



ORIGINAL ARTICLE

Somatic Symptoms and Emotional Health during the COVID-19 Epidemic in Spanish University Students

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Abstract

Background: This study aimed to examine scores on a validated questionnaires measure of somatic symptoms in Spanish university students sample during the COVID-19 pandemic and address the relationship of somatic symptoms with some variables as gender, degree, course and emotions.

Methods: The sample was conducted in Spanish university students from 12 May 2020 to 19 May 2020, eight weeks after the Spanish government decreed a state of alarm (n = 473). All participants answered an anonymous questionnaire and two validated questionnaires (PHQ-15 and GHQ-28).

Results: The total PHQ-15 mean score was 12.90 and GHQ-28 was 13.67 with differences by gender. In general, males reported significantly less symptoms than females. The item characteristics of the 15 items of the PHQ-15 demonstrated that the most frequent somatic symptoms were feeling tired, headaches, back pain and sleep problems. We have found few relationships between items of PHQ-15 and degree and course. However, emotions were associated with some of the items of PHQ-15. In particular, sadness, fear, disgust and security. In contrast, anger did not show any significant differences.

Conclusions: This investigation confirms that there were some somatic symptoms among Spanish university students, concretely fatigue and sleep problems during COVID-19 pandemic. These somatic symptoms were related with unpleasant emotions as sadness and disgust. It is necessary to implement preventive mental health strategies at the University in conjunction with epidemic and pandemic response strategies before, during and after of COVID-19 outbreak to reduce future psychosomatic problems among university students.

Keywords

COVID-19, Somatic symptoms, Emotions, University students, GHQ-28, PHQ-15

Introduction

The coronavirus (COVID-19), identified in China at the end of 2019, has a high contagion potential, and its incidence has increased exponentially. Its widespread transmission was recognized by the World Health Organization as a pandemic [1]. The situation has had consequences in a number of sectors, with direct implications for the population's daily life and mental health [2].



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During epidemics, the number of people whose mental health is affected tends to be greater than the number of people affected by the infection [3]. The mental health implications can last longer and have greater prevalence than the epidemic itself and that the psychosocial and economic impacts can be incalculable if we consider their resonance in different contexts. People may experience intense emotional and behavioral reactions, such as fear, boredom, loneliness, anxiety, insomnia or anger [4]. Such conditions can evolve into disorders, whether depressive, anxiety (including panic attacks and post-traumatic stress), psychotic or paranoid, obsessive-compulsive symptoms, somatic symptoms and somatization and can even lead to suicide [5-7].

These conditions can be especially prevalent in quarantined patients, whose psychological distress tends to be higher [8]. Thus, mass quarantine and confinement are measures to prevent and control the disease epidemic and governments have had to implement extraordinary physical distancing interventions to slow the spread of the virus [9]. People reduced contact with once common social connections, in isolation, stay at home, separation from loved ones with loss of freedom, people unable to work and having to interrupt their professional activities, stores and schools closed, public transport and every economic activity suspended, etc. This quarantine can, on occasion, create dramatic effects and affected many aspects of people's lives with a wide variety of psychological problems [8,9] with an emotional impact, negative psychological consequences and is likely to raise anxiety substantially with implications for other health for the general population [10-12].

There is evidence that negative psychological consequences in health for the general population in the COVID-19 outbreak but one group that has received little attention in the context of the current pandemic is the young people. Concretely, association between somatic symptoms and university young people during COVID-19 pandemic.

There are difficulties to conceptual clarification somatic symptoms [13]. Somatic symptoms are commonly reported in the general population, and many are medically unexplained [14,15]. It cannot be attributable to a defined medical illness or mental disorder differentiating functional somatic syndromes, such as specific clusters of bodily symptoms (e.g., fibromyalgia, irritable bowel syndrome, chronic tension-type headache, etc.) from bodily distress disorders, characterized by diverse unpleasant and disturbing bodily sensations that are insufficient for diagnosing a disease [13,16,17]. However, somatic symptoms are a public health problem and cause major emotional distress and functional impairment [13-15,18].

Table 1: Socio-demographic data.

Entire Cohort	(n = 473)
Age (median, SD)	21.6 (4.18)
	Range (18-54)
Sex (n, %)	
Male	56 (11.8)
Female	417 (88.2)
Degrees (n, %)	
Health Sciences	330 (69.8)
Nursing	102 (21.6)
Podiatry + Nursing	29 (6.1)
Speech and Language Therapy	102 (21.6)
Occupational Therapy	82 (17.3)
Podiatry	15 (3.2)
Social Sciences	139 (29.4)
Working Social	53 (11.2)
Education Social	50 (10.6)
Business Administration and Management	36 (7.6)
Others Degrees	4 (0.8)
Course (n, %)	
First	189 (40)
Second	106 (22.4)
Third	90 (19)
Fourth	88 (18.6)

Methods

Participants and procedure

This was a descriptive, epidemiological, cross-sectional study. The target population was university students in different degrees and years of study at the University of Castilla-La Mancha at its campus in Talavera de la Reina (n = 473) (Table 1). Non-probability quota sampling was used. The inclusion criteria of the study were minimum age of 18 years and being enrolled in a university degree course, years 1 to 4.

The sampling process was carried out with the collaboration of the academic secretary's office of the Faculty of Health Sciences and the Faculty of Social Sciences at the University of Castilla-La Mancha. Social media and WhatsApp were also used among students, colleagues and friends.

Participants were recruited by e-mail, having received an e-mail from the secretary of the University. This study received ethical approval and was supervised by the Research Commission of the Integrated Healthcare Services, in Talavera de la Reina, Spain (45/2019). Informed consent was obtained electronically before data were collected from the participants.

Data collection began on 12 May 2020 eight weeks

after the Spanish government decreed a state of alarm. The online questionnaire was openly accessible for 7 days from 12 May 2020 to 19 May 2020 (Google Forms®). On 12 May 2020, the university secretary's office sent an email from the corporate platform to students from all years enrolled in degrees in the previously mentioned Faculties, explaining the aim of the research and including a link to respond to the questionnaire. Students, colleagues, and friends were also asked to invite others to respond.

Spanish government, in a Royal Decree of exceptional averages has ordered a mass quarantine in all country as an emergency measure to prevent spreading of the infection. This situation started on 14 March 2020. Consequently, all levels since schools from universities, were closed and university students were confined to their homes. As in other countries [19,20] massive efforts are being made to create online courses and online teaching platforms on internet to teach lessons and topics to save the semester.

Instruments

An anonymous online questionnaire was developed for this study. First, we collected background demographic information on gender, age, degree and year of study.

Second, we administered the GHQ-28. It was developed by Goldberg in 1978 [21]. The GHQ-28 is one of the most widely used and validated questionnaires to screen for emotional distress, to detect those likely to have or to be at risk of developing psychiatric disorders and possible psychiatric morbidity. It has been tested in numerous populations and has since been translated into 38 languages. The GHQ-28 is a 28-item measure of emotional distress in the last few weeks, and is therefore an indication of state rather than trait characteristics at a point in time. Through factor analysis, the GHQ-28 has been divided into four subscales: somatic symptoms (items 1-7); anxiety/insomnia (items 8-14); social dysfunction (items 15-21), and severe depression (items 22-28). Answers on the GHQ are coded on a 4-point Likert scale (0-1-2-3) or on a dichotomous GHQ scale (0-0-1-1). We used the GHQ scale where the GHQ-28 can be scored with a binary method where "not at all", and "no more than usual" score 0, and "rather more

than usual" and "much more than usual" score 1. Using this method any score above 4 indicates the presence of distress or 'caseness'. The Cronbach's α has been excellent (0.9-0.95).

Third, we administered the Patient Health Questionnaire PHQ-15 developed by Kroenke & Spitzer [22]. It is a self-administered 15 somatic symptoms in the last four weeks. The PHQ-15 comprises 15 somatic symptoms, each symptom scored from 0 ("not bothered at all") to 2 ("bothered a lot"). The total PHQ-15 score ranges from 0 to 30 and scores of ≥ 5 , ≥ 10 , ≥ 15 represent mild, moderate, and severe levels of somatization. The Cronbach's α is 0.8.

Fourth, we asked about the presence of the following emotions (fear, anger, guilt, disgust, sadness, curiosity, admiration, security, and joy) [23,24] in the last four weeks.

Data analysis

Data analysis was conducted using the IBM® SPSS® Statistics 22.0. For the statistical analysis, we first checked whether the variables to be statistically analyzed were normally distributed, using the K-S test for normality. The sample did not follow a normal distribution of data, as indicated by the analysis of the Kolmogorov-Smirnov test of normality, in which all the variables evaluated follow a probability of less than or equal to 0.05. Therefore, for the data analysis, we performed the non-parametric Mann-Whitney test, which is the non-parametric test parallel to the t test for independent samples. A confidence level of 0.05 was taken into account for all statistical analyses. In addition, descriptive and frequency distribution (mainly means and standard deviations) and Chi-square independence tests were used.

Results

GHQ-28 and PHQ-15 mean scores

Table 2 shows the data regarding PHQ-15, GHQ-28 and subscales mean scores in the study. The total PHQ-15 mean score was 12.90 and GHQ-28 was 13.67. In the Table 2 we can see GHQ-28 and PHQ-15 mean scores by gender (males vs. females). In general, males reported significantly less symptoms than females.

Table 2: Descriptive statistics in measures of questionnaires in total sample and by gender.

Scales	Total Sample (n = 473)			Males (n = 56)			Females (n = 417)		
	M (SD)	Min	Max	M (SD)	Min	Max	M (SD)	Min	Max
Somatic symptoms	3.87 (2.16)	0	7	3.26 (2.38)	0	7	3.96 (2.12)	0	7
Anxiety and insomnia	4.71 (2.18)	0	7	3.58 (2.58)	0	7	4.86 (2.07)	0	7
Social dysfunction	3.77 (2.24)	0	7	3.25 (2.32)	0	7	3.84 (2.22)	0	7
Severe depression	1.3 (1.64)	0	7	1.07 (1.59)	0	7	1.34 (1.65)	0	7
Total GHQ-28	13.67 (6.67)	0	28	11.17 (7.31)	0	26	14.01 (6.52)	0	28
Total PHQ-15	12.90 (5.59)	0	28	9.12 (5.67)	0	23	13.40 (5.39)	0	28

Table 3: Characteristics of the items of PHQ-15.

Items	Full Sample (473)	Item-total correlation	Males (56)	Females (417)
	Mean (SD)		Mean (SD)	Mean (SD)
PHQ1 Stomach pain	0.82 (0.71)	0.62	0.50 (0.57)	0.86 (0.72)**
PHQ2 Back pain	1.43 (0.71)	0.56	0.98 (0.77)	1.49 (0.68)**
PHQ3 Pain arm, legs	0.81 (0.74)	0.52	0.68 (0.63)	0.83 (0.75)
PHQ4 Menstruation pain	1.15 (0.8)	0.32		1.30 (0.72)**
PHQ5 Headaches	1.46 (0.69)	0.62	1.14 (0.77)	1.50 (0.67)**
PHQ6 Chest pain	0.59 (0.73)	0.64	0.48 (0.68)	0.60 (0.74)
PHQ7 Dizziness	0.54 (0.68)	0.52	0.43 (0.65)	0.56 (0.69)
PHQ8 Fainting	0.05 (0.23)	0.41	0.05 (0.29)	0.05 (0.22)
PHQ9 Heart race	0.76 (0.77)	0.69	0.54 (0.71)	0.79 (0.77)*
PHQ10 Short breath	0.59 (0.71)	0.71	0.55 (0.73)	0.60 (0.71)
PHQ11 Pain sexual intercourse	0.12 (0.41)	0.21	0.02 (0.13)	0.14 (0.43)*
PHQ12 Constipation	0.88 (0.79)	0.46	0.68 (0.66)	0.90 (0.81)
PHQ13 Nausea, gas	0.74 (0.74)	0.71	0.48 (0.71)	0.77 (0.74)**
PHQ14 Feeling tired	1.56 (0.63)	0.54	1.39 (0.70)	1.58 (0.62)*
PHQ15 Trouble sleep	1.42 (0.72)	0.56	1.20 (0.84)	1.45 (0.70)*

Note: * $p < 0.05$; ** $p < 0.001$.

Characteristics of the items of PHQ-15

The item characteristics of the 15 items of the PHQ-15 can be seen in Table 3. The most frequent symptoms were feeling tired, headaches, back pain and sleep problems. The corrected item-test correlations are given. The coefficients were between 0.21 and 0.71. With the exception of pain during sexual intercourse ($r = 0.21$) and menstruation pain ($r = 0.32$), all coefficients were 0.41 or above. By gender, females reported higher levels of symptoms than males in all items. Females were most feeling tired, headaches, back pain, sleep problems and menstruation pain. And males feeling tired, sleep problems, headaches and back pain.

Females showed significant differences with higher mean ranges of stomach pain (244.47 vs. 181.38); back pain (246.98 vs. 162.65); menstruation pain (it is not relevant because contains gender-specific content); headaches (244.13 vs. 183.92) heart race (241.93 vs. 200.26); pain sexual intercourse (239.34 vs. 219.59); nausea, gas (243.11 vs. 191.48); feeling tired (240.95 vs. 207.58); and trouble sleep (241.32 vs. 204.86) than males. Female students presented greater scores in PHQ-15 ($Z: -5.156$; $p \leq 0.000$), compared to their male counterparts (248.86 vs. 148.71).

Correlations with other scales (GHQ-28)

The correlations between the PHQ-15 items and subscales of GHQ-28 are given in Table 4. The PHQ-15 total score was most strongly correlated with the total of GHQ-28. Among the items, "Trouble sleep" was most strongly associated with subscale anxiety and insomnia ($r = 0.576$); "Headaches" was most strongly associated with somatic symptoms ($r = 0.571$); and "Feeling tired"

was most strongly associated with subscale anxiety and insomnia ($r = 0.550$) and somatic symptoms ($r = 0.512$).

Relationship between items of PHQ-15 and degree, course and emotions

Significant differences were obtained in degrees. Firstly, it was found that students enrolled in Social Sciences degrees scored higher mean ranges in dizziness (255.21 vs. 226.49; $Z: -2.372$; $p \leq 0.018$), and in fainting (241.87 vs. 232.11; $Z: -2.036$; $p \leq 0.042$) than students enrolled in Health Sciences degrees.

Second, only was a significant difference between students enrolled in different courses. Third-year students showed higher mean ranges (97.55 vs. 81.27; $Z: -2.260$; $p \leq 0.024$) in constipation than those enrolled in 4th.

Finally, the frequencies of the emotions are given according to the prevalence. The most frequent emotions were sadness ($n = 148$; 31.3%), anger ($n = 109$; 23%), fear ($n = 78$; 16.5%), disgust ($n = 31$; 6.6%), joy ($n = 29$; 6.1%), curiosity ($n = 25$; 5.3%), security ($n = 24$; 5.1%), surprise ($n = 14$; 3.4%), guilt ($n = 13$; 2.7%) and admiration ($n = 2$; 0.4%).

Significant differences were found among items of PHQ-15 and some important emotions as fear, sadness, disgust and security (Table 5). However, anger not showed any significant differences. In general, when we divided emotions in two groups' negative/unpleasant emotions and positive/pleasant emotions we found significant differences in all items of PHQ-15 ($p < 0.001$) except in PHQ7 dizziness and PHQ11 pain sexual intercourse.

Table 4: Correlations between the PHQ-15 items with subscales of GHQ-28.

Items	Somatic symptoms	Anxiety and insomnia	Social dysfunction	Severe depression	Total GHQ-28
PHQ1 Stomach pain	0.352**	0.313**	0.209**	0.210**	0.339**
PHQ2 Back pain	0.344**	0.300**	0.235**	0.204**	0.339**
PHQ3 Pain arm, legs	0.343**	0.280**	0.271**	0.207**	0.345**
PHQ4 Menstruation pain	0.213**	0.272**	0.176**	0.155**	0.255**
PHQ5 Headaches	0.571**	0.372**	0.249**	0.244**	0.450**
PHQ6 Chest pain	0.431**	0.383**	0.336**	0.384**	0.472**
PHQ7 Dizziness	0.372**	0.291**	0.291**	0.376**	0.406**
PHQ8 Fainting	0.156**		0.147**	0.259**	0.139**
PHQ9 Heart race	0.412**	0.407**	0.345**	0.320**	0.461**
PHQ10 Short breath	0.465**	0.387**	0.348**	0.345**	0.479**
PHQ11 Pain sexual intercourse	0.130**	0.93*	0.114*	0.159**	0.150**
PHQ12 Constipation	0.290**	0.295**	0.292**	0.240**	0.348**
PHQ13 Nausea, gas	0.357**	0.298**	0.288**	0.311**	0.385**
PHQ14 Feeling tired	0.512**	0.550**	0.445**	0.310**	0.572**
PHQ15 Trouble sleep	0.408**	0.576**	0.392**	0.344**	0.537**
TOTAL PHQ-15	0.671**	0.622**	0.516**	0.496**	0.716**

Note: *p < 0.05; **p < 0.001.

Table 5: Significant differences were found among some emotions. Mean ranges.

Items	Fear		Sadness		Disgust		Security	
	Yes (n = 78)	No (n = 395)	Yes (n = 148)	No (n = 325)	Yes (n = 31)	No (n = 442)	No (n = 449)	Yes (n = 24)
PHQ1 Stomach pain							240.76	166.67**
PHQ2 Back pain			257.30	227.76*	280.98	233.92*	240.16	177.96*
PHQ3 Pain arm, legs					283.73	233.72*		
PHQ4 Menstruation pain								
PHQ5 Headaches			259.11	226.93**			239.47	190.83*
PHQ6 Chest pain							240.77	166.50**
PHQ7 Dizziness			258.47	227.22**				
PHQ8 Fainting								
PHQ9 Heart race								
PHQ10 Short breath			254.28	229.13*	298.52	232.69**	240.54	170.71**
PHQ11 Pain sexual intercourse								
PHQ12 Constipation								
PHQ13 Nausea, gas					283.37	233.75**		
PHQ14 Feeling tired	260.90	232.28*	269.61	222.15**			240.52	171.10**
PHQ15 Trouble sleep	262.05	232.05*	268.83	222.51**			241.42	154.38**
PHQ-15 Total			268.83	222.51**	289.50	233.32*	241.67	149.54**

Note: *p < 0.05; **p < 0.001.

Discussion

The present work aims to know the somatic symptoms and emotional health measured by two questionnaires in a sample of Spanish university students during quarantine as a consequence of the global pandemic caused by COVID-19.

Firstly, the mean scores obtained by our university students on the total GHQ-28 [25] and total PHQ-15 [22] suggest health in Spanish university students are normal with scores are not particularly high. Besides, the mean scores in sub-scales on GHQ-28 indicated moderate levels of anxiety and insomnia, somatic symptoms and social dysfunction. Sub-scale severe depression was so low. These results were similar with other studies with college [26] although, Makhal, et al. [27], with college too, found different results.

However, in items of PHQ-15, our results were different. The highest somatic symptoms reported were feeling tired, sleep problems, Headaches and back pain. Similar studies in the general population on base rates for somatic symptoms showed severe prevalence of fatigue and sleep problems [13,15,18] although, previous studies in general population reported slightly different frequencies with a dominance of various types of pain [28,29].

Regarding the gender, mean scores were higher for women compared to men in both questionnaire and their subscales and items. These were similar to previous studies [14,18].

The high association of somatization and GHQ-28 in the present study ($r = 0.716$) and with all subscales as somatic symptoms ($r = 0.671$), anxiety and insomnia ($r = 0.622$), social dysfunction ($r = 0.516$) and severe depression ($r = 0.496$) is comparable to former studies [18]. These results could suggest the relation between somatization and worse mental health in university students where somatization has a greater impact on mental health in Spanish university students during quarantine by the COVID-19 epidemic. Future studies should try to address although, this situation is clinically understandable given that somatic symptoms are frequent in anxiety disorders [15,18,26] even during the first 2 weeks of the COVID-19 outbreak [30].

Secondly, the relationships between the variables revealed few significant differences. For example, only students from Social Sciences degrees showed significant associations in cardiopulmonary symptoms (dizziness and fainting) than students enrolled in Health Sciences degrees. And only third-year students showed greater gastrointestinal symptoms (constipation) than those enrolled in 4th. There seems to be no evident explanation for these findings because in general there were not differences between degrees and academic years. In fact, the somatic symptoms affect all degrees and courses and the results do not allow identifying a

distinct profile of somatic symptoms for each degree or academic year. In previous studies with Spanish university students [31] were difficult to find a particular profile of students according to their degree or course.

Regards, emotions we found interesting findings. Sadness is the most frequent emotions in COVID-19 quarantine. Similar studies found this emotion [32]. Another frequent emotion during quarantine have been anger [33,34] and fear [4,12,32,33,35-37].

Sadness is an important emotion related with lost [23,24] and during COVID-19 quarantine our university students have lost many habitual routines, habits, activities, freedom even relatives, in the COVID-19 pandemic. Besides, sadness is the principal emotion in depression disorders and the imposition of quarantine in previous outbreaks have shown depression symptoms [4,20,36,38,39]. For that, it is possible think that our university students could have a depressive symptom. Future research is needed to determinate more about the relation of sadness in COVID-19 pandemic to know the relationship among this emotion in order to develop psychological prevention or intervention programs if our students had some depressive symptoms. Besides, sadness is a fundamental emotion for survival and adaptation, which leads us to advance, change, distance ourselves, etc., for this reason, it is necessary understand the utility of sadness [40]. Well-managed sadness leads to reflexion and to an awareness that may provide us with strategies and mechanisms that will lead to the change that we need in this moment of COVID-19 outbreak.

Another emotion that we also found was disgust. Disgust is frequently associated with health-related concerns such as hypochondriasis, fear of contracting the illness, fear of contamination, fear for eating a bad food, etc., where the person tries to avoid it [41]. The nature of COVID-19, with particularly significant respiratory symptoms and respiratory failure as one of the ways in which the virus can be fatal, increases the prevalence of disgust among our university students. For this reason, we could think that university students are feeling disgust in this situation of COVID-19 quarantine. This is an interesting finding where future research will have to study why and which university students are feeling this disgust reaction. Further, considering that recommended public health measures emphasize potential risks for contracting COVID-19 from surfaces and objects, disgust would be expected to additionally contribute to avoidance given the role in protecting against potential harm from pathogens [2,42].

Also our results showed several interesting findings among emotions and PHQ-15. In general, when we divided emotions in two groups, negative/unpleasant emotions and positive/pleasant emotions, we found significant differences in all items of PHQ-15 (except in dizziness and pain sexual intercourse) and in total PHQ-

15 ($p < 0.001$) where students with unpleasant emotions were higher scores than students with pleasant emotions. Previous research have demonstrated how emotional difficulties are frequent among university students [31,43], as well as, stress, worry, and anxiety was associated with increased somatic symptoms [13,15,18].

By items, sadness was associated with feeling tired, trouble sleep, short breath, dizziness, headaches and back pain; disgust with nausea and gas, short breath, pain arm, legs and back pain and fear with feeling tired and trouble sleep. So, we can see how feeling tired and trouble sleep were two somatic symptoms very prevalent in the emotions of sadness and fear, in fact, one of the most important somatic symptoms in depressive disorders and anxiety disorders are feel tired and sleep problems [15,30]. However, anger not showed any significant differences in any somatic symptoms of PHQ-15. It is possible that, in this moment of COVID-19 quarantine, feel anger is not adaptative.

In contrast, when university students are feeling security the findings were very different. Be safe or feel security [23,24,44,45] is a protective measure. Furthermore, these findings suggest there may be value in implementing psychological measures of COVID-19 at the University to avoid possibly psychosomatic problems where the aim should be teaching to students how to recognize the different emotions, be more confident, have control, take calm, be security, etc. Previous studies have taught the development of management of emotional abilities and skills with positive results among university students [40,46-48].

Finally, it is extremely necessary to implement mental health strategies at the University in conjunction with epidemic and pandemic response strategies before, during and after of COVID-19 outbreak to reduce future psychosomatic problems, psychological distress and prevent further mental health problems [4,34]. Mental health professionals, such as psychologists, psychiatrists and social workers, must be on the front line and play a leading role in emergency planning and management teams [4] and the prevention, identification and treatment of these psychosomatic problems should be included amongst the concerns and competences of universities, particularly when the therapeutic effect of psychological care amongst university students has repeatedly been identified as a factor in preventing university drop-out and in promoting performance and quality of life [31]. We are facing an important challenge where the University will have to take a lead in the process through academic curricula in the next months.

This study had some limitations. First, the sample was a sample of university students with majority of females and was not necessarily representative of the general Spanish population. Future studies using nationally representative samples and with students of different

degrees are needed to confirm the results reported here. Second, the descriptive, cross-sectional nature of this research means it was not possible to establish causal relationships. It would be interesting for future research to conduct longitudinal studies (to assess somatic symptoms after virus outbreaks in different temporal moments in order to be able to draw causal conclusions). Third, the PHQ-15 is a valid self-report measure for somatization in the general population and it is necessary knows the psychometric properties in university students.

Statements

Statement of ethics

All procedures performed in this study involving human participants were in accordance with the ethical standards of the University's Research Ethics Board and with the 1975 Helsinki Declaration. Informed consent was obtained from all participants.

Disclosure statement

The authors have no conflicts of interest to declare.

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Author contributions

The paper is the result of my team and IM Martínez-Lorca and A Martínez-Lorca developed the study concept and designed the study. M Martínez-Lorca collected the data. M Martínez-Lorca and A Martínez-Lorca analyzed the data, with assistance from JJ Criado Álvarez. M Martínez-Lorca and M^a Cabañas Armesilla drafted the manuscript. All authors provided critical revisions. All authors approved the final manuscript for submission.

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