Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Stressors met by quarantined French students during the covid-19 pandemic. Their links with depression and sleep disorders.

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A B S T R A C T

Background: Quarantine during the covid-19 pandemic has been shown to be associated with poor psychological health in students. However, no study has systematically examined the stressors perceived by students during this quarantine and their link with psychological health. Therefore, this cross-sectional study aimed to examine the stressors perceived by French students during the Covid-19 quarantine and their links with students' psychological health, i.e., depression and sleep disorders.

Methods: First, based on the existing literature and interviews with students, we designed a 27-item scale. Then a sample of 2536 French students completed a questionnaire containing the 27 items along with two measures: the CES-D to measure depression and the Jenkins Sleep Scale to assess sleep disorders.

Results: The statistical analyses (EFA and CFA) revealed six factors that were correlated with depression and/or sleep disorders. However, regression analyses revealed that among them, "*inactivity and idleness*" and "*academic worries*" were the most associated with depression and sleep disorders. To a lesser extent, "*Precariousness*", "*Lack of trust in information*" and "*Missing the people one care's about*" but not "*fear of the virus*", were also associated with depression and/or sleep disorders.

Limitations: The cross-sectional nature of our data limits the extent to which causal inferences can be made. All the data in this study was collected through online questionnaire.

Conclusion: Our results highlight the stressors most strongly associated with depression and sleep disorders, that is those that must be tackled as a priority.

1. Introduction

With the emergence of the coronavirus disease in 2019 (COVID-19), many governments implemented strict quarantine measures in order to stop the spread of the infection. In France, the quarantine was implemented from March 17 to May 11, 2020 (1 month and 25 days). Throughout this period, the universities were closed. Leaving home was restricted to what was strictly necessary (food shopping, health care and work when teleconsultation and teleworking was not possible), outings near the home not exceeding one hour (individual sports activities, walking pets).

Of course these quarantine measures aim to prevent disease transmission and to limit the number of deaths. According to the review of Nussbaumer-Streit et al., (2020), quarantine is found to reduce the risk of COVID-19 disease by 44–81% and mortality by 31–63%. However, quarantine may have negative psychological and/or physiological consequences (Brooks et al., 2020). This could especially be the case for university students who are already susceptible to mental health problems due to emerging adulthood and the financial difficulties they encounter (e.g., Auerback et al., 2018; Rajkumar, 2020; Wang et al., 2020). Indeed, Essadek and Rabeyron (2020) found that 43% of their sample of 8004 French students suffered from depression during the 2020 lockdown. In a study of 505 home quarantined Bangladeshi students, Khan et al., (2020) observed that 46.92% of their sample suffered from mild to extremely severe depression. (See also, for instance Kaparounaki et al., 2020, with Greek students). However, we lack systematic research exploring the sources of depression (i.e., the stressors) experienced by this population. Despite the fact that quarantine is found to be associated with depression, the perceived stressors that may explain these high levels of depression among students remain unknown.

Another problem that affects quarantined people is sleep disorders (see Tasnim, 2020, for a review). However, only a few studies investigated this disorder in students and none investigate their antecedents. Yet, sleep disorders have detrimental consequences on academic performance through different channels such as excessive daytime sleepiness, lower motivation, or decreased executive function (Gaultney, 2015; see also Hershner, 2020 for a review)

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Therefore, the aim of this paper is to investigate the stressors perceived by French students during the quarantine as well as to determine their links to depression and sleep disorders.

2. Methods

2.1. Participants and procedure

On the 1st of May, 2020, an online survey was sent by email, using Limesurvey, to all students (N = 24291) of a university located in the east of France. The survey link remained open during 7 days. After reading the aims of the study, participants provided their informed consent before completing the survey.

A total of 2536 participants (response rate = 10.4%) completed the survey during the time frame. 73.5% of participants were female and ages ranged between 18 and 54 years (M = 21.4 SD = 4.0).

The sample included students from the five departments of the university: Language, human and social sciences; Legal, economics, political and management sciences; Medical and pharmaceutical sciences; Science and technology; Sports and the education sector. Table 1 shows the demographic characteristics of our sample.

This study was conducted in full compliance with the provisions of the Declaration of Helsinki regarding research on human participants. It has been approved by the University of Franche-Comté.

2.2. Measures

2.2.1. Socio-demographics characteristics

Demographic variables included gender, age, academic year, nationality, year of study, current location, marital status and number of children (if any).

2.2.2. Stressors met by students: The Quarantined Student's Stressors Inventory

To establish the list of stressors met by students during quarantine, we considered two sources: on the one hand, the stressors indicated in the literature, and on the other, the stressors perceived by the students.

Table 1
Participant demographics (n = 2536).

Variables	N	%
Gender		
Men	658	25.9
Women	1864	73.5
Other	14	.6
Usually (outside the quarantine period), you live		
-Alone	1528	60.2
-As a couple	1008	39.8
Children		
Yes	72	2.8
No	2464	97.2
Native country		
France	2339	92.2
Other UE	52	2.0
South America	51	2.0
Africa	24	.9
Middle East	18	.7
North Africa	18	.7
Other (Asia, East Europe,	34	1.5
North America, Oceania, UK,		
Year of study		
1	819	32.3
2	594	23.4
3	488	19.2
4	277	10.9
5	280	11.0
6	44	1.7
7	16	.6
8	9	.4
>8	9	.4

We considered as a stressor any internal or external factor that was considered in the literature, or perceived by the students, as causing an internal disruption. More precisely, we first consulted four electronic databases: (MEDLINE, PsycINFO, Psychology and Behavioral Sciences Collection, and ScienceDirect) with the following keywords: "quarantine" and "students"; Then a first list of nine stressors was established. At the same time, in mid-April, 59 students were individually asked to list all the problems and daily worries they encountered during this quarantine period. Then a second list of 25 stressors was established. The stressors that we have identified in the literature were most often referred to by a generic name, e.g., "academic performance", "financial concerns", "financial insecurities", "disruption of daily routines". On the contrary, stressors written by students were more detailed and referred to more specific situations, e.g., "I am worried about the quality of my educational training"; "I am forced to restrict my food intake because of my financial situation". From the analysis of these two lists, we created a third one, that included the stressors mentioned on either list. We submitted this new list to a group of students (n = 21) to test the face validity of each item. This led us to rephrase some of the items. Finally, a list of 27 items was established.

2.2.3. Depression

The Center for Epidemiological Studies-Depression Scale (CES-D), Radloff (1977), was used to determine the depressive status of our participants. This scale was developed for use in studies of the epidemiology of depressive symptomatology in the general population. Its purpose differs from previous depression scales that have been used mainly for diagnosis at clinical intake and/or evaluation of severity of illness over the course of treatment" (Radloff, 1977, p. 385). Therefore, it is well suited for our population. We used Morin et al.'s (2011) French validated version.

2.2.4. Sleep disorders

To assess sleep disorders, we used the Jenkins Sleep Scale, (Jenkins, Stanton, Niemcryk, & Rose, 1988). This four-item instrument evaluates the frequency of certain sleeping problems (difficulty falling asleep, frequent awakenings during the night, trouble remaining asleep, and subjective feelings of fatigue and sleepiness) despite receiving a typical night's rest, during the last month. There were six response alternatives: never (0), 1–3 days (1), 4–7 days (2), 8–14 days (3), 15–21 days (4), and 22–31 days (5). As our survey was sent on the first of May and the quarantine began the 17th of March, participants had been quarantined for a month. The scale allows a global scoring ranging from zero to 20. A total score from one to 11 represents low levels of sleep disorders, while a score ≥12 represents high levels of sleep disorders (Monterrosa-Castro et al., 2016).

2.3. Data analysis

The psychometric structure of the Quarantined Student's Stressors Inventory was investigated using both exploratory and confirmatory factor analyses. We divided our sample into two equally sized groups in order to test the factor structure with EFA on the first sample and observe if the factor structure could be replicated on the second sample with CFA. Thus, each group contained 1268 students. The analyses were performed with SPSS 18 and Amos 18. Exploratory factor analysis (EFA) was conducted using oblique promax rotation because there was no reason to assume that the factors were completely independent. Moreover, the "maximum likelihood" method was used since the data was normally distributed (Fabrigar et al., 1999). Confirmatory factorial analysis (CFA) was conducted using the maximum likelihood procedure. The objective was to identify the fit between our model based on the EFA results and the data of our second group. Various indices were used: the $\chi 2$ value, the ratio of the Chi-square statistic to the degrees of freedom ($\chi 2/df$), the GFI = Goodness-Fit-Index (GFI), Comparative-Fit-Index (CFI), the Tucker–Lewis Index (TLI) and the root mean square error of

approximation (RMSEA). As a rule of thumb, a RMSEA ≤ 0.08 indicates a reasonable fit of the model, and the other fit indices should have values of 0.90 or higher (Hoyle, 1995). Correlation analyses were then performed to test criterion-related validity.

3. Results

3.1. Depression and sleep disorders

In our sample of French students, the mean CES-D score was 18.1 for men and 22.0 for women. According to the French cut-offs of the CES-D, i.e., 16 for men and 20 for women, (Morin et al., 2011), 52% of females and 49% of males of our sample have a depressive symptomatology. These results are consistent with the recent literature (e.g., Majumdar, Biswas, & Sahu, 2020; Odriozola-González et al., 2020). During the initial stage of the 2020 pandemic, Gonzalez et al. found that being a student predicted depression in a group of Spanish individuals.

Regarding sleep disorders, measured with the Jenkins Sleep Scale (Jenkins et al., 1988) 24.1% of students had high frequency of sleep disorders. Sleep disorders are significantly higher among females (M = 8.3) compared to males students (M = 6.7), F(1, 2534) = 26.1, $p < .0001$.

3.2. The stressors met by students: The Quarantined Student's Stressors Inventory

3.2.1. EFA

Six factors met the commonly used Kaiser criterion (eigenvalue > 1) for determining the number of factors to extract in factor analysis. Thus, a six-factor solution was retained explaining 57% of the variance with communalities ranging from .31 to .89 (see Table 2). No double loading was observed. The factorial solution clearly distinguished six factors identifying different aspects of quarantined student's stressors.

The first factor, *inactivity and idleness*, accounted for 22.6% of the total variance and contains six items referring to feelings and behaviors of idleness or spending days doing useless activities (e.g., *"I see the days go by and I feel like my time is wasted because I can't do much"; "Currently, I spend too much time in front of screens (series, films, games, etc."*).

The second factor, *academic worries,* consisted of eight items accounting for 9.0% of the total variance. The items for his factor refer to the worries about exam success and the quality of the educational training as well as to the barriers that hinder these achievements (e.g., "*I wonder if teachers will take the quarantine into account in their evaluations grading; "I am worried about the quality of my educational training"; "I am afraid to bother teachers by asking them for help by through e-mail"*).

The third factor, *lack of trust in information,* accounted for 7.2% of the total variance. It consists of four items that clearly reflect the lack of confidence in information about the virus, the contagion and the epidemic. (e.g., "*It is difficult for me to trust information coming from the government."; "I don't always know if the information circulating about the epidemic is true or if it's they're just rumors"*).

The fourth factor, *fear of the virus*, accounted for 6.8% of the total variance, and consisted of four items that refer to the fear of catching the virus, whether for oneself or one's family and friends (e.g., "*I'm afraid of catching the virus when I go out of the house (exercise, shopping)"; "I'm afraid that my family and friends will catch the virus on their way if they go out"*).

The fifth factor, *precariousness,* (5.6% of the total variance) consisted of three items that clearly refer to the precarious financial situation of students (e.g., "*I am forced to restrict my food intake because of my financial situation"*).

The sixth factor, "*miss those we love*", accounted for 4.6% of the total variance. It consisted of two items that reflect the fact of missing the people one cares about (e.g., *"I miss the people I care about very much"*).

Table 2
Factor loadings of the Quarantined Student's Stressors Inventory. (*reversed item)

	Factor loading
Factor 1: Inactivity and idleness (Cronbach α = 82)	
-1. With the quarantine, it's hard for me to find the motivation to work	.80
-2. With the quarantine, it's hard for me to concentrate for work	.74
-3. I see the days go by and I feel like my time is wasted because I can't do much .70	
-4. I am able to set up a work routine*	.66
-5. Currently, I spend too much time in front of screens (series, films, games, etc.) .56	
-6. With the quarantine, I stay in bed most of the day	.53
Factor 2: Academic Worries (Cronbach α = .80)	
-7. Pedagogically, I feel left behind	.78
-8. Exams procedures are unclear	.76
-9. I am worried that I will not pass my year	. 57
-10. I wonder if teachers will take the confinement into account in their grading	.57
-11. I'm afraid I'll encounter problems if there are online exams (disturbances, computer crashes, etc.)	.56
-12. I am worried about the quality of my educational training	.55
-13. Because of the confinement, I have a greater academic workload	.42
-14. I am afraid to bother teachers by asking them for help through email	.35
Factor 3: Lack of trust in information (Cronbach α = .80)	
-15. It is difficult for me to trust information coming from the government	.89
-16. It is difficult for me to trust information from health authorities.	.82
-17. I don't always know if the information circulating about the epidemic is true or if they're just rumors.	.58
-18. I feel there is a lack of reliable information about the coronavirus contagion.	.49
Factor 4: Fear of the virus (Cronbach α = .70)	
-19. I'm afraid of catching the virus when I go out of the house (exercise, shopping) .83	
-20. I'm afraid that my family and friends will catch the virus if they go out	.66
-21. I regularly watch for symptoms I might have (cough, sore throat, fever)	.59
-22. I spend a lot of time reading or listening to information about the coronavirus .31	
Factor 5: Precariousness (Cronbach α = .71)	
-23. With the quarantine, I am in a precarious financial situation	.81
-24. I am forced to restrict my food intake because of my financial situation	.80
-25. With the quarantine, I don't have all the necessary means to do my academic work .34 (computer, internet, printer...).	
Factor 6: Missing loved ones (Cronbach α =.80)	
-26. I miss the people I care about very much	.84
-27. Not seeing my family and friends regularly is distressing hard	.78

3.2.2. CFA

In accordance with the CFA results, a six-factor model was tested with Confirmatory Factor Analysis. The fit indices of the model were satisfactory: $\chi 2\ (1268) = 1440{,}1$; $\chi 2/df = 4.66$, RMSEA = .05, GFI = .92, TLI = 0.90 and CFI = 0.90. The standardized coefficients for CFA were reported in Table 3.

Table 3
Model fit indices

	Model fit indices							
	N	χ^2	*df*	χ^2/df	GFI	CFI	TLI	RMSEA
Model (6 factors)	1268	1440,1	309	4,66	.92	0.90	.90	0.05

Note. N = number of participants; χ^2 = chi-square; df = degrees of freedom; GFI = goodness of fit index, CFI = Comparative-Fit-Index, TLI = Tucker–Lewis Index, RMSEA = root mean square error of approximation.

3.3. Reliability

The internal consistency of the five subscales was good: Cronbach's alpha coefficient ranged from .70 to .82

3.4. Criterion-related validity: Stressors, depression and sleep disorders

Bivariate correlation and regression analysis were performed to test the relative association of each of the stressors with student's health, i.e., depression and sleep disorders. The correlation between the Quarantined Student's Stressors Inventory and the levels of depression and sleep disorders are reported in table 4. The correlational analyses were conducted with the whole sample. The six factors of the Inventory were significantly correlated with depression and sleep disorders.

Results of our regression analyses are reported in table 5. Gender, age and year of study were entered in the first step of the regression analysis in order to control these variables and test if they were related to depression and sleep disorders. The six stressors were then entered in the second step of the regression analysis. The model accounted for 50 % of the variance for depression, and 16.5% of the variance for sleep disorders. The factors "*inactivity and idleness*" and "*academic worries*" were the most associated with depression ($\beta = .42$ p<.001 and $\beta = .21$, $p < .001$, respectively) and sleep disorders ($\beta = .21$, $p < .001$ and $\beta = .13$, $p < .001$, respectively). To a lesser extent, "*Precariousness*", is also associated to depression ($\beta = .09$ $p < .01$) and sleep disorders ($\beta = .12$ $p < .001$). "*Lack of trust in information*" is also associated with depression ($\beta = .06$ $p < .01$), and sleep disorders ($\beta = .05$ $p < .01$). And "*Miss those we love*" was only associated with sleep disorders ($\beta = .06$ $p < .05$). However, fear of the virus is not associated with depression or sleep disorders.

Table 5
Regression analysis.

	Depression	Sleep Disorders
Step1		
Gender	-.10***	-.13***
Age	-.06*	.00
Year of study	.01	.00
R^2	.01	.01
Step2		
Idleness	.42***	.21***
Academic Worries	.21***	.13***
Lack of Trust	.06**	.05*
Fear of Virus	.02	.02
Precariousness	.09**	.12***
Missing	.03	.06*
R^2	.50	.21

***$p < .001$; **$p < .01$; *$p < .05$

4. Discussion

In our sample of French students, we observed a high rate of depression. Indeed, 52% of females and 49% of males of our sample have a depressive symptomatology. These results are consistent with the recent literature (e.g., Majumdar, Biswas, & Sahu, 2020; Odriozola--González et al., 2020). During the initial stage of the 2020 pandemic, Gonzalez et al., found that being a student predicted depression in a group of Spanish individuals. We also observe that 24.1% of students had high frequency of sleep disorders.

The main aims of this study were to examine the stressors perceived by French students during the Covid-19 quarantine and their associations with student's psychological health. First, we designed a scale to measure the stressors encountered by students. Our statistical analyses (EFA and CFA) revealed six factors, with satisfactory internal consistency. Secondly, regression analysis revealed that five of them correlated significantly with depression and/or sleep disorders.

Inactivity and Idleness was the most associated with depression ($\beta = .42$, $p < .001$) and sleep disorders ($\beta = .21$, $p < .001$). The items contributing to this factor clearly refer to the difficulty of mobilizing oneself to work (it's hard to find the motivation / the concentration), to waste one's time in bed or in front of a screen, etc. As stated by Brooks et al., (2020, p. 216), "Confinement, loss of usual routine, and reduced social and physical contact with others were frequently shown to cause boredom, frustration, and a sense of isolation from the rest of the world, which was distressing to participants". Furthermore, according to Duan et al., (2020) during the pandemic, elevated Internet use is associated, *inter alia*, with neglecting one's personal life, mood dysfunction, interpersonal conflicts, sleep disturbance and depression. It is likely that inactivity and idleness, and the depressive feelings they are associated with, can be linked to the risk of students dropping out of school. Here, students could be provided with practical advice on coping and stress management techniques. A telephone support line, run by psychologists, specifically dedicated to those suffering from quarantine could also be helpful (Maunder et al., 2003).

Academic worries is the second factor most associated with depression ($\beta = .21$, $p < .001$) and sleep disorders ($\beta = .13$, $p < .001$). It not only refers to the worries about exams and quality of the educational training, it also concerns the barriers that hinder these achievements: being afraid to bother teachers by asking them for help through e-mail, encounter problems if there are online exams, etc. During the quarantine, students are in a situation where they have no control over their academic work, both in the short and long term. And it is known that situations of lack of control are particularly harmful to the health of individuals, leading to states of depression and learned helplessness (e.g., Youssef, 2016). Obviously, the organization of courses and exams as well as the subsequent information are necessary elements in order to counter the effect of this stressor.

Precariousness is the third factor to be associated with depression ($\beta = .09$ $p < .01$) and sleep disorders ($\beta = .12$, $p < .001$). This precarious situation concerns basic needs (food) as well as the necessary supplies to carry out one's university work. It should be noted that in "normal" times, i.e., outside of pandemic and containment situations, financial concerns are among the first stressors encountered by students. For instance, Beiter et al., (2015) found, in a sample of 374 undergraduate US students, that financial worries are among the four stressors that concern a significant proportion of students. (See also Kapasia et al., 2020). And with the quarantine, those who have a student job are often deprived of this source of income. Hence, several studies among quarantined students report a link between precariousness and depression. For example, Khan et al., observed a significant association between

Table 4
Pearson's product–moment correlations among the stressors, depression and sleep disorders. (All $p < .01$)

	2	3	4	5	6	7	8
-1 Inactivity	.43	.21	.11	.26	.18	.55	.31
-2 Academic Worries		.31	.24	.38	.23	.46	.30
-3 Lack of Trust			.20	.25	.15	.25	.18
-4 Fear of Virus				.15	.26	.16	.13
-5 Precariousness					08	30	23
-6 Missing						.20	.17
-7 Depression	.						55
-8 Sleep Disorders							

"financial uncertainty" and the DASS depression subscale (as well as with the DASS anxiety and stress subscales). In a cross-sectional study conducted among two local private colleges in Southern Philippines, from April 25th to May 8th, 2020 Baloran (2020) found that 62.64% of the students of his sample (n = 530) were worried about food and financial resources. Among Bangladeshi students, Khan et al., (2020) observed a significant association between financial uncertainty and the DASS depression subscale (as well as with the DASS anxiety and stress subscales). The authors found the same associations with the stressor "inadequate food supply". In Wathelet et al.'s study (2020), French students who experienced a loss of income were at higher risk of reporting symptoms of depression compared with those who did not. And, in regards to sleep disorders, a study conducted with a sample of 736 English adults aged 58–72 years, poor sleep (measured with the Jenkins Sleep Problems Scale) is related to financial strain. Of course, as outlined by Brooks et al., (2020, p. 395) there is a need for officials to ensure that quarantined people have enough supplies. These authors also insist on the fact that the provision of supplies should ideally occur in advance to ensure that resources do not run out.

Lack of trust in information reflect the lack of confidence in information about the virus, the contagion and the epidemic. This lack of trust concerns both health authorities and the government. And more generally, it is the information "that is circulating" that does not inspire confidence. Finally, students feel they lack reliable information. In our sample, lack of trust is slightly associated with depression ($\beta = .06$ $p < .01$), and with sleep disorders ($\beta = .05$ $p < .05$). This association confirms the results currently observed in the literature. Conversely, trust in information during the pandemic is associated with lower depression (Huang, et al., 2020) and with adherence to health guidelines (e.g., Quinn et al., 2013; Sibley et al., 2020). This is an important issue as exposure to COVID-19 news in social and mass media had a significant association with depression (Kahn et al., 2020). Therefore, as stated by Brooks et al., (2020, p.395) "insuring that those under quarantine have a good understanding of the disease in question, and the reasons for quarantine, should be a priority". Thus, there is no doubt that university medical services could have an important role to play in this communication. By providing information on the dangers of the virus but also on behaviors that protect against it, they can give a sense of control that should help reduce depression.

Miss those we love, refers to missing the absent people one care about, whether it is family or friends. This factor is not associated with depression but is slightly associated with sleep disorders ($\beta = .06$, $p < .05$). The fact that "inactivity and idleness" was the stressor most associated with depression and sleep disorders, (see above) while "Miss those we love" is not related to depression may be explained by the fact that students may be much more depressed because they are not able to live the usual life they share with others (though usual activities and routine), than by the feeling in itself of missing those they love.

Fear of the virus refers to the apprehension of catching the virus, whether it is for oneself or one's family and friends. In our study, this fear is associated with looking for symptoms one might have and with constantly reading and listening to information about the virus. This fear has been observed previously in other quarantine situations and related to other infections such as SARS (e.g., Cava et al., 2005) or Ebola (Desclaux, Badji, Ndione, & Sow, 2017). Roy et al. (2020), also reported that individuals were worried for themselves and their families during the on-going pandemic. Regarding the Covid-19 pandemic, Tang et al., (2020) in a sample of 2485 home-quarantined Chinese college students, observed that feeling extremely scared by the virus had the largest contribution to depression. Mechili et al., (2020) found an association between fear of the virus and depression among Albanian students. This is not confirmed by our study. Although we observe a correlation between fear of contagion on the one hand and depression and sleep disorders on the other hand, ($r = .16$ and $.12$, $r^2 = 0.02$ and $.01$, respectively), regression analyses revealed no link between fear of the virus and depression or sleep disorders ($\beta = .02$, NS). It is possible that since our data was collected after one month of confinement, the fear of contagion had diminished. It is also possible that it is more associated with anxiety than depression. However, we did not measure anxiety. Hence in Kahn et al's., study with Bengali students, fear of infection had a significant association with anxiety but was not associated with depression.

5. Limitations of the study

Of course, this study is not without its limitations. First, the cross-sectional nature of our data limits the extent to which causal inferences can be made. Our results indicate that the stressors we identified could lead to depression and sleep disorders. However, being depressed and/or suffering from sleep disorders could lead to being more sensitive to the stressors in one's environment.

Secondly, as all scale items have been measured by means of a single questionnaire survey and at the same time, we cannot exclude the fact that the observed relationships might be distorted by the effect of common method variance (CMV)

Thirdly, we obtained a relatively low response rate which could be explained by the fact that the survey remained opened for only 7 weeks. Furthermore, only the students who had access to the internet had received the survey. In addition, our response rate is comparable to those obtained in other studies with students. For example, among French students, Essadek and Rabeyron (2020) and Wathelet et al., (2020), obtained a response rate of 13.3% and 4.3% respectively.

6. Conclusion

To the best of our knowledge, this study is the first one to link the stressors perceived by students during the Covid-19 quarantine with their level of depression and their sleep disorders. Some of our results confirm our knowledge about the impact of quarantine. But they also extend our knowledge by highlighting the stressors perceived by quarantined students and their association with depression and sleep disorders.

The quarantine situation has led to a high rates of depression among students in many countries. The results of this study suggest the need for social support from universities - and teachers - towards students. Of course, we used only two criteria of health, i.e., depression and sleeping disorders. And these two criteria are highly correlated ($r = .55$, $p < .001$, $r^2 = .30$). Therefore, they measured associated troubles. In future studies, researchers could use our scale to test other health indicators (e.g., anxiety, suicide ideations) among quarantined students.

Contributors

All authors have contributed significantly to the paper. DT directed the study and wrote the manuscript. DT and HT conceived the questionnaire and interpreted the data. HT designed and supervised the data collection. DT and MA performed statistical analyses. MA revised the manuscript.

Authorship and copyright

All authors confirm that the submitted manuscript is an original contribution and has not been previously published, that it is not under consideration for publication elsewhere, and that, if accepted, will not be published elsewhere in similar form in any language, without the consent of Elsevier B.V.

Ethical approval

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