theoretical framework can help to elucidate the relationship between work/education changes and suicide-related outcomes.

The Narrative-Crisis Model is one such model, which is a stepwise model of the progression from chronic to near-term suicidal risk. This model comprises three central components: chronic risk factors, suicidal narrative, and suicide crisis syndrome (SCS)[17,18]. The SCS is a negative cognitive-affective state associated with imminent suicidal behavior in those at high risk for suicide[17]. The SCS comprises several interrelated symptoms, including entrapment, affective disturbance, loss of cognitive control, hyperarousal, and social withdrawal[19]. Indeed, SCS is proposed as a unidimensional syndrome that proved promising as a new suicide-specific condition[20-22]. Individuals with chronic risk factors for suicide are likely to develop a subacute cognitive state of self-concerning others, termed suicidal narrative[23,24]. The suicidal narrative progresses from the frustration of treasured goals and the inability to re-orient toward new, more feasible goals to feelings of social defeat, humiliation, thwarted belongingness, and perceived burdensomeness[17,24]. It was previously proposed that the suicidal narrative and SCS have a reciprocally aggravating effect on one another, culminating in suicide[23].

Thus, this study aimed to examine differences in suicidal narrative and SCS symptoms, and suicidal ideation among those who maintained, lost, and gained employment or educational status during the COVID-19 pandemic in Brazil. In addition, we compared symptoms of narrative suicidal, suicide crisis syndrome, and suicidal ideation between workers and the unemployed. We hypothesized that (1) individuals who lost their jobs or educational status would have more elevated symptoms of the suicidal narrative and SCS when compared to those who maintained this status; (2) changes in occupational status during the COVID-19 pandemic would have mental health implications that would influence suicidal ideation.

Methods

Survey procedure

This is an online cross-sectional study on occupational status changes due to the implementation of the COVID-19 pandemic. This study was secondary data analysis of the International Suicide Prevention Assessment Research for COVID-19 (ISPARC) collaboration[25]. Participants completed this study anonymously using Qualtrics, a web interface. The survey link was available online for eleven months, from November 2020 to October 2021. Recruitment occurred via advertisements with links to the survey on social media (i.e., Facebook, Instagram, WhatsApp, and e-mail list to universities). Men and women over 18 years old, able to complete the consent form and complete the form with demographic information and self-report measures, were included. There were no specific exclusion criteria; however, adults who could not consent and children and adolescents were excluded (n = 81).

Our sample consisted of 2,259 individuals who were divided into groups: (1) those who maintained full-time (n = 844) part-time (n =

161) work or students (n = 1,153) both before and during the pandemic; (2) those who had full-time (n = 134) part-time (n = 108) work or students (n = 73) before the pandemic but who lost that employment/educational status during the pandemic; (3) those who did not have full-time (n = 95) part-time (n = 147) work, or students status (n = 122) before the pandemic, but who gained that employment/educational status during the pandemic; and (4) those who are not workers or who were unemployed both before and during the pandemic (n = 129). The same individual could work (full-time/part-time) and/or study.

Table 1. Sample demographics.

	n	%
Gender		
Female	1,592	70.2
Male	641	29.0
Other	18	0.8
Region Brazil		
South	934	42.2
Southeast	789	35.7
Northeast	294	13.3
Midwest	141	6.4
North	55	2.5
Educational attainment		
Basic education	84	3.7
Technical course	15	0.7
Graduation in progress	803	35.5
Bachelor's degree	661	29.3
Master's degree (M.Sc.)	469	20.8
Doctorate (Ph.D.)	225	10.0
Marital status		
Single	872	38.6
Married	539	23.9
Dating	461	20.6
Living together	298	13.2
Divorced or separated	76	3.4
Widowed	8	0.4
Test positive for COVID-19	80	3.54
Suggestive clinical diagnosis	9	0.39
Suicidal ideation	247	10.93
Suicide attempt		
In lifetime	283	12.57
In the last month	30	1.32

Source: Authors.

Measures evaluated

Occupational status and demographic information

Sociodemographic information was collected before individuals completed the self-report measures. This information included questions about age, gender, region of residence, educational attainment, marital status, and a positive test for COVID-19 (Table 1). Changes in occupational status were investigated based on current employment/ educational status (at the time of the survey) and before the implementation of the COVID-19 pandemic. For this, the participants answered: "What was your occupation before your state was affected by the COVID-19 pandemic?" and "What is your current occupation?" The participants could respond to these two questions, selecting options such as unemployed, students, full-time homemaker, volunteer work, part-time work, full-time work, and retired (Table 2).

For assessments of the constructs of suicidal narrative and suicide crisis syndrome, we use the following scales: The Suicidal Narrative Inventory (SNI) assesses the suicidal narrative, a coherent cognitive structure in which the self-representation becomes sufficiently distressing that suicide becomes a viable option [20]. The Suicide Crisis Inventory-2 (SCI-2) asses the symptoms of suicide crisis syndrome, a negative mental state associated with suicidal thoughts and behaviors[20,23].

Abbreviated Suicidal Narrative Inventory (SNI)

The Abbreviated SNI measures the six components of the suicidal narrative utilizing a 5-point Likert scale ranging from 1 (*not at all true*) to 5 (*extremely true*)23. The abbreviated SNI includes 38 items grouped into subscales: perceived burdensomeness, thwarted belongingness, social defeat, humiliation, goal disengagement, and goal re-engagement. In this study, the total score of the SNI was used in all analyses. How suicidal narrative combine factors gathered from other theories of suicide (e.g., the interpersonal theory and the integrated motivational-volitional theory) that itself has not yet been empirically tested [20], also analysis was performed of all subscales of suicidal narrative (Table 3).

Suicide Crisis Inventory-2 (SCI-2)

The SCI-2 is a 61-item self-report questionnaire that assesses the presence of the symptoms of Suicide Crisis Syndrome (SCS). Items are rated on a 5-point Likert scale ranging from 1 (*not at all true*) to 5 (*extremely true*) in five subscales:

Table 2. Occupational status by participants before and during implementation of the COVID-19 pandemic.

	n (%)			
	Before n = 2,259	**During** n = 2,259	χ^2	***p* value**
Unemployed				
Yes	192 (8.5)	243 (10.8)	14.12	< 0.001
No	2,067 (91.5)	2,016 (89.2)		
Student				
Yes	1,226 (54.3)	1,275 (56.4)	11.81	0.001
No	1,033 (45.7)	984 (43.6)		
Full-time Homemaker				
Yes	58 (2.6)	105 (4.6)	35.86	< 0.001
No	2,201 (97.4)	2,154 (95.4)		
Full-time work				
Yes	978 (43.3)	939 (41.6)	6.30	0.012
No	1,281 (56.7)	1,320 (58.4)		
Part-time work				
Yes	271 (12.0)	310 (13.7)	5.66	0.017
No	1,988 (88.0)	1,949 (86.3)		
Volunteer work			3.06	0.80
Yes	64 (2.8)	77 (3.4)		
No	2,195 (97.2)	2,182 (96.6)		
Retired			8.10	0.002
Yes	34 (1.5)	44 (1.9)		
No	2,225 (98.5)	2,215 (98.1)		

Values obtained after application of the McNemar test.

Source: Authors.

The scale comprises five subscales: entrapment, affective disorder, loss of cognitive control, hyperarousal, and social withdrawal [26]. The SCI-2 total score was used in all analyses.

Columbia – Suicide Severity Rating Scale (C-SSRS)

The C-SSRS is a semi-structured interview considered the gold standard that measures the severity of suicidal phenomena [27]. In the self-report screener version, a rating scale of 0 to 5 measures the severity of suicidal ideation, ranging from death ideations, suicidal ideations, consideration of a method, suicidal intent, and the presence of suicidal ideation with a plan and intentions to act on this plan. In the present study, for descriptive data, individuals who reported scores greater than 2 were considered to have current suicidal ideation. Additionally, the C-SSRS total score was used to analyze the comparison differences of the changes in occupational status. Thus, suicidal ideation ranged from the passive wish to die to an action plan.

Data analysis

The database used the IBM Statistical Package for the Social Sciences (SPSS) version 23.0 (IBM Corp., 2012). A descriptive analysis of the variables was performed with measures of the frequency and percentage for categorical variables and the mean and standard deviation for quantitative variables. The Shapiro-Wilk test was used to assess the distribution of all variables regarding normality. For the evaluation of changes in occupational status (before and after the COVID-19 pandemic), the McNemar test was used. The differences in SCI-2, SNI, and C-SSRS scores were compared across the groups (changes in occupational status) with a Kruskal-Wallis H test, followed by Dunn's post hoc test, when significant. Missing data were minimal and handled via listwise deletion after application of Little's MCAR Test χ^2 =156,431 DF = 2, $p < 0.001$. All inferential analyses were performed with a significance level of $\alpha = 0.05$.

Risk

The main risk of this study concerns individuals who could experience psychological discomfort during data collection. Therefore, to assure the safety of participants, national and local resources for suicide were provided in the information sheet at the beginning and end of the study. Particularly, contact and link to the program of the *Centro de Valorização da Vida* (CVV) and the *Núcleo de Prevenção às Violências e Promoção da Saúde* (NUPREVISPS) were presented.

Ethical issues

The Research Ethics Committee approved this study from UNESC (*Universidade do Extremo Sul Catarinense*) number 4.275.326. Participation in the research was voluntary, and there was no remuneration.

Results

A total sample included 2259 participants whose mean age was 31.14 years (SD = 10.94), 70.2% (n = 1,592) were female, 42.2% (n = 934) lived in the Southern, 35.7% (n = 789) in the Southeast, 13.3% (n = 294) in the Northeast, 6.4% (n = 141) in the Midwest, and 2.5% (n = 55) in the North regions of Brazil. The educational level of survey respondents was 35.4% (n = 803) graduation in

Table 3. Effects of changes in occupational status during the COVID-19 pandemic in subscales of the SNI.

Variables	Occupational status	Full-time work			Part-time work			Student		
		n	Mean ± SD	*p* value	n	Mean ± SD	*p* value	n	Mean ± SD	*p* value
Perceived Burdensomeness										
	Maintained	844	13.99 ± 3.23[a]	< 0.001	161	14.79 ± 3.50[a]	< 0.001	1,153	15.54 ± 3.43[a]	0.015
	Loss	134	14.93 ± 3.29[b]		108	14.92 ± 3.77[a]		73	15.15 ± 3.04[a]	
	Gained	95	14.48 ± 3.12[a, b]		147	14.90 ± 3.28[a]		122	14.67 ± 3.50[b]	
	Unemployed	129	16.64 ± 3.45[c]		129	16.64 ± 3.45[b]		-	-	
	Total	1,202	14.42 ± 3.35		545	15.28 ± 3.56		1,348	15.44 ± 3.42	
Thwarted Belongingness										
	Maintained	844	10.70 ± 4.05[a]	< 0.001	161	12.78 ± 4.46[a]	< 0.001	1,153	13.61 ± 4.55[a]	0.008
	Loss	134	12.51 ± 4.52[b]		108	12.93 ± 4.75[a]		73	12.71 ± 5.07[a,b]	
	Gained	95	12.16 ± 4.60[a,b]		147	12.82 ± 4.53[a]		122	12.26 ± 4.14[b]	
	Unemployed	129	15.89 ± 4.35[c]		129	15.89 ± 4.35[b]		-	-	
	Total	1,202	11.58 ± 4.49		545	13.56 ± 4.69		1,348	13.44 ± 4.56	
Social Defeat										
	Maintained	844	14.51 ± 2.87[a]	< 0.001	161	15.23 ± 2.86[a]	< 0.001	1,153	15.75 ± 2.93	0.781
	Loss	134	15.00 ± 2.73[a]		108	15.64 ± 3.10[a,b]		73	15.86 ± 2.99	
	Gained	95	15.23 ± 3.02[a]		147	14.96 ± 2.76[a]		122	15.54 ± 2.76	
	Unemployed	129	16.38 ± 2.96[b]		129	16.38 ± 2.96[b]		-	-	
	Total	1,202	14.82 ± 2.93		545	15.51 ± 2.95		1,348	15.74 ± 2.91	
Humiliation										
	Maintained	844	14.93 ± 2.49	0. 032	161	15.06 ± 2.39	0.222	1,153	15.22 ± 2.56	0.486
	Loss	134	15.41 ± 2.18		108	15.24 ± 2.91		73	15.52 ± 2.41	
	Gained	95	15.24 ± 2.73		147	15.08 ± 2.16		122	15.04 ± 2.34	
	Unemployed	129	15.41 ± 2.46		129	15.41 ± 2.46		-	-	
	Total	1,202	15.06 ± 2.48		545	15.18 ± 2.46		1,348	15.22 ± 2.54	
Goal Disengagement										
	Maintained	844	8.63 ± 2.26[a]	< 0.001	161	9.34 ± 2.46[a]	0.001	1,153	9.90 ± 2.41[a]	0.013
	Loss	134	9.24 ± 2.37[a]		108	9.62 ± 2.22[a]		73	9.57 ± 2.39[a]	
	Gained	95	9.25 ± 2.31[a]		147	9.58 ± 2.42[a]		122	9.26 ± 2.46[b]	
	Unemployed	129	10.38 ± 2.30[b]		129	10.38 ± 2.30[b]		-	-	
	Total	1,202	8.93 ± 2.34		545	9.71 ± 2.39		1,348	9.83 ± 2.42	
Goal Re-Engagement										
	Maintained	170	15.45 ± 2.80	0.418	161	16.06 ± 2.60	0.395	1,153	15.84 ± 2.80	0.426
	Loss	37	15.79 ± 2.78		108	15.65 ± 2.43		73	16.12 ± 2.73	
	Gained	19	15.56 ± 2.52		147	15.97 ± 2.61		122	16.01 ± 3.00	
	Unemployed	65	15.59 ± 3.12		129	15.59 ± 3.12		-	-	
	Total	291	15.51 ± 2.81		545	15.84 ± 2.71		1,348	15.87 ± 2.81	

[a,b,c] Statistically significant differences between the pairwise comparison of occupation changes are indicated by different superscript letters; Values were obtained after application of the Kruskal-Wallis H test followed by the Dunn post hoc test ($p \leq 0.05$); Abbreviations: SCI-2, Suicide Crisis Inventory-2; SNI, Suicidal Narrative Inventory; C-SSRS; Columbia Suicide Risk Rating Scale.

Source: Authors.

progress, 29.3% (n = 661) bachelor's degree, and 20.1% (n = 469) a master's degree. Regarding marital status, 38.9% (n = 872) were single, 23.7% (n = 539) were married, and 20.8% (n = 461) were dating. Only 3.54 % (n = 80) of all participants have been diagnosed with COVID-19. According to C-SSRS, 10.93 % (n = 247) had suicidal ideation. Regarding suicide attempts, 12.57% (n = 283) of participants tried to kill themselves in their lifetime, and 1.32 (n = 30) of these were in the last month (Table 1).

The mean of the SNI total was 111.42 (SD = 18.00), the SCI-2 total was 160.05 (SD = 58.65), and the C-SSRS score total was 2.40 (SD = 1.45).

In addition, Cronbach's alpha was calculated to evaluate our sample's consistency. The results showed that SNI and SCI-2 achieved excellent internal consistency in our sample (Cronbach's alpha SNI was 0.85, and SCI-2 was 0.99) (Table 4).

Table 2 shows the occupational status of the participants before and during the implementation of COVID-19 in Brazil. According to the McNemar test, there was a change in sample proportion of unemployment ($\chi^2(1) = 14.124$; $p < 0.001$), of students ($\chi^2(1) = 11.815$; $p < 0.001$), of full-time homemaker ($\chi^2(1) = 35.864$; $p < 0.001$), part-time work ($\chi^2(1) = 5.663$; $p = 0.017$), retired ($\chi^2(1)$ 8.100; $p = 0.002$) in full-time work ($\chi^2(1) = 6.306$; $p = 0.012$), before and during of the COVID-19 pandemic.

Table 5 shows the effects of changes in occupational status before and during the COVID-19 pandemic on the total SNI, SCI-2, and C-SSRS scores. According to the results of the Kruskal-Wallis H test, the group of individuals with **full-time work** showed statistical differences in the SNI total score when compared to the occupational status of the participants (χ^2 (3) = 97.37; $p < 0.001$). Pairwise comparisons demonstrated that the total score from SNI was higher in those who lost than in those who maintained their jobs ($p < 0.001$). In addition, the unemployed participants had an SNI total score higher than those who maintained, lost, or gained their work ($p < 0.001$). The Kruskal-Wallis H test also revealed differences in the SNI when comparing their occupational status in the individuals with

Table 4. SCI-2, SNI and C-SSRS scores by sample.

	n	Mean ± SD	95%CI
SCI-2 total	2,259	160.05 ± 58.65	160.36-162.78
SNI total	2,259	111.42 ± 18.00	111.42-112.16
C-SSRS total	613	2.40 ± 1.45	2.29-2.52

Abbreviations: SCI-2, Suicide Crisis Inventory-2; SNI, Suicidal Narrative Inventory; C-SSRS; Columbia Suicide Risk Rating Scale.

Source: Authors.

Table 5. Effects of changes in occupational status during the COVID-19 pandemic in SNI, SCI-2, and C-SSRS.

Variables	Occupational status	Full-time work			Part-time work			Student		
		n	Mean ± SD	*p* value	n	Mean ± SD	*p* value	n	Mean ± SD	*p* value
SNI total score										
	Maintained	844	106.07 ± 16.92[a]	< 0.001	161	112.98 ± 17.69[a]	< 0.001	1153	115.83 ± 17.61	0.167
	Lost	134	112.31 ± 17.47[b]		108	113.56 ± 19.99[a]		73	115.06 ± 17.50	
	Gained	95	110.87 ± 17.58[a, b]		147	112.31 ± 15.84[a]		122	112.64 ± 18.36	
	Unemployed	129	121.97 ± 17.41[c]		129	121.97 ± 17.41[b]		-	-	
	Total	1,202	108.85 ± 17.83		545	114.81 ± 18.04		1348	115.36 ± 17.69	
SCI-2 total score										
	Maintained	844	145.28 ± 56.07[a]	< 0.001	161	162.95 ± 57.68[a]	< 0.001	1153	173.44 ± 57.54	0.163
	Lost	134	166.77 ± 57.58[b]		108	171.75 ± 61.51[a]		73	170.28 ± 60.15	
	Gained	95	157.87 ± 57.36[a, b]		147	165.81 ± 55.68[a]		122	163.21 ± 56.24	
	Unemployed	129	192.42 ± 56.67[c]		129	192.42 ± 56.67[b]		-	-	
	Total	1,202	153.73 ± 58.35		545	172.44 ± 58.70		1348	172.35 ± 57.60	
C-SSRS										
	Maintained	170	2.25 ± 1.42	0.115	45	2.40 ± 1.61	0.308	388	2.46 ± 1.44	0.699
	Lost	37	2.35 ± 1.41		32	2.28 ± 1.41		18	2.66 ± 1.23	
	Gained	19	1.78 ± 1.31		40	2.87 ± 1.47		33	2.45 ± 1.50	
	Unemployed	65	2.66 ± 1.61		65	2.66 ± 1.61		-	-	
	Total	291	2.33 ± 1.47		182	2.57 ± 1.55		439	2.46 ± 1.43	

[a,b,c] Statistically significant differences between the pairwise comparison of occupation changes are indicated by different superscript letters; Values were obtained after application of the Kruskal-Wallis H test followed by the Dunn post hoc test ($p \leq 0.05$); Abbreviations: SCI-2, Suicide Crisis Inventory-2; SNI, Suicidal Narrative Inventory; C-SSRS; Columbia Suicide Risk Rating Scale.

Source: Authors.

part-time work (χ^2 (3) =28.45; $p < 0.001$), being that pairwise comparisons showed that the unemployed had a high SNI total score than those who maintained ($p < 0.001$), lost ($p = 0.003$), or gained ($p < 0.001$) their work. However, the occupational status did not significantly change the SNI score in the group of **students**.

The Kruskal-Wallis H test also demonstrated that the SCI-2 total score changes according to occupational status in the **full-time work** group (χ^2 (3) = 78.98; $p < 0.001$), and the unemployed individuals showed an elevated SCI-2 total score than those who maintained ($p < 0.001$), lost ($p = 0.006$), or gained ($p < 0.001$) their work. It is important to point out that participants who lost their job had an SCI-2 higher than those who maintained their positions ($p < 0.001$). The group with **part-time workers** also demonstrated differences in the SCI-2, according to the Kruskal-Wallis H test (χ^2 (3) = 20.33; $p < 0.001$). Pairwise comparisons found that those unemployed had SCI-2 higher than those who maintained ($p < 0.001$), lost ($p = 0.040$), or gained ($p = 0.001$) work. However, there were no statistical differences between occupational status on the SNI score in the group of **students**.

However, there were no statistically significant differences between changes in occupation status for **full-time work**, **part-time work,** and **student** groups on C-SSRS total score.

Discussion

The main purpose of this study was to assess the effects of changes in occupation status on suicidal narrative and suicide crisis syndrome (SCS) symptoms, and suicidal ideation. Our results showed that during the COVID-19 pandemic, there was an increase in unemployment, students, homemakers, part-time workers, and retired, as well as a decrease in full-time workers among the sample assessed. Our findings also showed that the changes in occupational status influenced suicidal narrative and SCS symptoms, but not suicidal ideation. In particular, individuals who lost full-time work have high SCS symptoms compared to those who maintained full-time work. On the other hand, no significant difference between those who gained and those who maintained employment on suicidal narrative and SCS symptoms. Similarly, no significant differences among all changes in educational status on suicidal narrative and SCS symptoms and suicidal narrative. In addition, the unemployed had higher symptoms of the suicidal narrative and SCS than workers.

Previous studies showed that changes in occupation are related to changes in physical and mental health[28-30]. Indeed, we found here that the individuals who maintained full-time work had fewer symptoms of the suicidal narrative and SCS than those who lost full-time work. Similarly, Marck et al. report that employment loss was prospectively associated with poorer mental health[31]. Also, temporary employment was significantly associated with persistent suicidal ideation but not with newly developed suicidal ideation[32]. This can be explained by the relationship between loss of employment and the decrease in income[33]. Financial strain can lead to depression, anxiety, poor mental health, shame, and guilt in high-status groups[33-35]. We suggest that people who have lost full-time work may need additional mental health assessment and support during economic change, including future pandemics[36].

Changes in occupational status in the part-time work group did not demonstrate significant differences in the suicidal narrative, SCS symptoms, and suicidal ideation. In addition, it is important to note that the number of individuals in the part-time work group increased. We found no other studies that evaluate the impact of part-time work changes (lost, gain) on mental health outcomes. However, Owens et al. showed that loss of part-time work predicted food insecurity[37]. On the other hand, when compared to full-time work, nonstandard work (part-time work, temporary work, and daily work) was associated with depression/suicidal ideation for women and suicidal ideation for men[38]. Additionally, part-time workers reported the greatest rates of fair/poor health[39]. In the present study, it is possible part-time work was not the only source of income for these individuals; that way, it could not affect their mental health.

Compared to the unemployed, the results of the present study showed that both the full-time and part-time workers had fewer symptoms of suicidal narrative and suicide crisis syndrome. This is in line with a cohort study that found that workers had a lower risk of urgent and involuntary psychiatric hospitalization when compared to the undeployed[15]. Similarly, part-time employment was associated with lower levels of depression compared to unemployment[40]. In addition, the unemployed had lower quality of life and mental health and a higher risk of suicidal ideation than employed individuals[41]. However, unemployment and insecure employment may

be risks to mental health. For instance, Yoon et al. showed that individuals who became precarious part-time workers were more likely to have suicidal ideation than those who remained permanent workers[42]. At this point, our findings replicate data from the literature on unemployment as one of the predictive factors of poor mental health.

The data from the present study showed that the educational status changes were not statistically significant in suicidal narrative and SCS symptoms. We also found no studies that examined the impact of educational status changes on students' health. To our knowledge, this is the first study to show this issue. However, college students may experience various mental health problems associated with their individual, study, and social experiences[43]. In contrast, higher education students had lower average psychological distress than those who did not[44]. It can partly be explained by higher education students' better socioeconomic conditions[45]. Also, young people with pre-existing mental disorders are less likely to attend higher education[46].

Despite suicidal narrative and SCS demonstrating important differences between occupational status, the suicidal ideation among workers, unemployed, or students did not alter by changes in occupational status. Recently, SCI total had a significant positive relationship with suicidal behavior[47]. Thus, SCS was proposed as an alternative method of detecting suicide risk[21,26,48]. Indeed, the combination of both SCS and suicidal ideation was associated with higher rates of suicide attempts during the one-month follow-up period[49]. Therefore, together SCS and suicidal ideation are more informative in identifying who may be at risk for engaging in suicidal behavior[49,50]. The suggestion for the results found here is that suicidal ideation is a more extreme outcome; nonetheless, the changes in employment status may lead to subtle mental health changes, which, combined with other risk factors, may lead to suicidal phenomena[51,52]. Corroborating this hypothesis, suicidal ideation was associated with employees with pre-existing mental health conditions[53]. We understand that the individuals evaluated here were part of a heterogeneous group of the Brazilian community. Thus, the lack of suicidal ideation alteration according to the changes in occupational status could be explained by suicidal ideation being a less common occurrence for non-psychiatric individuals[54,55].

Overall, it is generally accepted that the COVID-19 pandemic disproportionately affected the population[56]. Families with economic difficulties and work changes experienced modifications in parent-child relationship dynamics that influenced emotional well-being[57]. A meta-analysis found no evidence that the blocks reduced positive psychological functioning, such as well-being, life satisfaction, or well-being[58]. The innate capacity for psychological resilience, combined with feelings of support through texting, social media, and video conferencing, may have been a critical factor in the small effect of lockdown on mental health symptoms[59].

Several limitations are considered in this study: (1) the evaluation was based on self-report online, implying various forms of bias *per se;* (2) the cross-sectional nature of the analysis limited retrospective information; (3) since the occupation category of the participants was not differentiated, we were prevented from performing more detailed tests of worker status; (4) this study specifically examined the effects of changes in occupational status without considering factors that could influence the outcome of suicidal ideation; (5) the psychiatric history of the participants was not investigated; (6) although the research was open, the sampling technique adopted here enhanced the participation of university students; thus, the external validity of our results may be limited to the changes in an occupation that occur in the university environment; (7) the sample size of the occupational status change groups is unequal. Although the literature is inconclusive, the power to detect significant effects may be limited.

While further research is needed to confirm the generalizability of our results, our data suggest that changes in occupational status during the COVID-19 pandemic influenced symptoms of the suicidal narrative and suicide crisis syndrome, specifically in full-time work. Therefore, primary healthcare professionals would do well to consider changes in occupational status as a mental health risk factor during pandemics.

Collaborations

J Peper-Nascimento: conceptualization, data curation, formal analysis, investigation, methodology, writing-original draft, review and editing of the manuscript. ML Rogers: conceptualization, formal analysis, review and editing of the manuscript. K Madeira: data curation, formal analysis, review and editing of the manuscript. GS Keller: research, methodology, project administration, review and editing of the manuscript. J Richards: conceptualization, methodology, project administration, software, supervision. LB Ceretta: conceptualization, methodology, resources, review and editing of the manuscript. J Quevedo: financing, resources, review and editing of the manuscript. I Galynker: conceptualization, financing, methodology, project administration, supervision, validation, review and editing of the manuscript. SS Valvassori: conceptualization, methodology, project administration, resources, supervision, writing, review and editing of the manuscript.

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