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Mental health of French students during the Covid-19 pandemic

ABSTRACT

This study evaluates the impact of Covid-19 on the mental health of 8004 French students in the East part of France, which has been the first and hardest hit region by the Covid-19 pandemic. This is, to our knowledge, the largest study conducted on mental health of students during the pandemic. Our results show that students suffer from particularly high level of anxiety, depression and distress. A significant proportion of students might require psychological support, especially because the high distress scores suggest that the epidemic and confinement have favored the emergence of post-traumatic stress symptoms.

1. Context

Following the Covid-19 pandemic, the French population was confined from 17 March 2020 for almost two months and the total number of deaths has been over 30 265 out of 187 919 confirmed cases (by August 3 2020) in France. It seems essential to understand the effects of this situation on psychological health (Pfefferbaum and North, 2020), particularly on students who are generally considered to be a population at risk from a mental health point of view (Brooks et al., 2020). We therefore conducted a research on students of the University of Lorraine - the third largest French university - located in eastern France, which was the first and most affected by the Covid-19 pandemic. This study was more precisely conducted from April 27 to April 30, 10 days after the peak of the mortality rate during the pandemic in France.

2. Method

An online survey was sent by email, using *Lime Survey*, to the 59,931 students of the University of Lorraine. The data collected focused on sex, housing (alone or with others), Covid-19 symptoms (with or without diagnosis), financial situation (with or without scholarship) and work. Three mental health scales, previously validated in French, were used to measure the level of depression (*Patient Health Questionnaire*, PHQ-9 $\geq$ 10), anxiety (*Generalized Anxiety Disorder*, GAD-7 $\geq$ 7) and distress (*Impact of Event Scale-Revised*, IES-R $\geq$ 26). PHQ-9 and GAD-7 has been chosen because they are the most widely used in primary care and symptoms detection (Levis et al., 2019) (Spitzer et al., 1999) (Johnson et al., 2019), while the IES-R is an easily self-administered questionnaire very frequently use to assess post-traumatic symptoms. Logistic regressions were used to analyze the results with R software (3.6.3) and are presented in the form of odd-ratios (OR) with a 95% confidence interval. This study has been approved by the University of Lorraine and is registered with the number 2020-115.

3. Results

The age (21.7 years), sex (67.47% women) and scholarship rate (40.8%) show that the 8,004 students who responded (13.36% of students) are representative of the overall university population. 14% of the students lived alone during the confinement period and 16.6% of them were in paid work. Concerning the Covid-19, 24.13% of the students reported having been in contact with someone with the virus, 15.77% of students reported symptoms and 2.89% had this diagnosis confirmed by a Medical Doctor. In terms of mental health, at time of the survey, 43% of students suffered from depression (6.96% of severe level), 39.19% suffered from anxiety (20.7% of severe level) and 42.94% from distress (16, 09% of severe level). Female scores were significantly higher than those of males on measures of depression [1.64 (1.44-1.86)], anxiety [2.22 (2.01-2.46)] and distress [2.23 (2.02) -2.46)]. Students in contact with people infected by Covid-19 had also higher scores on depression [1.36 (1.23-1.51)], anxiety [1.31 (1.18-1.45)] and distress [1.36 (1.23-1.51)]. Similarly, students diagnosed with Covid-19 had higher scores on depression [1.64 (1.26-2.13)], anxiety [1.96 (1.51-2.56)] and distress [1.77 (1.35-2.30)]. Students with financial insecurities also had higher scores for depression [1.33 (1.22-1.46)], anxiety [1.32 (1.20-1.44)] and distress [1.25 (1.14-1.37)] while living alone was equally associated with higher depression score [1.64 (1.44-1.86)]. In contrast, undertaking work was linked to lower scores on depression [0.68 (0.61-0.77)], anxiety [0.74 (0.65-0.84)] and distress [0.75 (0.66-0.84)] (Table 1). Measures of anxiety and depression symptoms were strongly correlated (p = 0.735; $P < 0.001$), as well as anxiety and stress (p = 0.757; $P < 0.001$) and depression and stress (p = 0.691; $P < 0.001$). Being employed was weakly, but negatively, correlated with depression (p = -0.147; $P < 0.001$), anxiety (p =-0.156; $P < 0.001$) and stress (p =-0.146; $P < 0.001$). There was no other significant correlations between the different variables.

4. Discussion

According to our results, approximately 3% of students were diagnosed with Covid-19 and almost 12% developed symptoms of the disease, which corroborates recent epidemiological results (Salje and Lefrancq, 2020). Depression (43%), anxiety (39.19%) and distress (42.94%) scores were much higher than those normally observed in student population (Verger et al., 2010) (Ibrahim A and Kelly, 2013). More precisely, being a female, living alone, in a precarious financial situation and having been in contact with people who had contracted Covid-19 significantly increased levels of depression, anxiety and distress. Also note that 47.2% of students reported difficulty concentrating and 14.86% reported self-harming or suicidal thoughts. Conversely,

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Table 1
Odd-Ratio and identification of risk for mental health by logistic regression.

	DEPRESSION (PHQ-9)			ANXIETY (GAD-7)			DISTRESS (IES-R)		
	Affected / No affected	Odds-ratio (95%IC)	P-value	Affected / No affected	Odds-ratio (95%IC)	P-value	Affected / No affected	Odds-ratio (95%IC)	P-value
SEX									
MALE	899/1705	1*		702/1902	1*		785/1819	1*	
FEMALE	2543/2857	**1,69** (1,53-1,85)	P< 0.001	2435/2965	**2,22** (2,01-2,46)	P< 0.001	2652/2748	**2,23** (2,02-2,46)	P< 0.001
LIVE ALONE									
NO	2840 /4041	1*		2669/4212	1*		2896/3985	1*	
YES	602/521	**1,64** (1,44-1,86)	P< 0.001	468/655	**1,12** (0,99-1,28)	0.07	541/582	**1,28** (1,12-1,45)	P< 0.001
COVID SYMPTOMS									
NO SYMPTOMS	2871/4102	1*		2603/4370	1*		3306/4467	1*	
SYMPTÔMS NOT CONFIRMED	571/460	**1,77** (1,55-2,02)	P< 0.001	497/534	**1,80** (1,58-2,05)	P< 0.001	459/572	**1,78** (1,57-2,04)	P< 0.001
SYMPTOMS CONFIRMED BY MD	127/104	**1,64** (1,26-2,13)	P< 0.001	103/128	**1,96** (1,51-2,56)	P< 0.001	100/131	**1,77** (1,35-2,30)	P< 0.001
COVID CONTACT									
NO	2499/3574	1*		2285/3788	1*		942/989	1*	
YES	943/988	**1,36** (1,23-1,51)	P< 0.001	852/1079	**1,31**(1,18-1,45)	P< 0.001	2495/3578	**1,36** (1,23-1,51)	P< 0.001
PRECARIOUS FINANCIAL SITUATION									
NO	1899/2836	1*		1727/3008	1*		1926/2809	1*	
YES	1543/1726	**1,33** (1,22-1,46)	P< 0.001	1410/1859	**1,32** (1,20-1,44)	P< 0.001	1511/1758	**1,25** (1,14-1,37)	P< 0.001
HOUSING									
HOUSE	1898/2938	1*		1790/3046	1*		1950/2886	1*	
APARTMENT	1544/1624	**1,47** (1,34-1,61)	P< 0.001	1347/1821	**1,26** (1,15-1,38)	P< 0.001	1487/1681	**1,31** (1,20-1,43)	P< 0.001
WORKING									
NO	2970/3703	1*		2691/3982	1*		2942/3731	1*	
YES	472/859	**0,68** (0,61-0,77)	P< 0.001	445/885	**0,74** (0,65-0,84)	P< 0.001	495/836	**0,75** (0,66-0,84)	P< 0.001

working appeared to be protective for these states. Finally, being infected by Covid-19 strongly increase depression, anxiety and distress scores, which underlines the psychological impact of Covid-19 on the population. This study has nevertheless several limitations. First, it was conducted during only four days and lacked a longitudinal follow-up. Therefore, the long-term psychological impact of Covid-19 on the student population would deserve further study. Second, although the response rate for this study was 13.36%, a response bias is possible if, for example, non-respondents were too stressed –or, at the opposite, not stressed enough –to be interested in taking part in the study.

5. Conclusion

A significant proportion of students probably required psychological support during the Covid-19 pandemic, especially because the high distress scores suggest that the virus and the confinement have favored the emergence of post-traumatic stress symptoms (Galea et al., 2020). The various indicators highlighted in this study could guide the detection and the counselling of students most at risk in this type of situation. Future studies may evaluate the evolution of these indicators after the pandemic and assess the impact of care set up to help students.

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None

7. Contributors

The first author (Aziz Essadek) conducted the study and analyzed the data. Specifically, he participated in the design, formal analysis, writing, rewriting and editing. The second author (Thomas Rabeyron) oversaw the conduct of the study. Specifically, he participated in the design, formal analysis, writing, rewriting and editing.

Declarations of Competing Interest

None

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