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Original article

Bio-psychosocial study on the impact of the COVID-19 lockdown on depression and anxiety in a sample of 1753 French-speaking subjects



Étude biopsychosociale de l'impact du confinement covid19 sur la dépression et l'anxiété dans un échantillon de 1753 sujets francophones

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ABSTRACT

The aim of this article was to study the impact of the COVID19 lockdown on anxiety and depressive symptoms on the basis of responses to an online survey from 1753 French-speaking subjects, conducted between April 27 and May 11, 2020.

Method. – Using a biopsychosocial model, the effects of socio-demographic characteristics (age, gender at birth, socio-professional category, sexual orientation), lockdown conditions (material factors: urban density of the place of residence, surface area of the place of residence during lockdown), social characteristics: living with a partner during lockdown, presence of children during lockdown) and psychosocial history (attachment styles) on anxiety – evaluated on the GAD7 – and depression – evaluated on the MDI – were investigated. Ordinal regression analyses were conducted.

Results. – The rates of depression observed (moderate or severe depression: 22.5%) and anxiety (moderate or severe anxiety: 18.4%) were higher than usual but lower than what has been documented in other studies on the effects of lockdown. Women appeared to be more vulnerable than men (Anxiety: AOR = 1.647, CI 95% = 1.647–2.530; Depression: AOR = 1.622, CI 95% = 1.274–2.072). Bisexual individuals had an increased likelihood of anxiety symptoms (AOR = 1.962, CI 95% = 1.544–2.490) and depression (AOR = 1.799, CI 95% = 1.394–2.317). For homosexuals, only links with depression were observed (AOR = 1.757, CI 95% = 1.039–2.906). People in a situation of economic vulnerability were more prone to anxiety disorders (e.g. people with no working activity: AOR = 1.791, CI 95% = 1.147–2.790) or depression (e.g. people with no working activity: AOR = 2.581, CI 95% = 1.633–4.057). Links with attachment styles were also found. Fearful subjects were particularly vulnerable (anxiety: AOR = 2.514, CI 95% = 1.985–3.190; depression: AOR = 2.521, CI 95% = 1.938–3.289), followed by subjects with an anxious attachment style (anxiety: AOR = 1.949, CI 95% = 1.498–2.540; depression: AOR = 1.623, CI 95% = 1.207–2.181). The impact of lockdown on avoidant subjects only concerned depression (AOR = 1.417, CI 95% = 1.034–1.937). Being with a partner during lockdown appeared to have a protective effect against depression (AOR = .693, CI 95% = .555–.866). Neither the presence of children, the surface area of the lockdown residence, nor the population density of the place of residence was associated with anxiety or depression.

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C O N C L U S I O N

The impact of lockdown on mental health depends on a range of dimensions that need to be apprehended in order to tailor post-lockdown psychological and social support. Management based on a biopsychosocial approach should be favored.

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R É S U M É

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L'objet de cet article est d'étudier l'impact du confinement COVID19 sur les symptomatologies anxieuse et dépressive à partir des réponses à une enquête en ligne menée auprès de 1753 sujets francophones entre le 27 avril et le 11 mai 2020.

Méthode. – Partant d'un modèle biopsychosocial, l'effets des caractéristiques sociodémographiques (âge, état-civil à la naissance, CSP, orientation sexuelle), des modalités de confinement (matérielles : densité urbaine du lieu de résidence, superficie du lieu de confinement, sociales : confinement en couple, présence d'enfants pendant le confinement) et des antécédents psychosociaux (styles d'attachement) sur l'anxiété – évaluée par la GAD7 – et la dépression – évaluée par la MDI – sont investiguées. Des analyses de régression ordinale ont été conduites.

Résultats. – Les taux de dépression (dépression modérée ou sévère : 22,5 %) et d'anxiété (anxiété modérée ou sévère : 18,4 %) sont plus élevés que d'habitude mais inférieurs à ce qui a été documenté dans d'autres études sur les effets du confinement. Les femmes semblent être plus vulnérables que les hommes (anxiété : AOR = 1,647, IC95 % = 1,647–2,530 ; dépression : AOR = 1,622, IC95 % = 1,274–2,072). Les personnes bisexuelles ont une probabilité accrue de symptômes d'anxiété (AOR = 1,962, IC95 % = 1,544–2,490) et de dépression (AOR = 1,799, IC95 % = 1,394–2,317). Pour les homosexuels, seuls des liens avec la dépression ont été observés (AOR = 1,757, IC95 % = 1,039–2,906). Les personnes en situation de vulnérabilité économique sont plus sujettes aux troubles anxieux (par exemple les personnes sans activité professionnelle : AOR = 1,791, IC95 % = 1,147–2,790) ou à la dépression (par exemple les personnes sans activité professionnelle : AOR = 2,581, IC95 % = 1,633–4,057). Des liens avec les styles d'attachement sont également trouvés. Les sujets craintifs semblent particulièrement plus vulnérables (anxiété : AOR = 2,514, IC95 % = 1,985–3,190; dépression : AOR = 2,521, IC95 % = 1,938–3,289), suivis par les sujets ayant un style d'attachement anxieux (anxiété : AOR = 1,949, IC95 % = 1,498–2,540 ; dépression : AOR = 1,623, IC95 % = 1,207–2,181). L'impact du confinement chez les sujets évitants ne concerne que la dépression (AOR = 1,417, IC95 % = 1,034–1,937). Le fait d'être en couple pendant le confinement semble avoir eu un effet protecteur sur la dépression (AOR = 0,693, IC95 % = 0,555–0,866). Ni la présence d'enfants, ni la taille du lieu d'enfermement, ni la densité de population du lieu de résidence ne sont associées à l'anxiété ou à la dépression.

Conclusion. – L'impact du confinement sur la santé mentale dépend d'une pluralité de dimensions qu'il convient de saisir pour adapter au mieux les accompagnements psychologiques et sociaux post-confinement. Une prise en charge axée sur une approche biopsychosociale serait à privilégier.

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1. Introduction

The first cases of SARS COV-2 infection (severe acute respiratory syndrome due coronavirus-2) officially appeared in China in November 2019. The coronavirus-related illness (COVID-19) rapidly spread across the world, and at the end of January 2020, the World Health Organisation (WHO) declared a state of public health emergency on an international scale. Many countries had to adopt lockdown measures as a result of the exponential increase of COVID-19 cases. In France, the first lockdown period was started on March 17th 2020 and ended on May 11th 2020. A second lockdown period took place from October 30th to December 1st 2020. In this article, the exclusive focus is the first lockdown period. During that time, French people were required to stay at home and limit their social interactions. Educational institutions – primary schools, secondary schools and universities – were closed to the physical presence of any students. Only basic-need shops were allowed to remain open. Daily leisure outings were only allowed within a one-kilometre radius of the home, either alone or with members of the same household for a maximum duration of one hour.

Lockdown linked to the coronavirus illness (COVID-19) had a considerable impact on the population's mental health [1]. Increases in the prevalence of mood disorders, anxiety disorders and sleep disorders were reported in the international literature [1–3], compared to what is usually observed [4–7]. Different vulnerability factors were evidenced. Greater vulnerability

was observed among women [8–11]. Vulnerability among sexual minorities was also documented [12–15]. The contextual characteristics of lockdown need to be taken into account to understand its impact [16]. The impact seemed to vary depending on the density of the geographical zone in which subjects were locked down [17]. Lockdown for a single person clearly does not have the same impact as lockdown with a partner [18,19], which may have a positive effect, but can also foster domestic violence [20]. The presence of children at home during lockdown may have created increased stress, thus making people more vulnerable [21]. More structural psychological dimensions also need to be considered to understand the variability of the lockdown effect on mental health [22], and in particular adult forms of attachment (see [23,24]).

In order to contribute to research tackling the effects of lockdown on mental health, a bio-psychosocial approach was adopted for this study on the impact of the COVID-19 lockdown on depression and anxiety, based on Bruchon-Schweitzer's [25] model of health psychology. This study is based on a differential approach. The hypothesis underpinning this study is that the impact of lockdown on anxiety and depression depends on:

- socio-demographic characteristics (age, gender, socio-professional category, sexual orientation);
- lockdown conditions;

- material conditions: urban density of the area of residence, living surface area during lockdown,
- social conditions: living alone or with a partner during lockdown, presence of children;
- Psychosocial history (forms of attachment).

2. Method

2.1. General considerations

The present research is part of the more general context of an online survey carried out from April 27th to May 11th 2020 on the impact of the COVID-19 lockdown on sexuality. In the course of this survey, a multiplicity of dimensions and behaviours related to individual, relational, psychological and sexual functioning were collected, together with socio-demographic data and data relating to lockdown conditions. In this article, the focus was on responses concerning the emotional impact of lockdown, via cross-analyses of the responses concerning depression and anxiety, socio-demographic information and responses to questions dealing with forms of attachment. The survey was presented in a conditional format. Certain questions were thus only asked depending on responses given to previous questions. In particular, questions about forms of attachment were only asked to people who had reported having a partner at the start of the study (but not necessarily living together during lockdown). The analyses were therefore only carried out on a sub-sample of the overall study, which was made up of 1753 subjects who reported having a partner.

Participant recruitment was mainly carried out via the social media. The invitation to participate in the study, presented and entitled "Sexuality and lockdown", was relayed by journalists in the general public information media. The survey was created using Limesurvey free software. A secure university server was used to store the data. Participation in the study was anonymous and free of charge. Great attention was paid to make sure that no information likely to identify the subjects was requested. Neither the IP addresses nor the cookies were saved. Likewise, times and dates of connection were not recorded to increase the confidentiality of the responses.

The research was conducted in agreement with the ethical, deontological and legal principles for scientific research programmes on humans and society (article R. 1121-1-1 in the public health code, decree 2017-884 of May 9th 2017 relating to research involving human beings), and with the ethical principles of the World Association for Sexual Health (WAS). An informed consent form, created from the one suggested by the Laval university research ethics committee, was issued to the participants. This form presented the context of the research, its precise objectives, the mean time required to respond and the potential repercussions of the research. The subjects were required to acknowledge access to the detailed objectives of the study and the conditions to be able to take part in the study, before they could consent electronically. Acknowledgement of access to the detailed objectives and agreement to participate were both necessary to be granted access to the survey. The contact details of the main research investigators and the institutions they belonged to were presented to the participants. The consent form gave information on the possibility of withdrawing from the study at any moment. Furthermore, at the top of each page of the questionnaire, the subjects could tick a box if they wished to quit and erase their responses.

The overall research dealt with many different themes all related to the main research objective: sexuality and lockdown. Each theme was processed on a separate page. When a new theme was introduced, the subjects were informed and a brief general definition of the theme was provided. Concerning the dimensions more specifi-

cally addressed in this article, the participants were told that their investigation enabled an assessment of the potential psychological impact of the lockdown situation through an assessment of their emotional state.

2.2. Measures

Socio-demographic data was collected with an ad hoc questionnaire. The participants' sexual orientation was inferred on the basis of a scale that asked the subjects to indicate with whom they had had sexual intercourse. At one end, subjects could say whether it was exclusively men and on the other end, they could say whether their partners were exclusively women. Between the two extremes, the subjects could indicate whether there were as many men as women, or preferentially men or preferentially women. By crossing the responses to these questions, and to the question relating to birth gender, the subjects' sexual orientation was inferred: when men reported sexual intercourse systematically with women, they were considered heterosexual, when they reported sexual intercourse systematically with men, they were considered homosexual. When partners were either men or women, the subjects were considered bisexual. A similar procedure was used to infer the sexual orientation of the women participating in the study.

The General Anxiety Disorder scale (GAD7) [26,27] was used to study anxiety symptoms. Even though it was originally designed to screen for generalised anxiety disorder, the GAD7 scale also enables the presence of anxiety disorders in different forms to be assessed (panic attacks, post-traumatic stress syndrome, social anxiety disorder. . .). The scale comprises 7 items to which subjects respond on a 4-point scale for the frequency with which they have encountered 7 potential problems in the last two weeks (0: not at all; 3: almost every day). The psychometric qualities of the GAD7 have been recently demonstrated [28] and were also found in the present study ($\alpha > .80$). Categorisation of the level of anxiety was conducted on the basis of the following thresholds: GAD < 5: no anxiety disorders; GAD < 10: slight anxiety; GAD < 15: moderate anxiety; GAD \geq 15: severe anxiety.

Depressive symptoms were collected using the Major Depression Inventory (MDI) developed by the WHO [29]. Twelve items compose this questionnaire. Subjects are asked to give the frequency of appearance of recent depressive symptoms (last 2 weeks) on a 6-point Likert scale (5: all the time; 0: never). The psychometric qualities reported in the literature [30] and in the present research ($\alpha > .80$) are good. The following thresholds enabled subjects to be discriminated: no depression MDI < 20; slight depression: MDI \leq 25; moderate depression: 25 > MDI > 31; severe depression: MDI \geq 31.

The perception of attachment to the partner was assessed using the "Relationship structure questionnaire of experiences in close relationships-revised" [31,32]. This questionnaire is composed of 9 items presented in the form of a Likert scale which can be used to assess attachment to 4 potential attachment figures (mother, father, romantic partner and best friend). In the present research, attention was focused on romantic partnerships. The questionnaire provides a score that assesses the anxiety dimension of attachment and the avoidance dimension. The psychometric qualities found in the literature were good, as was also the case for the present study ($\alpha \geq .70$).

From the scores obtained for the anxiety and avoidance dimensions, the subjects were categorised according to Bartholomew and Horowitz's 4-group classification [33]. Subjects with anxiety and avoidance scores lower than the median were categorised as subjects with a secure attachment style. Subjects with an anxiety score higher than the median, but lower than the median for the avoidance score, were categorised as having an anxious style of attachment. Subjects with a score higher than the median for both

attachment dimensions were considered as having a fearful style of attachment.

2.3. Data processing

The data was processed with R Software (3.6.0). Ordinal regression analyses were conducted with anxiety or depression as response variables.

3. Results

3.1. Participant characteristics

The participant characteristics are presented in Table 1. The sample was relatively young and female for two-thirds. Executives and students were overrepresented, whereas farmers and manual workers were underrepresented. Most participants were living in moderate to high-density towns and in spacious living quarters. Two-thirds were living with a partner during lockdown and one third with children. The presence of anxiety symptoms concerned more than half of the subjects and 18.4% presented moderate to severe anxious symptoms. More than one subject out of five exhibited moderate to severe depressive symptoms. Almost a third of the subjects could be categorised as having a secure or fearful attachment style. One out of five presented an anxious or avoiding attachment style.

3.2. Multivariate analyses

3.2.1. Anxiety

Ordinal regression analyses concerning anxiety are presented in Table 2. There was greater vulnerability among women and people not working (unemployed or students). Vulnerability linked to sexual orientation was found, but for bisexual people specifically. With regard to attachment styles, only subjects with avoidant and fearful styles seemed to present an increased risk of anxiety symptoms.

3.3. Depression

Results for the regression analyses concerning depression are presented in Table 3. Increased vulnerability to depression was found among women. Four socio-professional categories presented a greater probability of depression than executives. Homosexual and bisexual people exhibited a risk of depressive disorders that was at least 1.75 times greater than for heterosexual people. Subjects with an insecure attachment style showed greater vulnerability than subjects with a secure attachment style.

4. Discussion

The results of the present study are in line with the international literature on the subject of the impact of lockdown on populations' mental health, despite the fact that the rates of depression and anxiety in this sample were lower than those documented in other studies [3]; the rates are however non-negligible compared to data usually observed [4–6].

The present study is also a reminder that the health crisis did not have the same effects for everyone, which encourages the adoption of a bio-psychosocial and differential perspective, both to theorise the impact of lockdown and to suggest care tailored to the specificities of each individual. As suggested in other studies, women seemed more vulnerable towards the situation than men [8–11]. While this result has frequently been reported in studies on depression and anxiety [4–6], it is important to bear in mind the specificity of the lockdown setting for women: increased economic insecur-

Table 1
Participant characteristics.

	Fq	%
Socio-demographic characteristics		
Age		
18–24 years old	606	34.6%
25–29 years old	289	16.5%
30–39 years old	481	27.4%
40–49 years old	283	16.1%
50 years old and +	94	5.4%
Birth gender		
Women	1188	67.8%
Men	565	32.2%
Socio-professional category		
Farmers	6	0.3%
Tradespeople, shop owners and business managers	83	4.7%
People with no professional activity	86	4.9%
Executives and higher intellectual professions	644	36.7%
Employees	290	16.5%
Primary and secondary school students	482	27.5%
Manual workers	18	1.0%
Intermediate professions	138	7.9%
Retired	6	0.3%
Sexual orientation		
Bisexual	314	17.9%
Homosexual	63	3.6%
Heterosexual	1376	78.5%
Characteristics of the lockdown residence area		
Density of the urban population		
A village (fewer than 2000 inhabitants)	274	15.6%
A big town (+100,000 inhabitants)	757	43.2%
A small town (between 2000 and 20,000 inhabitants)	382	21.8%
A medium-size town (between 20,000 and 100,000 inhabitants)	340	19.4%
Surface area of the lockdown residence		
Less than 20 m ²	35	2.0%
Between 20 and 40 m ²	184	10.5%
Between 40 and 60 m ²	321	18.3%
Between 60 and 80 m ²	365	20.8%
More than 80 m ²	848	48.4%
Living with a partner during lockdown		
No	565	32.2%
Yes	1188	67.8%
Presence of children during lockdown		
No	1223	69.8%
Yes	530	30.2%
Psychological dimensions		
Anxiety		
No anxiety	833	47.5%
Slight anxiety	596	34.0%
Moderate anxiety	220	12.5%
Severe anxiety	104	5.9%
Depression		
No depression	1153	65.8%
Slight depression	206	11.8%
Moderate depression	173	9.9%
Severe depression	221	12.6%
Attachment styles		
Anxious	352	20.1%
Fearful	517	29.5%
Avoidant	329	18.8%
Secure	555	31.7%

ity, domestic violence, difficulties in accessing bare necessities or seeing gynaecologists, for instance.

Compared to executives and higher intellectual professions, students, people having difficulty finding employment or lower category salaried employees seemed more affected by lockdown. As executives and higher intellectual professionals belong to economically favoured socio-professional categories, this result is in line with what has been observed for the role played by economic vulnerability in understanding the impact of lockdown [10] and more broadly the impact of economic determinants on mental health [7].

Table 2
Ordinal regression of the anxiety scores (GAD7).

Predictor	Estimate	SE	Z	P	AOR	95% Confidence Interval	
						Lower	Upper
Socio-demographic characteristics							
Age (ref: 18–24 years old)							
25–29 years old	-.015	.182	-.083	.934	.985	.690	1.410
30–39 years old	.069	.186	.369	.712	1.071	.744	1.540
40–49 years old	-.059	.217	-.273	.785	.942	.616	1.440
50 years old and +	-.006	.270	-.022	.983	.994	.583	1.680
Birth gender (ref = men)							
Women	.712	.109	6.518	<.001	2.038	1.647	2.530
Socio-professional category (ref: Executives and higher intellectual professions)							
Farmers	.572	.704	.812	.417	1.771	.427	7.080
Tradespeople, shop owners and business managers	.155	.228	.681	.496	1.168	.743	1.820
People with no professional activity	.583	.226	2.576	.010	1.791	1.147	2.790
Employees	.178	.140	1.272	.204	1.195	.908	1.570
Primary and secondary school students	.521	.183	2.839	.005	1.683	1.176	2.410
Manual workers	.237	.467	.507	.612	1.267	.490	3.120
Intermediate profession	-.148	.188	-.791	.429	.862	.594	1.240
Retired	.967	.737	1.312	.190	2.630	.574	11.000
Sexual orientation (ref: heterosexual)							
Bisexual	.674	.122	5.507	<.001	1.962	1.544	2.490
Homosexual	.424	.252	1.683	.092	1.528	.926	2.490
Characteristics of the lockdown area of residence							
Urban density (ref: a big town (+100,000 inhabitants))							
A village (less than 2000 inhabitants)	.020	.150	.134	.894	1.020	.760	1.370
A small town (between 2000 and 20,000 inhabitants)	-.134	.129	-1.041	.298	.874	.679	1.130
A medium-size town (between 20,000 and 100,000 inhabitants)	.079	.128	.620	.535	1.082	.842	1.390
Surface area of the accommodation (ref: between 60 and 80 m²)							
Less than 20 m ²	.225	.344	.654	.513	1.252	.633	2.450
Between 20 and 40 m ²	.122	.178	.685	.494	1.130	.796	1.600
Between 40 and 60 m ²	-.095	.150	-.631	.528	.910	.677	1.220
More than 80 m ²	-.136	.127	-1.071	.284	.873	.681	1.120
Living with a partner during lockdown (ref: No)							
Yes	-.162	.104	-1.564	.118	.850	.694	1.040
Presence of children (Ref: No.)							
Yes	.190	.134	1.415	.157	1.209	.930	1.570
Psychological dimensions							
Attachment style - RSQ (ref: Secure)							
Anxious	.667	.134	4.968	<.001	1.949	1.498	2.540
Fearful	.922	.121	7.624	<.001	2.514	1.985	3.190
Avoidant	.161	.140	1.155	.248	1.175	.893	1.540

SE: Standard Error; AOR: Adjusted Odds Ratio.

This is not the first study to have underlined how very vulnerable people belonging to sexual minorities are. Existing research has however focused on the vulnerability of the LGBT community as a whole (for instance: [15]). Nevertheless, in the present study, bisexual people were found to be more vulnerable than homosexual people, whether for the level of significance of the results or the amplitude of the effects (AOR). This result is a reminder of the need for responsiveness, accompaniment and prevention adapted to the specificities of the issues encountered [16]. The difficulties encountered by people from sexual minorities are not identical to those encountered by heterosexual people, and alongside what bisexual people have had to face during the health crisis is not necessarily identical to what homosexual people have had to face.

Several explanatory factors provided by the international literature [12–15] could explain the increased vulnerability of homosexual and bisexual individuals: greater difficulty in access to care, greater economic vulnerability and exacerbated stigmatisation could favour psychopathological symptoms. Behavioural aspects related to the restrictions on social relationships intrinsically linked to lockdown also need to be considered (for instance: [15]). The present research does not however enable these explanatory factors to be better understood among the subjects in this study. Further investigation is therefore necessary to determine their respective weights.

Some studies have investigated the role played by the different attachment styles in the psychological and social adaptation

to lockdown [22], but to our knowledge, none was conducted on a French-speaking sample. In line with the literature on adult attachment [23,24], the present results underline how vulnerable people with insecure attachment styles have been, with a probability 1.4 and 2.5 times greater of having been affected by the health crisis than subjects with a secure attachment style. The vulnerability varies with the type of insecure attachment, with fearful subjects and those with an anxious form of attachment to their partner seeming to be the most vulnerable.

Despite what was expected, contextual factors had little impact on depression and anxiety levels. Living with a partner during lockdown was found to be beneficial, as depressive affects were probably minimised by social support, perceived to be of good quality (see Bruchon-Schweitzer, 2002). However, neither the presence of children, nor the urban density of the place of residence appeared as factors, unlike reports in the literature [17,21]. These differences could be due to cultural disparities—to our knowledge, studies in France have not examined these aspects. They could also be the result of socio-demographic differences between the different populations studied. Similarly, they could be linked to differences in lockdown conditions across countries. Indeed, one study that showed links between urban density and lockdown impact was a Chinese study [17]. However, urban density in China is hardly comparable to French urban densities, and the lockdown measures that were put into place by the Chinese authorities were not identical to the first French lockdown.

Table 3
Ordinal regression of the depression scores (MDI).

Predictor	Estimate	SE	Z	P	AOR	95% Confidence Interval	
						Lower	Upper
Socio-demographic characteristics							
Age (ref: 18–24 years old)							
25–29 years old	.092	.194	.477	.633	1.097	.751	1.606
30–39 years old	.135	.202	.667	.505	1.144	.771	1.704
40–49 years old	-.088	.245	-.358	.721	.916	.566	1.482
50 years old and +	-.277	.333	-.833	.405	.758	.387	1.432
Birth gender (ref= Men)							
Women	.484	.124	3.898	<.001	1.622	1.274	2.072
Socio-professional category (ref: Executives and higher intellectual professions)							
Farmers	1.810	.765	2.367	.018	6.112	1.403	31.485
Tradespeople, shop owners and business managers	-.294	.291	-1.012	.311	.745	.411	1.291
People with no professional activity	.948	.232	4.091	<.001	2.581	1.633	4.057
Employees	.403	.158	2.552	.011	1.496	1.096	2.036
Primary and secondary school students	.804	.198	4.059	<.001	2.236	1.520	3.306
Manual workers	.966	.473	2.045	.041	2.628	.995	6.488
Intermediate Professions	.015	.216	.070	.944	1.015	.658	1.539
Retired	-.163	1.141	-.143	.887	.850	.042	5.840
Sexual orientation (ref: heterosexual)							
Bisexual	.587	.130	4.532	<.001	1.799	1.394	2.317
Homosexual	.564	.262	2.156	.031	1.757	1.039	2.906
Characteristics of the lockdown area of residence							
Urban density (ref: A big town (+100,000 inhabitants))							
A village (less than 2000 inhabitants)	-.152	.168	-.905	.365	.859	.616	1.192
A small town (between 2000 and 20,000 inhabitants)	-.218	.147	-1.485	.138	.804	.603	1.071
A medium-size town (between 20,000 and 100,000 inhabitants)	.003	.142	.021	.983	1.003	.758	1.323
Surface area of the accommodation (ref: between 60 and 80 m ²)							
Less than 20 m ²	.545	.336	1.620	.105	1.724	.886	3.328
Between 40 and 60 m ²	.202	.191	1.059	.289	1.224	.841	1.778
Between 20 and 40 m ²	.098	.163	.599	.549	1.103	.800	1.520
More than 80 m ²	-.245	.144	-1.707	.088	.783	.591	1.038
Living with a partner during lockdown (ref: No)							
Yes	-.366	.114	3.226	.001	.693	.555	.866
Presence of children (Ref: No)							
Yes	-.008	.154	-.049	.961	.992	.734	1.342
Psychological dimensions							
Attachment styles - RSQ (ref: Secure)							
Anxious	.484	.151	3.211	.001	1.623	1.207	2.181
Fearful	.925	.135	6.860	<.001	2.521	1.938	3.289
Avoidant	.348	.160	2.177	.029	1.417	1.034	1.937

SE: Standard Error; AOR: Adjusted Odds Ratio.

Therefore, even if data from the international literature provides substantial resources to understand the effects of the health crisis on psychological functioning, the present results underline the need to take cultural/socio-demographic contexts into account if the lockdown effects on mental health are to be apprehended in a specific population/culture/society. Furthermore, because (1) the absence of significance of the results does not mean the absence of effects, but the inability to conclude on the existence of an effect, and because (2) anxiety and depression could enhance risks of child abuse [21], long-term attention to the various impacts of lockdown is still necessary.

5. Limitations

The main limitation encountered in the present study was its cross-sectional design, which made it difficult to evidence causal links between lockdown conditions, symptoms and socio-demographic variables. Links between socio-economic vulnerability and mental health have been extensively documented in the scientific literature and international reports outside lockdown settings [7]. Similarly, the deleterious impact of insecure attachment styles has been demonstrated many times [23,24]. It is therefore possible that the links observed between these different dimensions pre-existed before the health crisis. What is more fundamental is to determine whether the impact of lockdown, or more globally the COVID-19 health crisis, has led to the emergence

of psychopathological issues of a new nature – qualitatively different – or whether this health crisis reactivated or aggravated pre-existing forms of vulnerability. The difference in this case would be more quantitative. Beyond the theoretical reflection, the stakes are also in terms of care and accompaniment: whilst quantitative changes could encourage increased efforts to cater for the most vulnerable people on the basis of usual practice, qualitative changes could encourage reflexion on new modes of support and care.

It would have been interesting to take into consideration the effect of the approach of the end date of lockdown on the subjects' psychological functioning. It is indeed possible that the expectation of coming out of lockdown and a pandemic recession had an impact on anxiety and depression scores, or even that the effect of expecting to come out of lockdown had a different impact depending on the population's demographic characteristics. However, for confidentiality reasons and to ensure the strictest anonymity, this information was not recorded in the present study.

As with many studies carried out during lockdown, data collected remotely could have entailed a selection bias among subjects: only those with access to Internet and at ease with IT took part. Examination of socio-professional categories, the characteristics of the place of residence, and anxiety and depression levels showed that the subjects in the present study belonged to a population group that was less vulnerable than the average. Because of lockdown, it is probable that the subjects completed the survey from their place of residence. However, a great majority

were living with a partner during lockdown. These constraints, linked the situation of lockdown, did not as a result enable access to the most vulnerable subjects – for instance those for whom the relationship with their partner was a source of conflict or violence.

6. Conclusion

In this non-typical sample, which is likely to have been preserved from the most negative aspects of lockdown, the repercussions on mental health were nevertheless non-negligible. It is also possible that these repercussions were under-estimated as a result of the characteristics of the sample. The impact of lockdown on mental health depends on numerous dimensions that need to be understood to improve and tailor post-lockdown psychological and social care. Care centred on a bio-psychosocial approach certainly needs to be encouraged. It could also be improved by the integration of specificities linked to biological gender, addressing them by taking norms and gender stereotypes into account. This approach could explore sexual orientations to determine the potential impact of discrimination experienced by subjects. Economic vulnerability should also be taken into consideration and an investigation into relationships with partners is needed. On this last point, the consideration of attachment styles towards partners could contribute to a better understanding of how lockdown is experienced.

Disclosure of interest

The authors declare that they have no competing interest.

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