

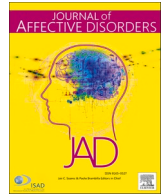


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Research paper

## The impact of Covid-19 on unemployment across Italy: Consequences for those affected by psychiatric conditions



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## ABSTRACT

**Background:** Severe psychological and psychosocial consequences of the COVID-19 pandemic are expected, especially for people already vulnerable to biological or psychosocial stressors, including those with mental health problems. The study aimed to investigate factors associated with the loss of jobs and unemployment during the COVID-19 pandemic. In particular, we investigated whether mental illness was associated with a higher risk of losing one's job because of the COVID-19 pandemic.

**Methods:** Nineteen thousand four hundred ninety-six adults living in Italy were administered an online protocol including a sociodemographic checklist and questionnaires investigating suicide ideation and risk, mental health status and general distress (stress, anxiety, and depression), resilience, and perceived support.

**Results:** One thousand two hundred seventy-four reported having lost their job because of the COVID-19 pandemic, and 5.4% of the sample reported a mental illness (mostly a depressive disorder). Unemployment was independently associated with mental illness, poor mental health, and depression. Mental illness was associated with the risk of losing one's job because of the COVID-19 pandemic, but not at the multivariate analyses. Those who lost their job because of the COVID-19 pandemic (compared to others) reported worse mental health and depression.

**Limitations:** The presence of mental illness was self-reported by respondents and the administered measures were self-reported questionnaires affected by social desirability and other response bias.

**Conclusions:** The COVID-19 pandemic and social isolation measures and lockdown used to contain its spread among the Italian population were associated with occupational insecurity, especially among the more vulnerable social categories.

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## Introduction

In a recent statement, the WHO (2021) indicated that the COVID-19 pandemic has presented an unprecedented challenge to public health and the world of work, with nearly half of the world's global workforce being at risk of losing their livelihoods. In this situation, the effects on the psychological health of the contagion, the fear of being infected, or of the measures of quarantine and social isolation can be evident, as supported by studies investigating past pandemics (e.g., SARS and Ebola) (Barbisch et al., 2015; Gorwood and Fiorillo, 2021). More specifically, Fiorillo and Gorwood (2020) suggested that severe psychological and psychosocial consequences are expected, especially for people already vulnerable to biological or psychosocial stressors, including those with mental health problems.

Literature has indicated that poor health, mainly as a consequence of mental disorder, could be associated with higher unemployment (Chatterji et al., 2007; Claussen, 1999; Goldberg et al., 2001; Heponiemi et al., 2007; Leino-Arjas et al., 1999; Thomas et al., 2005; Zhang et al., 2009) and this, in turn, could be associated with higher risk of suicide (Elbogen et al., 2020; Lundin et al., 2012). Especially during times of economic hardship, people with mental illness could be the most disadvantaged in term of unemployment and financial insecurity (Evans-Lacko et al., 2013; Knapp and Wong, 2020; Viinamaki et al., 2000).

The COVID-19 pandemic harmed the global economy, including an increase in the unemployment rate (International Labour Organization, 2020; International Monetary Fund, 2020) and great challenges in the labour market (Brenner and Bhugra, 2020; Crayne, 2020; Kaur et al., 2020; Ksinan Jiskrova et al., 2021). Furthermore, the COVID-19 pandemic was also associated with other factors influencing mental health and fears of increase in suicide risk, such as social distancing and quarantine measures (Brooks et al., 2020; Daly et al., 2021; Li et al., 2020; McIntyre and Lee, 2020; Pompili, 2021; Unutzer et al., 2020).

Now, according to several researchers, all these factors could lead to an epidemic of suicide ideation and behaviors (Kawohl and Nordt, 2020; McIntyre and Lee, 2020; Samson and Sherry, 2020). For example, in a recent publication Job, Steptoe, and Fancourt (2020) investigated abuse, self-harm, and thoughts of suicide/self-harm in the UK during the first month of the COVID-19 pandemic using data from the COVID-19 Social Study (n=44 775) and reported that 18% of respondents experienced thoughts of suicide or self-harm in the first month of lockdown and 5% reported harming themselves at least once since the start of the lockdown.

Thus, the study aimed to investigate factors associated with the loss of one's job and unemployment during the COVID-19 pandemic. In particular, we investigated whether mental illness was associated with a higher risk of losing one's job because of the COVID-19 pandemic and whether geographic variations were visible (i.e., northern Italian regions vs. central Italian regions vs. southern regions and major islands). We hypothesized that people with poor health (i.e., those with psychiatric illnesses) have a higher risk of being unemployed and losing their job because of the COVID-19 pandemic. We also hypothesized that unemployment and job loss could be associated with a higher risk of suicide ideation, higher levels of general distress (i.e., depression, anxiety and distress), and lower general health levels.

## Methods

This is a cross-sectional study part of the Covid Mental Health Trial (COMET), a national trial coordinated by the University of Campania "Luigi Vanvitelli" (Naples) in collaboration with nine Italian universities. Information about the design of the COMET collaborative network study can be found in Giallonardo et al. (2020) and Fiorillo et al. (2020). The research design of the study has been approved by the Ethical Review Board of the University of Campania "L. Vanvitelli".

## Participants

The participants were 19,496 adults (14,017 women and 5,479 men) living in Italy. Mean age of the sample was 39.0 years (SD=13.2; age range=18/83 years). Sociodemographic characteristics are reported in Table 1. Participants were recruited according to a snowball sampling method within an online survey. Inclusion criterion was being 18 years and older. No exclusion criteria were defined for the recruitment of the sample. The full methodology is described in detail in Giallonardo et al. (2020).

## Measures

All the participants were administered an online protocol described elsewhere (Fiorillo et al., 2020). For this study, we analyzed socio-demographic information (sex, age, marital status, school attainment, working status, and area of residence) and clinical information (positivity for the COVID-19 virus, presence of physical and mental illness), epidemiological data (number of positives of COVID-19 in the Italian regions), and data from the following psychological tests: the General Health Questionnaire – 12 items version (GHQ) (Goldberg et al., 1997), the Depression Anxiety Stress Scales (DASS-21) (Lovibond and Lovibond, 1995), the Connor Davidson Resilience Scale (CD-RISC) (Connor and Davidson, 2003), the Multidimensional Scale of Perceived Social Support (MSPPS) (Zimet et al., 1990), and the Suicidal Ideation Attributes Scale (SIDAS) (van Spijker et al., 2014). Two questions assessed the working status of the participants. People were asked whether they were unemployed at the time of the assessment and in people who responded positively it was asked whether they loss their job because of the spread of the COVID-19 pandemic. The presence of mental and physical health problems was self-reported by participants.

The GHQ (Goldberg et al., 1997) is a 12-item questionnaire assessing mental health status. Each item is rated on a 4-point Likert-type scale (0-3). A total score is calculated, and higher scores are indicative of worse mental health status. The Italian version of the GHQ proved to be a reliable scale with a Cronbach's alpha of 0.81 (Politi et al., 1994). In the present sample Cronbach's alpha was 0.73.

The DASS-21 (Lovibond and Lovibond, 1995) is a 21-item questionnaire assessing three dimensions of psychopathology: depression, anxiety, and stress. Each item is rated on a 4-level Likert-type scale (0-3). We calculated a total score as an index of general distress, and scores for the three dimensions (i.e., depression, anxiety, and stress). The Italian version of the DASS-21 demonstrated good psychometric properties (e.g., internal consistency and convergent validity) (Bottesi et al., 2015). In the present sample Cronbach's alpha was 0.82.

The CD-RISC (Connor and Davidson, 2003) is a 10-item scale assessing resilience. Each item is rated on a 6-level Likert-type scale, and higher scores indicate higher levels of resilience. The Italian CD-RISC demonstrated good internal consistency (Cronbach's alpha of 0.89) and convergent validity (Di Fabio and Palazzeschi, 2012). A total score was calculated with higher scores indicating higher levels of resilience. In the present sample Cronbach's alpha was 0.85.

The MSPPS (Zimet et al., 1990) is a 12-item scale measuring perceived support. Each item is rated on a 7-level Likert-type scale, and higher scores indicate higher levels of perceived support. The Italian MSPPS demonstrated good internal consistency and concurrent validity in clinical and nonclinical populations (De Maria et al., 2018; Di Fabio and Busoni, 2008; Di Fabio and Palazzeschi, 2015). We calculated a total score with higher scores indicating higher levels of perceived support. In the present sample Cronbach's alpha was 0.94.

The SIDAS (van Spijker et al., 2014) is a 5-item scale assessing frequency, controllability, closeness to attempt, and level of distress associated with suicidal ideation. Participants are asked to respond on a 10-level Likert-type scale. Higher scores are indicative of higher suicide risk. The SIDAS demonstrated good internal consistency and convergent validity in Australian (van Spijker et al., 2014) and Chinese

**Table 1**  
Characteristics of the sample.

	Whole Sample	Whole Sample	Unemployed N=3065	Others N=16431	Test	Significance	Effect size	Others N=18222	Lose job N=1274	Test	Significance	Effect size
	N	%	N	%				N	%			
<b>Sex</b>						<0.04	phi=0.01				<0.001	phi=0.03
Males	5479	28.1%	26.8%	28.4%				28.5%	22.4%			
Females	14017	71.9%	73.2%	71.6%				71.5%	77.6%			
<b>Age - M±SD</b>	39.04	13.18	31.25±11.69	40.49±12.93	t <sub>4577.97</sub> =-36.85	<0.001	d=0.75	39.13±13.23	37.69±12.36	t <sub>1484.36</sub> =4.01	<0.001	d=0.11
<b>Marital status</b>					χ <sup>2</sup> <sub>2</sub> =941.61	<0.001	v=0.22			χ <sup>2</sup> <sub>2</sub> =18.60	<0.001	v=0.03
Divorced or widowed	1542	7.9%	5.0%	8.4%				7.8%	9.5%			
Single	7922	40.6%	65.6%	36.0%				40.3%	44.7%			
Married	10032	51.5%	29.4%	55.6%				51.9%	45.8%			
<b>School attainment</b>					χ <sup>2</sup> <sub>2</sub> =388.78	<0.001	v=0.15			χ <sup>2</sup> <sub>2</sub> =82.10	<0.001	v=0.07
≤8 years	351	1.8%	3.0%	1.7%				1.7%	3.9%			
≤13 years	6156	31.6%	47.7%	30.3%				32.5%	41.8%			
≥16 years	12095	62.0%	49.3%	68.0%				65.8%	54.3%			
<b>Unemployed</b>	3065	15.7%	-	-	-	-	-	-	-	-	-	-
<b>Lost job because the COVID-19 pandemic</b>	1274	6.5%	-	-	-	-	-	-	-	-	-	-
<b>Geographic location</b>					χ <sup>2</sup> <sub>2</sub> =127.96	<0.001	v=0.08			χ <sup>2</sup> <sub>2</sub> =47.75	<0.001	v=0.05
Northern regions	8013	41.1%	33.3%	42.6%				41.7%	32.9%			
Central regions	6075	31.2%	31.5%	31.1%				31.1%	32.3%			
Southern regions and major islands	5408	27.7%	35.2%	26.3%				27.2%	34.9%			
<b>Positive for COVID-19 virus</b>	286	1.5%	0.8%	1.6%		<0.001	phi=0.03	1.5%	1.3%		0.39	phi=0.003
<b>Physical illness</b>	2602	13.3%	10.5%	13.9%		<0.001	phi=0.04	13.3%	14.0%		0.26	phi=0.01
<b>Mental illness</b>	1050	5.4%	7.4%	5.0%		<0.001	phi=0.04	5.3%	7.2%		0.002	phi=0.02
<b>Suicide ideation</b>	2809	14.4%	14.9%	14.3%		0.20	phi=0.01	14.3%	15.6%		0.11	phi=0.01
<b>Number of Positives for COVID-19 in the Region of residence - M±SD</b>	3852.91	930.67	3837.21±957.69	3855.84±925.54	t <sub>19494</sub> =-1.02	0.31	-	3850.86±926.57	3882.23±987.30	t <sub>1434.23</sub> =-1.10	0.25	-

Bonferroni correction for multitestung: p=0.05/17=0.0029. In bold significant tests.

(Han et al., 2017) adults. We dichotomized responses to the item no. 1 (i.e., how often have thoughts about suicide) and reported frequencies and percentages of those who endorsed a frequency  $\geq 1$  indicating the presence of suicide ideation. In the present sample Cronbach's alpha was 0.82.

*Statistical analysis*

All the analyses were performed with the statistical package for social sciences (SPSS) 19.0. A series of one-way Fisher exact tests, chi-squared tests, and independent sample t-tests were used to assess differences between groups at the bivariate level (people who were unemployed at the time of the assessment vs. other respondents, and those who lose one's job because the COVID-19 pandemic vs. others). Bonferroni correction was used for controlling multitemesting. Cohen's d, Cramer's v, and phi coefficients were reported as measures of effect sizes. Small effect sizes were indicated by  $d \geq 0.2$  or  $v|\phi \geq 0.1$ , medium effect sizes by  $d \geq 0.5$  or  $v|\phi \geq 0.3$ , and large effect sizes by  $d \geq 0.8$  or  $v|\phi \geq 0.5$ .

Variables significant at the bivariate analyses were included as independent variables in two generalized linear models (with a robust estimator) used to fit a binary logistic regression (binomial distribution and logit link function were used). Job status (unemployed vs. others) and loss of one's job because the COVID-19 pandemic (those who lost their jobs vs. others) were included in the analyses as a criterion. Odds ratios (OR) and their 95% confidence intervals (95% CI) were reported as measures of association. ORs > 1 indicate higher risk in the index group when compared to the reference group. ORs < 1 indicate lower risk in the index group when compared to the reference group (i.e., higher risk in the reference group compared to the index group). Positivity of the COVID-19 virus was not included in the multivariate analyses because of the low number of subjects included in some categories. All tests are significant at  $p < 0.05$ .

**Results**

*Characteristics of the sample*

Three thousand sixty-five participants reported being unemployed at the time of the assessment (Table 1) and 1,274 of the 3,065 reported having lost their job because of the COVID-19 pandemic. The participants completed the assessment between March 2020 and May 2020. Most of the participants were evaluated during the first two weeks of April (n=14,096) and the last two weeks of April 2020 (n=3,706). Other respondents were evaluated during March (n=718) and May (n=976). Around 41% of the participants reported living in northern Italy, 31% in the central Italian regions, and 28% in the southern Italian regions or major islands.

Only 1.5% of the respondents reported having been tested positive for COVID-19. Around 13% reported having a physical illness, and 5.4% reported a mental illness (mostly depressive disorders). Fourteen percent of the sample reported a higher risk for suicide ideation.

*Factors associated with unemployment*

Differences between groups are reported in Tables 1 and 2. Participants who reported to be unemployed (compared to others) were younger ( $31.25 \pm 11.69$  vs.  $40.49 \pm 12.93$ ;  $t_{4577.97} = -36.85$ ,  $p < 0.001$ ), more frequently single (65.6% vs. 36.0%;  $\chi^2_2 = 941.61$ ,  $p < 0.001$ ), and less frequently divorced/widowed (5.0% vs. 8.4%) or married (29.4% vs. 55.6%). They less frequently reported having a university degree (49.3% vs. 68.0%;  $\chi^2_2 = 388.78$ ,  $p < 0.001$ ) than other participants. Participants who reported to be unemployed (compared to others) more frequently reported living in the southern Italian regions and major islands (35.2% vs. 26.3%;  $\chi^2_2 = 127.96$ ,  $p < 0.001$ ) and less frequently in the northern regions (33.3% vs. 42.6%). Moreover, unemployed

**Table 2**  
Descriptive statistics for the psychological measures.

	Whole Sample	Whole Sample	Unemployed N=3065	Others N=16431	Test	Effect size	Significance	Others N=18222	Job lost N=1274	Test	Significance	Effect size
GHO	15.97	4.93	17.13±5.40	15.76±4.81	$t_{4022.24} = 14.14$	d=0.27	<0.001	15.87±4.88	17.42±5.46	$t_{118.86} = -9.85$	<0.001	d=0.30
DASS General Distress	18.13	8.33	20.25±7.54	17.73±8.40	$t_{4601.66} = 15.45$	d=0.32	<0.001	17.96±8.34	20.61±7.68	$t_{1490.86} = 11.84$	<0.001	d=0.33
DASS Depression	6.16	3.76	7.29±3.34	5.96±3.79	$t_{4659.26} = 19.79$	d=0.37	<0.001	6.08±3.76	7.44±3.45	$t_{1492.89} = 13.55$	<0.001	d=0.38
DASS Anxiety	3.75	3.42	4.46±3.51	3.61±3.39	$t_{4195.19} = 12.40$	d=0.25	<0.001	3.69±3.40	4.52±3.55	$t_{1441.02} = -8.02$	<0.001	d=0.24
DASS Stress	8.22	3.52	8.50±3.14	8.17±3.58	$t_{4676.41} = 5.24$	d=0.10	<0.001	8.19±3.54	8.65±3.24	$t_{1493.62} = -4.93$	<0.001	d=0.14
Connor Resilience	31.35	10.42	31.28±10.47	31.37±10.42	$t_{19494} = -0.41$	d=0.01	0.68	31.35±10.43	31.39±10.36	$t_{19494} = -0.11$	0.91	d=0.003
MSPPS Social Support	63.78	16.34	63.71±16.49	63.79±16.32	$t_{19494} = -0.24$	d=0.004	0.81	63.79±16.32	63.54±16.71	$t_{19494} = 0.53$	0.60	d=0.02

**Bonferroni correction for multitemesting:  $p = 0.05/17 = 0.0029$ . In bold significant tests.**

respondents more frequently reported suffering from a mental illness (7.4% vs. 5.0%;  $p < 0.001$ ) and less frequently from a physical illness (10.5% vs. 13.9%;  $p < 0.001$ ). Groups differed for GHQ scores ( $t_{4022.24} = 14.14$ ,  $p < 0.001$ ), the DASS general distress ( $t_{4601.66} = 15.45$ ,  $p < 0.001$ ), and all the subdimensions of the DASS. Participants who reported to be unemployed (compared to others) reported higher scores on the GHQ and all the DASS dimensions. Groups did not differ for suicide ideation (14.9% vs. 14.3%;  $p = 0.20$ ), and for scores on the Connors Resilience Scale ( $t_{19494} = -0.41$ ,  $p = 0.68$ ) and the MSPPS social support scale ( $t_{19494} = -0.24$ ,  $p = 0.81$ ). Groups also did not differ for the numbers of positive cases of the COVID-19 virus in their region of residence ( $t_{19494} = -1.02$ ,  $p = 0.31$ ).

Variables significant at the bivariate analyses were included in a generalized linear model with job status as a criterion (Table 3). Positivity for the COVID-19 virus was excluded because of the low number of subjects in some categories. Participants who reported to be unemployed (compared to others) had higher odds of having a mental illness (OR=1.31,  $p = 0.01$ ), and higher scores on the GHQ (OR=1.02,  $p = 0.004$ ) and the DASS Depression (OR=1.07,  $p < 0.001$ ). Participants who reported to be unemployed (compared to others) had higher odds of being younger (OR=0.96,  $p < 0.001$ ; reference category=younger people vs. older people), single (OR=1.47,  $p < 0.001$ ), having a high school diploma (OR=1.60,  $p < 0.001$ ; reference category=having undergraduate education or higher vs. high school education or lower), and living in southern Italian regions or major islands (OR=1.28,  $p < 0.001$ ). Sex, physical illness, and DASS Anxiety and Stress subscales were not significantly associated with the job status.

*Factors associated with having lost one's job because of the COVID-19 pandemic*

Differences between groups are reported in Table 4. Participants who reported having lost their job because of the COVID-19 pandemic reported the highest scores on the GHQ and the DASS dimensions. Participants who reported having lost their job because of the COVID-19 pandemic (compared to others) were more frequently female (77.6% vs. 71.5%;  $p < 0.001$ ), younger ( $37.69 \pm 12.36$  vs.  $39.13 \pm 13.23$ ;  $t_{1484.36} = 4.01$ ,  $p < 0.001$ ), single (44.7% vs. 40.3%;  $\chi^2_2 = 18.60$ ,  $p < 0.001$ ), or divorced/widowed (9.5% vs. 7.8%), and less frequently married (45.8% vs. 51.9%). They less frequently reported having a university degree (54.3% vs. 65.8%;  $\chi^2_2 = 82.10$ ,  $p < 0.001$ ) than other participants. Participants who reported having lost their job because of the COVID-19 pandemic (compared to others) more frequently reported

having a mental illness (7.2% vs. 5.3%;  $p = 0.002$ ), living in the Italian southern regions and major islands (34.9% vs. 27.2%;  $\chi^2_2 = 47.75$ ,  $p < 0.001$ ) and less frequently in northern Italy (32.9% vs. 41.7%). Groups differed for GHQ scores ( $t_{1418.86} = -9.85$ ,  $p < 0.001$ ), the DASS General Distress ( $t_{1490.86} = -11.84$ ) and all the subdimensions of the DASS. Groups did not differ for suicide ideation (15.6% vs. 14.3%;  $p = 0.11$ ), and for scores on the Connors Resilience Scale ( $t_{19494} = -0.11$ ,  $p = 0.91$ ) and the MSPPS social support scale ( $t_{19494} = 0.53$ ,  $p = 0.60$ ). Groups also did not differ for the number of positives for the COVID-19 virus ( $p = 0.39$ ) or the numbers of positive cases for the COVID-19 virus in their residence ( $t_{1434.23} = -1.10$ ,  $p = 0.25$ ).

A second generalized linear model included variables significantly associated at the bivariate analyses with loss of one's job because of the COVID-19 pandemic (Table 4). Participants who reported to have lost their job because of the COVID-19 pandemic (compared to others) had higher odds to have higher scores on the GHQ (OR=1.03,  $p < 0.001$ ) and the DASS Depression (OR=1.08,  $p < 0.001$ ). They also had higher odds of being female (OR=1.28,  $p = 0.006$ ), having a high school diploma (OR=1.47,  $p < 0.001$ ), and residing in the southern Italian regions or major islands (OR=1.18,  $p = 0.03$ ). Age, marital status, mental illness, and DASS Anxiety and Stress subscales were not significantly associated with losing one's job because of the COVID-19 pandemic.

**Discussion**

In our sample, people who reported having a mental disorder reported more frequently to be unemployed than other respondents. Furthermore, among those with a job before the COVID-19 pandemic, people who reported having a mental disorder also reported having lost their job during the COVID-19 pandemic (despite being not significant at the multivariate analyses). This supports the idea that people with mental illness could be less resilient and more disadvantaged in unemployment during an economic crisis (Evans-Lacko et al., 2013; Viinamaki et al., 2000). Furthermore, social integration could be problematic in people with mental illness even without considering the possible consequences of social distancing and quarantine measures adopted with the COVID-19 pandemic (Mueller et al., 2006). Such measures could have affected those with mental illness more than other people and have limited their social network and their ability to receive emotional support to cope with stress deriving from fear of being infected or losing loved ones because of COVID-19, or even fear of losing their job. Social networks' disintegration and poor social support are considered to be potent risk factors for suicide behaviors and ideation

**Table 3**  
Generalized linear model (criterion: Job).

	B	SE	$\chi^2$	Significance	Odds Ratio	95% lower CI	95% upper CI
Females <sup>1</sup>	-0.040	0.06	0.44	0.51	0.96	0.85	1.08
Age <sup>2</sup>	-0.05	0.003	202.52	<0.001	0.96	0.95	0.96
Single <sup>3</sup>	0.38	0.07	32.95	<0.001	1.47	1.29	1.67
School $\leq 13$ years <sup>4</sup>	0.47	0.06	72.26	<0.001	1.60	1.44	1.79
Southern regions and major islands <sup>5</sup>	0.25	0.05	22.00	<0.001	1.28	1.16	1.43
Physical illness <sup>6</sup>	-0.03	0.09	0.11	0.74	0.97	0.81	1.16
Mental illness <sup>7</sup>	0.27	0.11	6.19	0.01	1.31	1.06	1.63
GHQ <sup>8</sup>	0.02	0.01	8.28	0.004	1.02	1.01	1.03
DASS Depression <sup>9</sup> (reference category= lower depression)	0.07	0.01	56.87	<0.001	1.07	1.05	1.09
DASS Anxiety <sup>10</sup> (reference category= lower anxiety)	-0.002	0.01	0.08	0.78	1.00	0.98	1.02
DASS Stress <sup>11</sup> (reference category= lower stress)	-0.02	0.01	3.52	0.06	0.98	0.96	1.00

**Model statistics:** -2LL=9071.90,  $\chi^2_{11} = 1072.74$ ,  $p < 0.001$ , Nagelkerke  $R^2 = 0.16$ .

**Model information:** <sup>1</sup>Reference group=males.

<sup>2</sup> Reference group=younger participants

<sup>3</sup> Reference group=others

<sup>4</sup> Reference group=school  $\geq 16$  years

<sup>5</sup> Reference group= participants living in other Italian regions

<sup>6-7</sup> Reference group=no (physical or mental) illness

<sup>8</sup> Reference group=better mental health

<sup>9-11</sup> Reference group=lower depression or anxiety or stress. **In bold significant tests.**

**Table 4**  
Generalized linear model (criterion: lost job).

	B	SE	$\chi^2$	Significance	Odds Ratio	95% lower CI	95% upper CI
Females <sup>1</sup>	0.25	0.09	7.51	<b>0.006</b>	1.28	1.07	1.53
Age <sup>2</sup>	-0.003	0.004	0.53	0.47	1.00	0.99	1.01
Single <sup>3</sup>	-0.15	0.10	2.22	0.14	0.86	0.70	1.05
School $\leq$ 13 years <sup>4</sup>	0.39	0.08	24.47	<b>&lt;0.001</b>	1.47	1.26	1.72
Southern regions and major islands <sup>5</sup>	0.17	0.08	4.89	<b>0.03</b>	1.18	1.02	1.36
Mental illness <sup>6</sup>	0.10	0.15	0.49	0.49	1.11	0.83	1.49
GHQ <sup>7</sup>	0.03	0.01	12.70	<b>&lt;0.001</b>	1.03	1.01	1.05
DASS Depression <sup>8</sup>	0.07	0.01	35.16	<b>&lt;0.001</b>	1.08	1.05	1.10
DASS Anxiety <sup>9</sup>	-0.01	0.01	0.93	0.34	0.99	0.97	1.01
DASS Stress <sup>10</sup>	-0.01	0.01	0.21	0.65	0.99	0.97	1.02

**Model statistics:**  $-2LL=5541.32$ ,  $\chi^2_{10}=128.47$ ,  $p<0.001$ , Nagelkerke  $R^2=0.03$ .

**Model information:** <sup>1</sup>Reference group=males.

<sup>2</sup> Reference group=younger participants

<sup>3</sup> Reference group=others

<sup>4</sup> Reference group=school $\geq$ 16 years

<sup>5</sup> Reference group= participants living in other Italian regions

<sup>6</sup> Reference group=no mental illness

<sup>7</sup> Reference group=better mental health

<sup>8-10</sup> Reference group=lower depression or anxiety or stress. **In bold significant tests.**

(Heikkinen et al., 1993; Innamorati et al., 2008).

In a recent study (Iob et al., 2020) investigating self-harm and thoughts of suicide/self-harm in the UK during the first month of the COVID-19 pandemic, 18% of respondents experienced thoughts of suicide or self-harm in the first month of lockdown, and 5% reported harming themselves at least once since the start of the lockdown. In our study, 14% of the sample reported a higher risk for suicide ideation (a score  $\geq 1$  at the first item of the SIDAS), and no differences were significant between participants who reported to be unemployed and those employed, or between respondents who reported having lost their job because the COVID-19 pandemic and those who did not. No differences were present even when limiting these analyses among respondents with mental illness (unemployed vs. employed: 14.9% vs. 14.2%,  $p=0.41$ ; people with mental illness who lost their job because of the COVID-19 pandemic vs. others: 14.1% vs. 18.5%,  $p=0.16$ ). This is not in line with our hypothesis and the general view that the COVID-19 pandemic could be associated with an epidemic of suicide ideation and behaviors (Kawohl and Nordt, 2020; McIntyre and Lee, 2020; Samson and Sherry, 2020).

Although the groups did not differ for suicide ideation, people who reported to be unemployed (compared to other respondents) or who reported having lost their job (compared to other respondents) had worse mental health status and higher distress, depression, and anxiety. General distress and depression could be significant predictors of suicide behaviors and ideation (Overholser et al., 2012), but this association could be mediated by other psychological factors (Campos et al., 2017). In our sample, people who reported losing their job despite reporting worse mental health status and distress still reported being resilient and having social support not dissimilar from other respondents. These results could explain why those who lost their job did not report an increase in suicide risk despite higher distress and worse mental health status. This finding is in line with recent results from the international literature which highlighted that suicide rates were overall stable or sometimes decreased during the first year of the pandemic (Pirkis et al., 2021; Pompili, 2021).

Our results also pointed to other psychosocial factors of vulnerability when facing the COVID-19 pandemic—being female and having lower school attainment were independently associated with a higher risk of losing one's job because of the COVID-19 pandemic (Garrouste et al., 2010; Newell, 2020). For example, Garrouste, Kozovska, and Perez (2010) suggested that an individual's probability of being in long-term unemployment could decrease with his/her educational level (Eurostat, 2019). Furthermore, Italy is ranked amongst the countries in the EU with the lowest gender equality (Rosselli, 2014), especially in the work

and labor market. Higher vulnerability in women could be associated with the fact that women (compared to men) have more frequently low-paid or temporary jobs (Newell, 2020). Furthermore, teleworking demands could be more difficult in women to conciliate with family responsibilities (Eurofound, 2020).

Furthermore, geographic variations were evident with a higher risk of losing one's job because the COVID-19 pandemic in the Italian southern regions and major islands than in the Italian northern and central regions, reflecting the economic and social imbalance among the Italian regions. For example, southern Italian regions are still disadvantaged in terms of life expectancy and access to care and quality of health services (Ferré et al., 2014).

### Limitations and strengths

Our findings have some limitations to their generalizability. First, the presence of mental illness was self-reported by respondents. Second, the administered measures were self-reported questionnaires affected by social desirability and other response bias. For example, the presence of suicide risk was evaluated with a single item of the SIDAS and not with clinical interviews assisted by questionnaires such as the Columbia Suicide Severity Rating Scale (Posner et al., 2011). Third, the data was gathered between March and May 2020 during the first national lockdown, and thus, it could not represent the situation during the months following the first lockdown characterized by local lockdowns and several changes in the Italian national policies regarding the emergency of the COVID-19 pandemic. However, this study has several strengths. For example, the online survey allowed us to reach a large portion of the Italian population in a pandemic situation when face-to-face contacts were not possible. The methods used allowed us to recruit a large sample representative of the Italian population.

### Conclusion

The COVID-19 pandemic and social isolation measures and lockdown used to contain its spread among the Italian population were associated with occupational insecurity, especially among the more vulnerable social categories (for example, people with mental illness and women). Clinicians should assess the presence of life events, such as the risk of losing one's job because of the COVID-19 pandemic in psychiatry patients. Unemployment and loss of one's job were associated with worse mental health and general distress, and higher suicide risk. Thus, supportive psychosocial interventions are needed for the general population in order to help people at risk to overcome stress and anxiety due

to the pandemic. Moreover, targeted interventions for job employment or support should be developed and provided to people with pre-existing mental disorders who have a higher risk of losing job.

### Authors statements

Drs. Pompili, Fiorillo, Sampogna, and Innamorati conceived the study and interpreted the results based on the COMET study. Drs Pompili and Innamorati drafted the first version of the article. Dr. Innamorati performed the statistical analysis. All authors contributed to the interpretation of results and in preparing the final version of the manuscript.

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### Declaration of competing interest

None.

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