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## RESEARCH ARTICLE

### Stress Predictors in Nursing Students during the COVID-19 Pandemic Confinement

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#### Abstract:

##### Background:

The COVID-19 pandemic has largely impacted nursing education. Owing to the element of confinement, emergency education fostered conflicts between problems and their solutions, leading to higher stress among students.

##### Objective:

The aim of the study was to identify the determinants of perceived stress in nursing students during confinement due to the COVID-19 pandemic.

##### Methods:

This multicentric, quantitative, and cross-sectional study employed the multiple linear regression model. The study was conducted at seven nursing graduate schools in the Iberian Peninsula, with 1,058 nursing graduate students in confinement. An online questionnaire was administered to nursing students between April 23<sup>rd</sup> and May 02<sup>nd</sup>, 2020. According to socio-demographic data, COVID-19 experience, satisfaction with learning strategies, and coping strategies ( *Brief COPE scale* ) of the nursing students, the model was developed with the *Perceived Stress Scale* as the explained variable.

##### Results:

Stress is predictable in the form of greater coping-avoidance ( $b = 2.415$ ;  $p < .001$ ) when a family member is infected ( $b = -2.354$ ;  $p = .005$ ) and in younger students ( $b = -.104$ ;  $p = .002$ ). It tends to be lower with higher coping-reflective ( $b = -2.365$ ;  $p < .001$ ) and when the students have a more favourable self-perceived life ( $b = -1.206$ ;  $p < .001$ ). Furthermore, the stress has been found to be higher in Portuguese students ( $b = -1.532$ ;  $p < .001$ ) and women ( $b = 2.276$ ;  $p < .001$ ) than their Spain and male counterparts, respectively. Among variables related to academics, perceived stress is higher when the students are dissatisfied with the time spent on the computer ( $b = 1.938$ ) and with the evaluation methods ( $b = 1.448$ ).

##### Conclusion:

Personal factors and the ease of mobilisation of the proposed training strategies affect the students' ability to deal with stress. Emergency education should consider stress predictors so that the students can adapt to training better.

**Keywords:** Coping skills, Psychological stress, Nursing students, COVID-19, Coping-avoidance, Perceived Stress Scale.

#### Article History

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## 1. INTRODUCTION

The COVID-19 pandemic has had a severe impact on people's vulnerability, resulting in changes in interpersonal relationships and personal mood. During the SARS-CoV-2

pandemic, the Portuguese Health Authority defined social confinement as a restriction on mobility to restrict the spread of COVID-19. Measures were thus taken only to allow strictly necessary social contact. It is an uncommon and unprecedented

situation that, in its unpredictability, may lead to fear and stress [1]; furthermore, individual responses to confinement can be contradictory. This crisis and the dynamic interaction between the individuals and the environment have engendered varied responses in individuals, including their ability to cope with adversity in stressful situations [2].

Strategies and methods to cope with stressors are unique and depend on the individuals, the experience that generates stress, and the environmental context [3]. Active coping seeks to manage or remove a stressor by focusing on the problem. Reflecting on dealing with a stressor or seeking support to face it are indicators of coping strategies focused on emotions. Contrastingly, giving up or removing oneself from the situation indicates coping centered around denial or avoidance, highlighting helplessness [4, 5]. There is no consensus on variables such as age and gender with respect to stress [6]. However, an unexpected event can induce the fear of infection, of the person or a loved one, which came to light at the pandemic's beginning during interviews with the population [7].

Stress is a crucial aspect of undergraduate students' lives [8, 9]. Nursing students (NSs) show moderate levels of stress that decrease in the more advanced years of the course [10 - 12], with the course being a protective factor [13]. As women exhibit greater stress, gender has been identified as a stress predictor [10 - 12]. Additionally, facing death, preparing for assessment and being criticised in a clinical context, along with the fear of making mistakes, are stressors identified in NSs [11], particularly males [10]. Negative interactions with professors, high workload, and extensive clinical assignments influence stress [14]. Therefore, it may be imperative for students to streamline their educational practices to adapt to academic stressors [15]. Educational strategies using digital media can bridge the gap between theoretical knowledge and clinical practice [16]. Clinical teaching carves the path to establishing a professional identity, and the nature of training plays a significant role in the success of training [14, 17, 18].

Owing to the COVID-19 pandemic and the resulting guidelines for confinement, Higher Education Institutions (HEIs) had to discontinue numerous educational activities. This harmed academics [19], resulting in anxiety, depression, and stress in students [20]. Other studies have shown this solution to be generally accepted, although prolonging confinement may risk causing chronic changes in health status and result in students not adapting to the nature of the nursing course [21]. Furthermore, local risk factors may also lead to complications [22] requiring personal coping responses.

Due to the pandemic, the training process required strategies to be implemented under emergency education. This has been regarded as the transition from face-to-face to distance learning, albeit with insufficient time to establish appropriate strategies [23, 24]. Some studies have shown this teaching to be valued by those involved [25, 26]. It has altered

student-faculty relationships by changing their ways of contact and interaction, along with training and assessment [27]. Though this teaching method can transform the training paradigm, ruptures, barriers, and inertia from the participants are to be expected [25, 28]. However, it also innovates, strengthens, and adjusts to the present time and other qualitative-understanding teaching-learning modalities [29]. In emergency education, maintaining contact with the students can minimise the impact of confinement [30, 31]. In context of this teaching method, some common stress predictors have been observed in undergraduate students, such as dissatisfaction with distance learning, distress during home quarantine, sleep and eating disorders, fear of reduced academic performance, and loneliness [32].

Considering the present situation, it is pertinent to investigate the stress faced by NSs, considering its relationships with coping and teaching-learning process conditions. This study aimed at identifying the determinants of perceived stress in Portuguese and Spanish NSs in confinement imposed during the COVID-19 pandemic.

## 2. MATERIALS AND METHODS

### 2.1. Study Design And Participants and Setting

This was a quantitative and cross-sectional study. NSs attending seven universities/HEIs in the Iberian Peninsula countries, namely Portugal and Spain, participated in the study. They were enrolled in the second semester of 2019-2020 and participated in the study by filling out a Google Forms questionnaire.

Undergraduate students who spoke the language spoken at their schools/universities, *i.e.*, 3,003 NSs (Portugal = 1,803; Spain = 1,200), were included in the study. Recruitment was carried out by employing a convenience sample design. A total of 1,061 students (35.3%) participated and answered all the questions. Following exclusions that were implemented due to study assumptions for statistical procedures, the final sample comprised 1,058 students.

### 2.2. Data Collection

With permission from the HEIs, the students employed motivational strategies through the institutional websites; through these websites, the messages were sent to inquire regarding them and remind them of their participation. The questionnaire was sent out by e-mail to the NSs.

The study was approved by the Research Ethics Committee of the Portuguese Catholic University Commission in 2020 (register number 74) and followed the principles outlined in the Declaration of Helsinki. In the preamble of the questionnaire, the purpose of the study and its voluntary nature were explained to the NSs. An initial compulsory question was asked related to the students' consent, and they could only advance if they agreed. Source anonymity and data confidentiality were guaranteed so that the participants were not identified. To emphasise this, they were informed that the data would be anonymised by removing any e-mail identification. The students were also reported that the data collected would be used for the current research project. Data

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were collected between April 23rd and May 02nd, 2020, during the contingency period in Portugal and Spain.

### 2.3. Measurement

The questionnaire comprised six sections, namely: 1) socio-demographic data (*i.e.*, age, gender, country and year of the course); 2) confinement status (*i.e.*, number of days in confinement, self-perceived life); 3) COVID-19 experience (*i.e.*, occurrence of own infection, occurrence of infection in family members); 4) satisfaction with emergency teaching strategies (*i.e.*, online classes, interaction with professors, course load, evaluation method, time spent on the computer, discontinuation of clinical teaching); 5) Perceived Stress Scale [33, 34]; and 6) Brief COPE [35 - 37].

In the pre-test, the time taken to complete the instrument ranged between 8 to 11 minutes. Perceived stress was assessed using the Perceived Stress Scale, a one-dimensional tool [38]. It determines how events are perceived as stress inducers due to their unpredictable, uncontrollable, or excessive nature. The 10-item instrument, presented on a Likert-type scale, ranged from 0 (never) to 4 (very often). Items 4, 5, 7, and 8 had a reverse scale. The score was obtained by adding the points of each item; the total score ranged from 0 to 40. Higher scores corresponded to higher perceived stress. The Portuguese version presented a Cronbach's alpha coefficient of .874, while the Spanish version presented a coefficient of .810 [33, 34]. In the current study, the Cronbach's alpha coefficient for the Portuguese subsample was .840 ( $n = 695$ ) and was .758 ( $n = 363$ ) for the Spanish.

The Brief Coping Orientation to Problems Experienced (Brief COPE) multidimensional scale has 14 subscales and 28 items. The brief form [37] recommends the creation of factors according to the data of each empirical study. In Portugal, four factors with Cronbach's alpha coefficients between .66 and .80 were identified; in Spain, the factors identified had Cronbach's alpha coefficients between .64 and .94 [39]. Principal Component Factor Analysis (PCFA) was performed in the current study, considering the 28 items. Varimax rotation was robust in 3 factors, with factorial weight consistently exceeding .40 (Table S1). Internal consistency was satisfactory, with Cronbach's alpha coefficients of .780, .770 and .755. The factors were called "coping-reflective" (10 items), "coping-avoidance" (7 items) and "coping-support" (6 items). The scores of the scales were obtained by determining the mean value of the items, with more marked coping implying a higher score.

### 2.4. Data Analysis

Questionnaires with missing data were excluded. Descriptive analyses were carried out using frequency and percentage for discrete data and mean and standard deviation for continuous data. Normal distribution was observed by the Kolmogorov-Smirnov test for the Portuguese and the Spanish samples ( $p = .002$ ;  $p < .0001$ , respectively). A parametric analysis was then carried out by using a sample size recommended by the Central Limit Theorem [40].

Descriptive statistics were used for characterising the NSs based on their experiences and feelings in the face of the

COVID-19 crisis and their responses to the learning strategies proposed by the HEIs. Differences in the mean scores of the coping dimensions were tested using Student's t-test.

A multiple linear regression (MLR) model with the stepwise method was employed to identify stress predictor variables. In the model, the dependent variable was perceived stress, while the categorical predictor variables included are as follows: country; gender; satisfaction with evaluation methods; satisfaction with online classes; satisfaction with interactions with professors; satisfaction with course load; satisfaction with time spent on the computer; and satisfaction with the discontinuation of clinical education. The quantifiable predictor variables were age, self-perceived life, coping-reflective, coping-avoidance, and coping-support. A number of assumptions were made for MLR, namely: a) absence of outliers: cases 11, 27, 76, 258, 506, 591, 950 and 955 were outliers and were excluded, with the Std Predict Value and Std Residual statistics showing values below -3 and +3 (Table S2); b) Linear relationship was observed by Spearman's correlation, between the perceived stress dependent variable and the categorical variables: 1) gender, 2) country, 3) satisfaction with the evaluation methods, 4) satisfaction with online classes, 5) satisfaction with interactions with professors, 6) satisfaction with course load, 7) satisfaction with time spent on the computer, and 8) occurrence of infection in family member, with Spearman's correlation coefficients having values between .091 and .240; c) A linear relationship was observed by Pearson's correlation between perceived stress and variables, such as 1) age, 2) self-perceived life quality, 3) coping-reflective and 4) coping-avoidance, with  $r$  coefficients between -.111 and -.390, respectively; d) Homoscedasticity was observed through a Scatterplot between Standardised Residuals and Standardised Predicted Value (Fig. S1); e) The Durbin-Watson statistic was 1.024, indicating that the residuals were independent; f) Absence of multicollinearity was observed in coefficients between 1.011 and 1.250 in the VIF Statistics, as it was  $< 5$ , and also in Tolerance, which was above .10 (*e.g.*., between .800 and .989); and g) Distribution was near normal, as can be observed in the histogram of standardised residuals (Fig. S2).

The data were analysed using the Statistical Package for Social Sciences (IBM SPSS® Version 25.0). The confidence level was 95% for 5% significance ( $p$ -value  $\leq 0.05$ ).

## 3. RESULTS

### 3.1. Participants' Characteristics and their Experiences or Feelings in the COVID-19 Crisis and Exposure to Learning Strategies

The participants' mean age was 22.42 ( $\pm 4.93$ ) years, ranging from 18 to 53 years old. Those aged up to 30 years old accounted for 93.8% ( $n = 991$ ) of the sample population. Most of the students were women ( $n = 934$ ; 88.3%) and were in the last year of the course ( $n = 312$ ; 29.5%). The Student's t-test revealed significant differences in age when considering the students' nationality ( $t_{(603.077)} = -5.987$ ;  $p < .001$ ), with the 363 Spanish students presenting the highest mean ( $M = 23.74 \pm 5.58$ ), when compared to their 693 Portuguese counterparts

( $M = 21.72$ ;  $\pm 4.40$ ). A cross-tab analysis was performed, exploring the categorical variables by nationality (Table 1).

The confinement of the Portuguese students lasted for an average of 44.43 ( $\pm 8.10$ ) days, while the Spanish students underwent confinement for an average of 44.90 ( $\pm 8.41$ ) days, with ranges of 0-76 days and 0-69 days, respectively. Self-perceived life at the moment, on a scale from 0 (worst possible life) to 10 (best possible life), on a global average, was 6.14 ( $\pm 1.63$ ).

Regarding coping, according to the current study dimensions (Table S1), the means of coping, except coping-avoidance, were similar for genders and countries (Table 2).

Concerning the “perceived stress” criterion variable in the total sample, the mean was 19.59 ( $\pm 6.03$ ), with women presenting higher mean values ( $M = 19.88$ ;  $SD = 6.05$ ) of perceived stress than men ( $t_{(147.654)} = -3.037$ ;  $p = .003$ ), as was the case with Portuguese students ( $M = 20.17$ ;  $SD = 6.35$ ) compared to their Spanish counterparts ( $t_{(1056)} = 3.822$ ;  $p < .001$ ).

**Table 1. Participants’ characteristics and their experiences or feelings in the COVID-19 crisis and exposure to learning strategies.**

	Portugal n (%)	Spain n (%)	Total n (%)
Gender			
Male	73 (10.5)	51 (14.0)	124 (11.7)
Female	622 (89.5)	312 (86.0)	934 (88.3)
Course year			
1 <sup>st</sup>	201 (29.2)	75 (21.4)	276 (26.6)
2 <sup>nd</sup>	135 (19.6)	67 (19.1)	202 (19.4)
3 <sup>rd</sup>	181 (26.3)	68 (19.4)	249 (24.0)
4 <sup>th</sup>	171 (24.9)	141 (40.2)	312 (30.0)
COVID infection in the students			
Yes	5 (.70)	9 (2.5)	14 (1.3)
No	690 (99.3)	354 (97.4)	1,046 (98.7)
Family member infected by COVID			
Yes	22 (3.2)	18 (5.0)	40 (3.8)
No	673 (96.8)	345 (95.0)	1,018 (96.2)
Fear of COVID-19 infection			
Yes	28 (4.0)	45 (12.4)	73 (6.9)
No	667 (96.0)	318 (87.6)	985 (93.1)
Fear of COVID-19 infection in a family member			
Yes	1 (.1)	2 (.06)	3 (.3)
No	694 (99.9)	361 (99.4)	1,055 (99.7)
Online classes			
Satisfied	583 (83.9)	254 (70.0)	837 (79.1)
Dissatisfied	112 (16.1)	109 (30.0)	221 (20.9)
Interactions with professors			
Satisfied	605 (87.2)	286 (78.8)	892 (84.3)
Dissatisfied	89 (12.8)	77 (21.2)	166 (15.7)
Course load			
Satisfied	387 (55.7)	140 (38.6)	527 (49.8)
Dissatisfied	308 (44.3)	223 (61.4)	531 (50.2)
Evaluation methods			
Satisfied	479 (68.9)	172 (47.4)	651 (61.5)
Dissatisfied	216 (31.1)	191 (52.6)	407 (38.5)
Time spent on the computer			
Satisfied	365 (52.5)	152 (41.9)	517 (48.9)
Dissatisfied	330 (47.5)	211 (58.1)	541 (51.1)
Discontinuation of clinical education			
Satisfied	198 (28.5)	74 (20.4)	272 (25.7)
Dissatisfied	497 (71.5)	289 (79.6)	786 (74.3)
Total	695 (65.7)	363 (34.3)	1,058 (100.0)

**Table 2. Description of the coping dimensions according to gender and country.**

Dimension	Category	Item	N	Mean	SD	t
Coping-Reflective	Gender	Male	124	1.84	.48	$t_{(1056)} = 1.935; p = .053$
		Female	934	1.75	.45	
Coping-Avoidance		Male	124	.437	.49	$t_{(1056)} = 2.317; p = .021$
		Female	934	.346	.40	
Coping-Support		Male	124	1.29	.64	$t_{(1056)} = -1.230; p = .219$
		Female	934	1.36	.61	
Coping-Reflective	Country	Portugal	695	1.76	.46	$t_{(1056)} = -.472; p = .637$
		Spain	363	1.77	.44	
Coping-Avoidance		Portugal	695	.379	.43	$t_{(1056)} = -1.293; p = .196$
		Spain	363	.575	.42	
Coping-Support		Portugal	695	1.34	.64	$t_{(853.837)} = -.815; p = .415$
		Spain	363	1.37	.54	
Total			1,058			

**Table 3. Significance of the variables in the model.**

Model	Coefficients <sup>a</sup>							
	Unstandardised Coefficients		t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	31.722	1.520	20.869	.000	28.740	34.705		
VI_Perceived_Life	-1.206	.108	-11.159	.000	-1.418	-.994	.922	1.084
VI_Cop_Reflective	-2.365	.368	-6.426	.000	-3.087	-1.643	.917	1.090
VI_Time_Spent_PC (0 = satisfaction; 1 = dissatisfaction)	1.938	.350	5.538	.000	1.251	2.625	.838	1.193
VI_Cop_Avoidance	2.415	.398	6.075	.000	1.635	3.195	.944	1.059
VI_Gender (0 = male; 1 = female)	2.276	.501	4.539	.000	1.292	3.260	.982	1.018
VI_Country (0 = Portugal; 1 = Spain)	-1.532	.356	-4.307	.000	-2.230	-.834	.898	1.114
VI_Evaluation_Methods (0 = satisfaction; 1 = dissatisfaction)	1.448	.368	3.935	.000	.726	2.171	.800	1.250
VI_Age	-.104	.033	-3.105	.002	-.169	-.038	.956	1.046
VI_Family_Member_Infected (0 = Yes; 1 = No)	-2.354	.843	-2.793	.005	-4.007	-.700	.989	1.011

**3.2. Predictors of the Students’ Perceived Stress During the Confinement Period**

The MLR model determined the predictors of perceived stress ( $F_{(9,1043)} = 51.704; p < .001$ ) using the stepwise method. The confidence intervals suggest that the b values are close to beta in the population (Table 3).

With other variables constant, nine are stress relievers in the model. Better perceived quality of life is associated with a low value of 1.2 in the Perceived Stress Scale assessment ( $b = -1.206$ ). The same was observed with coping-reflective; an incremental increase of one unit is linked with a 2.26 reduction in stress. Regarding age, each one-year increase in the students’ age is associated with a reduction in stress by .104 ( $b = -2.365$  and  $b = -.104$ , respectively).

Conversely, nine variables in the stress model increase stress. An incremental increase of one unit of coping-avoidance is associated with a 2.41 rise in perceived stress ( $b = 2.415$ ). Furthermore, students with an infected family member exhibit 2.35 times more stress ( $b = -2.354$ ). Women also experience

2.27 times more stress than men ( $b = 2.276$ ), while the Portuguese subjects exhibit 1.53 times more stress than their Spanish counterparts ( $b = -1.532$ ). Among the academic variables, being dissatisfied with the time spent on the computer contributes to increased stress by 1.93 ( $b = 1.938$ ). In addition, dissatisfaction with the evaluation methods is associated with a 1.4 increase in stress on the PSS Scale ( $b = 1.448$ ).

The value of the coefficient of determination ( $R^2 = .309$ ) indicates that the model explains 30.9% of the perceived stress variability.

**4. DISCUSSION**

The results on stress found in this study corroborate other studies, which relate it to unpredictability [1] and fear of intra-family transmission [41]. Pandemic confinement exerts a negative impact [19], which generates uncertainty during the period regarding the outcome. Studies before the pandemic identified mixed stances among students because, although

they preferred virtual activities, they also desired face-to-face and real-life interactions [42].

The results suggest that online activities were satisfactory, along with their interactions with professors, the virtual transmission of content, and evaluation methods, considering there was no loss in theoretical learning. Moreover, the feelings of fragility about self-perceived life at the moment confirm the results of other studies [43]. The participants showed the ability to adapt to the unpredictability of the pandemic while simultaneously appearing to be satisfied with the strategies made available by the HEIs for their training.

Remote emergency education was found to bring people closer and safeguard academic success. The human element in virtual communication was also prevalent. However, the HEIs' efforts in the face of confinement were interpreted as excessive.

Course load and time spent on the computer led to dissatisfaction. Balance is difficult to establish because, while it is necessary to support students at the risk of stress [19], it is also necessary to maintain the level of education provided to the students. Student-centered learning in confined situations [44] increases interactions and work; however, it is not comparable to the levels of education imparted in person.

Even in ordinary times, clinical practice is stress-inducing [14, 17, 18, 41]. Replacing it with conventional non-clinical exercises is different from experiencing real-life care practice, manifesting discontent, and/or concern for postponement of clinical training.

The students responded adeptly to scenarios due to their experience dealing with crises, thus sharpening their coping abilities. In situational coping, they seemed to develop their skills and adapt to an alternate process of teaching-learning. They had satisfactory responses, comparable to coping-reflective. Our results correspond to the initial phase of confinement, which may have led to better coping responses due to the unpredictability of the pandemic. Feelings of solidarity, support, and acquiescence prevailed, where students tried to solve crises. The students were at their homes with their families, proactively applying measures for themselves and their loved ones to avoid infection while simultaneously continuing their education to graduate. Data collection occurred over a short time, perhaps not long enough for the students' deeper feelings of unsettlement to manifest. However, with the same population, current studies in the COVID-19 context showed stress predictors with strong disturbance in daily activities, such as sleep disorders, satisfaction with distance learning, fear of depreciating academic performance, and loneliness [32]. The participants seemed capable of responding to the crisis, similar to the case of Israeli students observed in another study [31]. Concerning coping support, Spanish students used more out-of-their-care aid strategies for self-protection [45]. Regarding coping avoidance, the lower levels suggest that they have found ways of alienating from the crisis. This way of coping focused on emotions and distancing themselves from adversity-induced emotional distress [46].

Perceived stress was found higher in women and lower in

students nearing graduation, regardless of the country. Controversial results confirm [31, 46] or counteract similar situations [47]. In addition to undergraduate students' stress [8, 9], another type arises due to confinement. Personal predictors associated with stress confirm that people are unique and react according to their needs and values, using their own experiences and finding resilience [48].

With regards to predictors related to lower stress levels, favourable self-perceived life stands out, which depends on self-recognised stress and the ability to cope. The intrinsic potentiation emerges in the joint view of the three types of coping [49]. As a defence mechanism, the students are proactive and protect themselves when facing confinement.

The association between the lowest stress and satisfaction with the time spent on the computer suggests that a balance was achieved in the HEIs between adequacies of teaching. Older age as a predictor can mean maturity to deal with stress [50]. Furthermore, age implies a more advanced curricular year, close to graduation. Especially in those circumstances, the HEIs have found solutions due to the importance for professionals [41]. Confinement, which was enacted in Spain, emphasising the high casuistry by the mass media [45], may have contributed to the adaptive processes.

In predictors with a positive relationship with perceived stress, women do not follow the pre-pandemic pattern [10], according to recent studies [31, 51]. This is perhaps based on emotionality in the face of health events [50]. Social standards and nursing education imprint affections, compassion, and concern with others [52] on the care models. On the other hand, social patterns suppress emotions in men.

Regarding the factors that potentiate stress, coping-avoidance and expressing maladjustment may be rooted in the unpredictability of the situation and in the uncertainties of those who stand for safety and authority (family, professors). The results agree with other studies, where avoidance is associated with passive behaviour, non-pro-activity, fatalism, and unfought acceptance [53]. The nursing care culture and the prevalence of females in the sample may have facilitated coping-avoidance [54].

## CONCLUSION

The highest levels of stress in the personal and socio-family domains have been found in the youngest of Spanish men, who feared the risk of infection to a family member, and in those with worse self-perceived life at the moment. In the academic domain, the highest stress level was observed in those dissatisfied with the time spent on the computer and evaluation methods. Regarding the coping strategies, there was more stress observed in students who employed less coping-reflective and more coping-support and coping-avoidance strategies.

Students must employ appropriate coping mechanisms in the face of adversity. Coping avoidance and coping-support strategies and the need to work on them during the training process have come to light. An NS is subjected to complex learning and care situations. The study highlights the need to include advanced forms of technology in teaching, along with

adaptation of the syllabus to this methodology. As the pandemic has enforced emergency education, more studies should be conducted to elucidate the repercussions of this phenomenon. The non-randomised sample precludes the generalisation of the results. However, a large sample will facilitate the understanding of how NSs of two nationalities have experienced confinement and reacted to it.

## ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The protocol was approved by the Research Ethics Committee of the Catholic University of Portugal in 2020 (No. 74).

## HUMAN AND ANIMAL RIGHTS

No animals were used that are the basis of this study. All the procedures were followed in accordance with Declaration of Helsinki.

## CONSENT FOR PUBLICATION

Each student provided his/her informed consent. Previously, the students were informed that their participation was voluntary and that they could leave the study whenever they wanted, without any consequences. Anonymity and privacy were guaranteed. The students were also informed that the data collected would be used for the current research project.

## AVAILABILITY OF DATA AND MATERIALS

The data supporting the findings of the article are available from the corresponding author [T. L.], on reasonable request.

## FUNDING

None.

## CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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## SUPPLEMENTARY MATERIAL

Supplementary material is available on the publisher's website along with the published article.

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