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Generalised anxiety in Slovenian university students during the Covid-19 pandemic

Abstract: The Covid-19 pandemic has caused increased fears, worries and uncertainty worldwide, thus also increasing the potential for anxiety. Using an online survey conducted in April 2020 with a sample of Slovenian participants aged 18 and over, we collected data on generalised anxiety, neuroticism, psychosocial vulnerability, loss of perceived control and the impact of various difficulties encountered during the pandemic. This paper presents the results of 110 university students and compares these results with those of a non-student sample ($n = 779$). We found that students experienced higher levels of generalised anxiety, loss of perceived control and pandemic-related difficulties than non-students. Among students, generalised anxiety was positively associated with the perceived impact of pandemic-related restrictions, loss of perceived control and neuroticism. This study sheds light on risk factors for generalised anxiety among students during the health crisis and shows possible directions for the development of preventive interventions.

Keywords: Covid-19, generalised anxiety, perceived control, stress, students

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Introduction

Covid-19 is a new respiratory infection that originated in China in December 2019. Due to the suddenness of the outbreak and the infectious power of the SARS-CoV-2 virus, which poses a serious threat to the safety of life, massive restrictions were quickly imposed to encourage changes in people's health-protective behaviour. As in previous health crises, it was expected that there would be an increase in anxiety and depression in the general population (Taylor 2019). Studies from around the world (e.g., Horesh et al. 2020; Huang and Zhao 2020; Hyland 2020; Lep and Hacin Beyazoglu 2020; Rettie and Daniels 2020; Twenge and Joiner 2020) have indeed shown such an increase. In this study, we investigated generalised anxiety in Slovenian university students during the first wave of the Covid-19 pandemic.

Anxiety is defined as an unpleasant affective state of intense distress and tension that occurs in response to stimuli such as novel situations and the potential for undesirable outcomes (Spielberger 2013; Brooks and Schweitzer 2011). Specific physiological and behavioural symptoms, such as heart palpitations, disturbances of respiration, sweating, tremors or vertigo, are often experienced. Anxiety may bias attentional processing (limiting the range of perceived stimuli and directing attention to the threat) and distort the evaluation of the valence of stimuli (Yiend 2010) in addition to the individual's perception of reality (Spielberger 2013). There are two types of anxiety (Spielberger 2013): anxiety as a transitory state describes a condition of the organism that fluctuates over time and is clearly related to physiological arousal, and anxiety as a trait is a relatively stable personality characteristic causing a susceptibility to anxiety. Individuals with anxiety traits perceive a wider range of objectively harmless circumstances as threatening and therefore have a greater probability of emotional reactivity to stress, irrespective of the stress situation.

Generalised anxiety disorder is diagnosed when everyday situations (e.g., problems at work, finances, health, future events, etc.) cause intense anxiety and excessive worry that is disproportionate to the actual risks, lasts for several months or longer and is difficult to control (Stein and Lang 2002). This disorder

is often accompanied by restlessness, fatigue, increased muscle aches or soreness, sleep disorders, impaired concentration, irritability, self-doubt and depression, and it can have a negative impact on the individual's ability to perform in everyday life (American Psychiatric Association 2013; Jelenko Roth and Dernovšek 2011). The prevalence of generalised anxiety disorder is 7% in the European (Jelenko Roth and Dernovšek 2011) and United States general populations (Stein and Lang 2002) and in the portion of the United States population made up of students (Kanuri et al. 2015).

In times of crisis, individual responses vary greatly: some do not report anxiety, and some experience constant and increasing anxiety (Taylor 2019). Generalised anxiety is associated with neuroticism (Sexton et al. 2003), a relatively stable personality trait characterised by over-reactivity, worry or nervousness (Chang, Fang et al. 2020), probably because both traits share excessive worrying as a characteristic (Servaas et al. 2014). Generalised anxiety is also associated with psychosocial risk factors for stress vulnerability, such as lack of confidence, difficulties in coping with studies (Farrer et al. 2016), coping skills in general (Legerstee et al. 2011), social support (Qi et al. 2020) and perceived control over potentially negative events (Gallagher et al. 2014).

At the onset of the SARS-CoV-2 virus' spread, an increase in anxiety was anticipated insofar as the coronavirus represented an unprecedented and unknown external threat with the potential to cause harm and other undesirable outcomes. As reported by Taylor (2019), people in an epidemic report an increase in fear for their health, safety, family and financial situation. Anxiety mobilises individuals either to escape or protect themselves from a dangerous situation. To a certain extent, the anxiety response to the Covid-19 pandemic may be adaptive since it motivates people to change their behaviour (e.g., to maintain adequate physical distance and wear a mask). On the other hand, anxiety is considered an unadjusted response if it is so pronounced that it affects the mental health and psychological well-being of the individual (Taylor 2019)—for example, by leading to increased insomnia or excessive fear of contact with other people even when they keep a proper distance and wear a mask.

Despite the mass of studies examining the increase in anxiety during the Covid-19 pandemic that have been conducted on the general population, the extent to which the pandemic has affected the mental health of students requires additional investigations (Lee 2020). Generalised anxiety in students, especially in conditions of higher levels of uncertainty, can impair concentration and the ability to perform coordinated mental activities, distract from tasks, cause incessant rumination on worries and negatively affect academic performance and an individual's belief in his or her potential to succeed (Pantel and Chen 2012). Because of the potentially harmful effects of generalised anxiety on student performance, it is important to know how widespread generalised anxiety is in the student population at any given time (including during the Covid-19 pandemic) so that academic duties can be adjusted as needed.

McGinty et al. (2020) found that among adults, psychological distress increased the most in groups ranging from 18–29 years old. Chang, Yuan et al. (2020) reported

that in the early stages of the Covid-19 pandemic, the prevalence of anxiety among college students in Guangdong province in China was 26.6%, while Zhao et al. (2020) reported that 14.4% of self-isolating college students experienced anxiety. In a large cross-sectional online survey of college students from the Chinese province of Guangzhou, Wang et al. (2020) reported that 7.7% of students were experiencing anxiety. Based on a survey of Filipino students, Baloran (2020) reported that the majority exhibited anxiety throughout the period of lockdown and that 63% were concerned about food and financial resources. These results demonstrate that there is a lack of clarity about the level of anxiety among students during the Covid-19 pandemic, most likely due to differences in the tools used to measure anxiety, the characteristics of the samples in the different studies and the differences in the measures used by different countries to deal with the Covid-19 outbreak.

According to Jelenko Roth and Dernovšek (2011), losses, health problems and unpleasant events and situations can all contribute to triggering generalised anxiety disorder. Therefore, it is not only important to examine the prevalence of generalised anxiety in university students, but also to understand how the different situational stressors experienced during the Covid-19 pandemic affected generalised anxiety in students. During the first wave of the pandemic in the spring of 2020, Slovenian universities closed and transitioned all classes to online formats. Student dormitories were also closed, and many students had to return home to live with their parents. Work opportunities for students were reduced, causing many students to experience financial difficulties. Due to the massive lockdown, access to necessities like food, medicines, doctors and personal protective equipment was restricted. Freedom of movement was restricted to the home municipality, and the media reported extensively on the crisis. This period was stressful for everyone, especially for university students who, in a period of emerging adulthood, were developing a professional identity, entering into romantic relationships and detaching themselves from spatial, financial and emotional dependence on their families (Arnett 2000). Uncertainty about future events plays a role in generating worry and intrusive thoughts (Pantel and Chen 2012), both important aspects of generalised anxiety. Wang et al. (2020) reported that anxiety was higher among students who reported poor health, which may be related to uncertainty about future health.

In this study, we were interested in how students perceived the impact of the different stressors caused by the uncertain crisis and the measures introduced in Slovenia to limit the crisis—in addition to how the perception of stressors was related to generalised anxiety among students. There is still a lack of data on the risk factors that influence the anxiety associated with Covid-19 in the student population, and further studies are needed.

Aim of the study

The aim of this study was to investigate the prevalence of generalised anxiety in Slovenian students aged 18 and older and to compare these results with the anxiety levels in non-students. Since anxiety is generally considered a product of a stress

stimulus that is interpreted as threatening or dangerous, the second aim of this study was to gain a better understanding of the possible risk factors of generalised anxiety among students during the Covid-19 pandemic. We wanted to investigate how generalised anxiety was related to neuroticism and psychosocial vulnerability that affect how a person interprets the stress stimulus, as well as how it was related to the perceived impact of stressors caused by the Covid-19 outbreak and the loss of perceived control. Based on the literature, we expected that the perceived effects of stressors, loss of perceived control, psychosocial vulnerability and neuroticism would be identified as important risk factors for generalised anxiety.

Method

This study was part of a larger study conducted in an international group of researchers from China, the United States and Slovenia. We investigated the stressors, various psychosocial factors of stress, and the emotional, cognitive and physical responses to stress occurring during the Covid-19 pandemic in different countries. Since we had to react quickly to the crisis and were also limited by the lockdown, we decided to collect the data online. We wanted to gain insight into different aspects of participants' Covid-19 experiences, so we used brief measures of the mentioned concepts, sometimes even single indicator variables, to obtain relevant information.

Survey

Participants completed *A Brief Measure for Assessing Generalised Anxiety Disorder: GAD-7* (Spitzer et al. 2006), which is a short clinical self-report screening measure consisting of 7 items. The instructions for GAD-7 were slightly adjusted in our study, and the participants were asked to rate on a 4-point scale (0 – *Never*, 1 – *Several days*, 2 – *Over half the days* and 3 – *Almost every day*) how often they had experienced the listed symptoms (e.g., '*feeling nervous, anxious or on edge*') since the onset of the outbreak—instead of the original 'over the last two weeks'. In clinical practice, the sum of the ratings is calculated by adding the item scores: 0–4 points indicating a minimum, 5–9 indicating a mild, 10–14 indicating a medium and 15–21 points indicating a severe generalised anxiety. Spitzer et al. (2006) determined a cut point (10 points) that optimised sensitivity (89%) and specificity (82%) in identifying cases with GAD. They reported that the instrument had good reliability (the Cronbach alpha coefficient was 0.92, and the test-retest intraclass correlation was 0.83), construct validity (a higher score was strongly associated with multiple domains of functional impairment and disability days) and factorial validity (the scale differentiated generalised anxiety disorder symptoms from depression symptoms). In our study, the confirmatory factor analysis using the diagonally weighted least squares estimator (DWLS) supported the one-dimensional structure of the instrument, robust $\chi^2(14) = 122.31, p < .001$, CFI = .99, RMSEA = .09

and SRMR = .04, with all item loadings higher than 0.70. Cronbach's alpha was 0.89. The item responses were added up and resulted in a score between 0 and 21 points—with a higher score indicating a higher generalised anxiety.

To assess the role of stressors, participants rated on a 5-point scale (1 – *Not at all*, 2 – *A little*, 3 – *Moderately*, 4 – *A lot* and 5 – *A great deal*) how strongly the following difficulties impacted their mood or emotions during the pandemic: time spent indoors, media coverage, living space, reduced privacy, restricted freedom of movement, lack of protection, lack of food, lack of medication, difficulty accessing a doctor, family relationships, intimate partner relationship, work-related problems, academic problems, economic problems, physical pain, fatigue/sleepiness and worsening of the illness. In addition, the participants assessed their workload during the pandemic compared to the time before the pandemic (1 – *Much less*, 2 – *Less*, 3 – *Same*, 4 – *More* and 5 – *Much more than before*).

To measure perceived control during the pandemic, the participants were asked to complete the *Perceived Stress Scale: PSS-4* (Warttig et al. 2013), in which they used a 5-point scale (1 – *Never*, 2 – *Rarely*, 3 – *Sometimes*, 4 – *Often* and 5 – *Very often*) to rate the degree to which situations in their life were appraised as stressful and uncontrollable during the pandemic (e.g., '*How often during the past month did you feel that you cannot control things that are important in your life?*'). The confirmatory factor analysis with the DWLS estimator marginally supported the one-dimensional structure of the scale, robust $\chi^2(2) = 103.11, p < .001$, CFI = .92, RMSEA = .24 and SRMR = .07, with all item loadings between 0.58 and 0.71. The answers were averaged, and some items were reverse scored. A higher score indicated higher loss of perceived control. Cronbach's alpha coefficient for PSS-4 was 0.67 in our study.

To get an indicator of the neuroticism of the participants, they assessed how emotionally stable and worry-free they are in general (1 – *Not typical for me at all* to 5 – *Extremely typical for me*). The responses were reverse scored and averaged.

We compiled a list of psychosocial factors that seemed to be relevant in the Covid-19 crisis (*a feeling of imbalance, self-denial, lack of resilience, vulnerability, tendency to suppress emotions, lack of family support, lack of social support, perfectionist tendencies, powerlessness, lack of confidence and lack of ways to deal with problems*) and asked the participants what role these factors played in their negative emotions (1 – *Not at all* to 5 – *A great deal*).

We also asked about participants' gender, age, marital status, education and work activity during the pandemic. At the end, they were able to write an additional comment about how they were affected by the pandemic.

Procedure

The Ethics Committee of the Faculty of Arts at the University of Ljubljana approved the study. Snowball sampling was used to recruit participants. Personal email contacts and announcements on several Facebook pages and the websites of various organizations were used. Participants were asked to pass the invitation

on to their relatives, friends and acquaintances. Participation in the survey was voluntary. Participants did not receive any rewards for participating in the survey. They were informed about the purpose of the survey and agreed to participate in the study by clicking on a specific button on a survey website. Participants could choose not to respond to certain items. The survey was open on the Slovenian platform 1KA (2020) for 10 days (from 15 to 25 April 2020) and took about 15 minutes to complete.

Participants

More than one thousand (1,359) Slovenians clicked on the survey. Out of 1,195 people who started to fill in the survey, 1,135 (95%) filled in at least part of the survey, and 924 (77%) responded to the last section. Out of 889 useful units (with answers to at least 80% of the numerical items and information of employment status), 192 (22%) said they were men and 691 (78%) women. Table 1 shows the age structure of our sample. Compared to data for the Slovene general population (SURS 2020), the oldest age category was underrepresented in our sample, which is most likely related to the online administration of the survey.

Age category (years)	f	%	% in general population
18–24	90	10	8
25–34	167	19	15
35–44	174	20	18
45–54	157	18	17
55–64	131	15	17
65–74	147	17	13
75 and older	21	2	11

Table 1: Age structure of the sample

Educational levels were higher than in the general population: 1% of participants completed primary school or less, 22% had some form of secondary schooling and 64% had a tertiary degree or more (in 2019, the percentages in the general population were 9%, 56% and 35%, respectively; SURS 2020). The sample included 110 (12%) students. The rest of the sample was made up of participants who worked part-time, were not working during the pandemic, were self-employed, were retired or were employed and working regularly in their offices or from their homes.

Data analysis

The data analysis was carried out in the statistical programme *R* (R Core Team 2020). Confirmatory factor analyses of the GAD-7 and PSS-4 scales were performed with the *lavaan* package. Principal component analyses with the function *principal* were used to reduce the number of other variables. The number of components to be extracted was determined using the *nFactors* package (Raiche 2010) and considering the interpretability of the different solutions. Scores on extracted principal components were calculated by averaging responses to items belonging to a particular component. Cronbach's alpha coefficients were calculated to describe the lower limit of internal consistency of the scores. The frequency distributions of the scores in different participant groups were examined, and mean values and standard deviations of the scores were calculated. The scores of students were compared with the scores of other participants using a Welch *t*-test (the alpha error rate was set to .005 due to the use of multiple *t*-tests). Cohen's *d* was used to describe the effect size. The relationships between the GAD-7 score in students and other variables were described using Pearson correlation coefficients. Using multiple regression analysis, the GAD-7 score was predicted based on other variables. Bootstrap on 5,000 samples with the method of resampling rows and BCa correction was used to estimate 95% confidence intervals for the regression parameters. Finally, the answers to the open question were coded and the resulting codes counted.

Results

Data reduction

A principal component analysis of stressors using the *Promax* rotation yielded a five-component solution that explained 58% of the item variance. The stressors were sorted into five groups: (i) *confinement* (i.e., time spent indoors, restricted freedom of movement and exposure to intensive media coverage); (ii) *lack of necessities* (i.e., lack of protection, food, medication, difficulty accessing a doctor); (iii) *domestic problems* (i.e., reduced privacy, limited living space, difficult family relationships and intimate partner relationships); (iv) *work/study problems* (i.e., work-related problems, academic problems and economic problems); and (v) *health problems* (i.e., physical pain, fatigue/sleepiness and worsening of the illness). The score for each component was calculated by averaging the responses to items. Higher scores indicated a more strongly perceived influence of the stressors on the life and emotions of the participants. Cronbach's alpha coefficients for the five groups of stressors were 0.59, 0.63, 0.73, 0.60 and 0.67, respectively.

A principal component analysis of aspects of psychosocial vulnerability to stress led to a one-component solution that explained 50% of the item variance. The responses to all items were averaged. Higher values indicated that a person reported being more psychosocially vulnerable to stress. Cronbach's alpha for this component was 0.90.

Comparison of students and non-students

Table 2 compares the descriptive statistics of variables examined among students to those of the other participants in the study. On average, students felt anxious for several days during the pandemic. The generalised anxiety they experienced was statistically significantly higher than among non-students. The difference between the two groups was moderate. Figure 1 shows that in the non-student group, a large percentage of participants scored 0 on the GAD-7 scale and that the percentages of participants decreased with increasing values. Most participants in this group fell into the category of minimal generalised anxiety. In contrast, a larger percentage of students achieved scores indicating mild generalised anxiety. In the non-student group, 68 out of 779 (9%) experienced moderate or high levels of generalised anxiety, a number that increased to 18 out of 110 (16%) in the student group.

Students reported that generalised anxiety made it somewhat more difficult for them to carry out their daily activities (Table 2). Their perception of the effects of generalised anxiety was greater than that of non-students. Regarding the perceived emotional effects of stressors during the pandemic, students judged the effects of confinement to be moderate, domestic and health problems to be low and work/study problems to be low to moderate. Compared to non-students, students reported being somewhat more affected by these four types of stressors, but neither group claimed to be affected by the lack of necessities. The students assessed that their workload increased during the outbreak of Covid-19, but this increase was not different from that reported by the non-students. Table 2 also shows that the loss of perceived control was sometimes experienced by students and moderately more often among students than among non-students (with a Cohen's d score of over 0.50). The students also reported moderately higher psychosocial vulnerability and neuroticism than others.

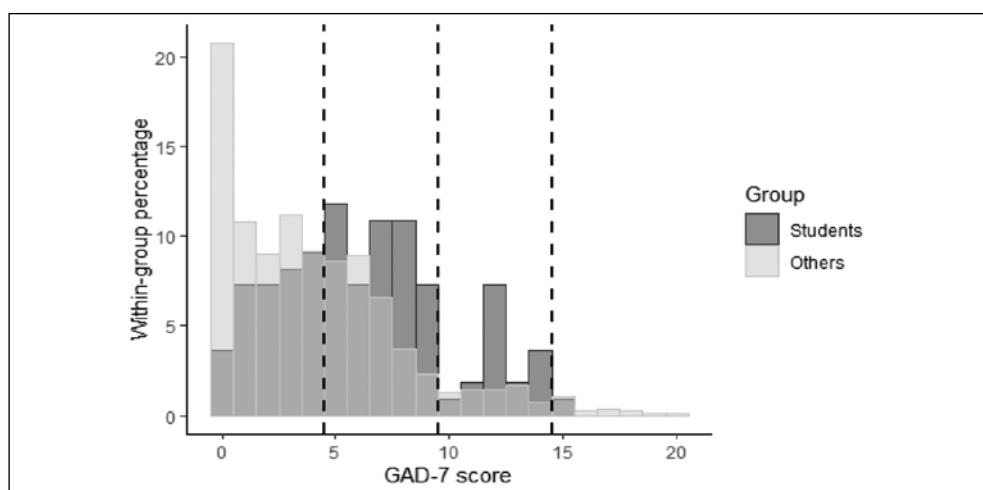


Figure 1: The GAD-7 score in the two groups of participants

Note: Black lines show the boundaries between minimal, mild, moderate and severe generalised anxiety.

Variable	Response scale	Students (n = 110)		Others		Result of Welch t-test			
		M	SD	n	M	SD	t	df	p
Generalised anxiety (GAD-7)	0-21	6.19	3.74	775	4.07	3.82	5.56	143.3	<.001
Impact of generalised anxiety	1-4	1.95	0.70	778	1.65	0.64	4.35	136.1	<.001
Confinement	1-5	3.23	0.79	778	2.99	0.88	3.02	150.0	.003
Lack of necessities	1-5	1.52	0.63	776	1.58	0.59	-0.82	137.5	.415
Domestic problems	1-5	2.21	0.86	771	1.81	0.80	4.60	137.3	<.001
Work/study problems	1-5	2.40	0.88	777	1.92	0.88	5.29	141.9	<.001
Health problems	1-5	1.80	0.75	773	1.53	0.66	3.61	133.5	<.001
Workload	1-5	3.26	0.95	377	3.31	1.10	-0.45	200.2	.653
Loss of perceived control (PSS-4)	1-5	2.85	0.75	777	2.40	0.63	6.01	131.8	<.001
Psychosocial vulnerability	1-5	2.22	0.71	778	1.78	0.64	6.27	135.5	<.001
Neuroticism	1-5	3.42	0.86	777	2.88	0.73	6.29	131.9	<.001

Table 2: Comparison of variables measured in our study between Slovenian students and non-students

Variable	1	2	3	4	5	6	7	8	9	10
1 – GAD-7	1.00									
2 – Confinement	.39	1.00								
3 – Lack of necessities	.16	.17	1.00							
4 – Domestic problems	.33	.27	.14	1.00						
5 – Study/work problems	.20	.14	.41	.12	1.00					
6 – Health problems	.41	.21	.36	.17	.20	1.00				
7 – Workload	.08	-.01	.21	.21	.12	.18	1.00			
8 – Loss of perceived control	.57	.28	.24	.28	.31	.30	-.07	1.00		
9 – Psychosocial vulnerability	.56	.48	.28	.34	.30	.42	.03	.59	1.00	
10 – Neuroticism	.46	.13	.01	.15	-.07	.27	-.06	.45	.45	1.00

Table 3: Correlations between different variables (Pearson correlation coefficients; $n = 110$)

Note: In the case of a family-wise error rate of 5% and a correction for multiple tests, correlation coefficients higher than 0.31 will reach statistical significance ($p < .001$).

Relationships between generalised anxiety and other variables in the student group

Next, using results only from the student group, we examined the relationships between generalised anxiety and other variables. The frequency distributions of the GAD-7 scores among different subgroups of students differed from normal at a statistically significant rate, which required the use of non-parametric tests. The GAD-7 score for men ($n = 11$; $M = 6.0$; $SD = 3.2$; $Mdn = 6$) was not statistically significantly different from that for women ($n = 96$; $M = 6.2$; $SD = 3.9$; $Mdn = 6$) (Wilcoxon $W = 524$, $p = .971$), nor did the score differ statistically significantly between those who were single ($n = 54$; $M = 5.8$; $SD = 3.8$; $Mdn = 5$) and those who were in a relationship ($n = 56$; $M = 6.6$; $SD = 3.7$; $Mdn = 7$) (Wilcoxon $W = 1740$, $p = .172$).

Table 3 shows the correlations between different variables. The correlations of generalised anxiety with the effects of stressors were as follows: positive and moderate for confinement, domestic problems and health problems; low for work/study problems and lack of necessities; high for loss of perceived control and psychosocial vulnerability; and moderate for neuroticism. A negligible correlation was found between generalised anxiety and changes in workload during the Covid-19 outbreak.

Table 4 shows the results of the multiple regression analysis with which we investigated the independent contribution of different variables to the GAD-7 score. Overall, 45% of the variance in the GAD-7 score could be explained by the regression model ($F(9, 99) = 10.8$, $p < .001$). The bootstrapped 95% confidence intervals for regression parameters did not contain the value 0 in the case of three predictors: the effect of confinement, the loss of perceived control and neuroticism. These predictors therefore reliably showed an effect on the outcome variable. Higher generalised anxiety was associated with higher scores in neuroticism, perceived impact of confinement and loss of perceived control.

Predictor	<i>b</i>	<i>SE_b</i>	<i>t</i>	<i>p</i>	Bootstrapped 95% CI for <i>b</i>	β
Intercept	-2.28	2.15	-1.06	.293	-6.71; 2.61	0.00
Confinement	0.85	0.39	2.15	.034	0.06; 1.56	0.18
Lack of necessities	-0.49	0.50	-0.97	.334	-1.66; 0.46	-0.08
Domestic problems	0.42	0.34	1.23	.222	-0.30; 1.19	0.10
Work problems	0.19	0.36	0.53	.599	-0.57; 0.99	0.04
Health problems	0.91	0.42	2.19	.031	-0.13; 1.82	0.18
Workload	0.17	0.30	0.55	.585	-0.46; 0.75	0.04
Loss of perceived control	1.37	0.48	2.88	.005	0.36; 2.43	0.27
Psychosocial vulnerability	0.61	0.58	1.06	.292	-0.76; 1.98	0.12
Neuroticism	0.91	0.39	2.37	.020	0.13; 1.78	0.21

Table 4: Results of multiple regression analysis

Note: *b* = regression coefficient; *SE_b* = standard error for β ; *t* = the ratio of *b* to its standard error; CI = confidence interval; β = standardised regression coefficient

In the student group, 25 respondents replied to an open-ended question prompting them to describe how they were impacted by the pandemic. Of these answers, four groups emerged: 5 naming positive effects, 17 naming negative effects, 2 naming neutral effects and 1 naming both negative and positive effects of the pandemic. The most frequent response category was the negative effects of the quarantine: restricted freedom of movement and lack of social contacts ($f = 6$) (e.g., »[B]eing confined in a living space with the family can be very tiring, especially for students whose parents expect them to work for distance learning and at the same time do housework—cook lunch, do the laundry, vacuum . . .«); 5 mentions of motivational and organizational difficulties (e.g., »I feel the need for self-discipline, but I cannot achieve it«); 4 mentions of the uncertainty of the situation (e.g., »One of the factors that affected me most during the pandemic was the uncertainty of the future. I cannot plan events that will bring me joy . . . An example of the uncertainty is that I cannot visit my boyfriend abroad, whom I only see twice a year. This gives me a feeling of hopelessness and affects my productivity in relation to my studies«). Negative effects that were listed included personal health, the economic situation and students' concerns about close friends and family members, all of which were only mentioned twice. Among the positive effects were 4 mentions of the reduction of stress (e.g., »I have recovered from stress and everyday worries, I do things more slowly and all the goals that were previously impossible to achieve because of the rush and many commitments have now been fulfilled. I organize my day so that I have time for physical activities, reading and learning«) and 4 mentions of increased ability to achieve personal goals (e.g., »I have started to write my master's thesis, so this is positive. Before, I was around all the time«).

Discussion

The primary aim of our study was to investigate the prevalence of generalised anxiety among Slovenian students during the Covid-19 pandemic. We found that 16% of the students in our sample experienced moderate-to-high generalised anxiety. Unfortunately, we were not able to find data from the GAD-7 scores showing the prevalence of generalised anxiety among Slovenian students in the period before the pandemic, so determining whether generalised anxiety increased during the pandemic is impossible. The prevalence of generalised anxiety disorder in the European general population is about 7% during normal times (Jelenko Roth and Dernovšek 2011). In our non-student sample, a prevalence of 9% was observed. Since unpleasant environmental events and situations, health problems and losses (e.g., of a loved one) contribute to anxiety responses—and, for some individuals, trigger a generalised anxiety disorder (Jelenko Roth and Dernovšek 2011)—it is not surprising to find a higher prevalence of generalised anxiety during the pandemic. However, other studies have found a much larger increase in this prevalence. McGinty et al. (2020) reported a tripling of the prevalence of symptoms of serious psychological distress in the United States during the pandemic. In the United States, adults ranging from 18–29 years old experienced an increase in serious psychological distress—from about 4% in 2018 to about 24% in April 2020. It could be reasonably assumed that a similar increase in the various symptoms of mental stress, including generalised anxiety, also occurred in Slovenia. However, the proportion of students with a score of 10 or more on the GAD-7 scale in our study was lower than that of the general population in the United Kingdom (24%; Rettie and Daniels 2020) or in Ireland at about the same time (20%; Hyland 2020). In addition to possible differences in the specific characteristics of the samples, the timing of the studies may also be important: Twenge and Joiner (2020) found that the percentage of people experiencing high generalised anxiety changed as the pandemic endured. Nor can the effects of the pandemic be directly compared across countries, as countries employed different measures to prevent the spread of the SARS-CoV-2 virus and to provide information about coping with the pandemic, both of which could affect their populations differently.

We found higher levels of generalised anxiety in university students than in non-students. Several other studies conducted in different countries reported findings like those of our study (e.g., Horesh et al. 2020; Huang and Zhao 2020; Hyland et al. 2020), namely an increased risk of generalised anxiety in younger people during the Covid-19 pandemic. In a study of 2,722 Slovenian adults, Kavčič et al. (2020) found that the younger participants were more likely to have unfavourable psychological functioning within five days of the pandemic outbreak in Slovenia, suggesting that our results are reliable. Higher levels of generalised anxiety among students than non-students could be explained in part by the characteristics and tasks of the developmental phase of emerging adulthood, such as identity exploration in love, work and worldview (Arnett 2000). In our study, students named lack of social contacts, restricted movement, uncertainty about the future, worsening of health, economic problems and concerns about family and friends as negative

effects of the pandemic. This suggests that during the pandemic, the fulfilment of the various developmental tasks listed by Sepke et al. (2018) (i.e., detachment from spatial and financial dependence on the family, looking for work, beginning a career, and entering into romantic relationships) was threatened, even prevented, by the lockdown. Many students had to return to their parents' homes due to the closure of student residences, and as job opportunities became more limited, students were forced to become financially dependent on their parents. Since social contact and freedom of movement were restricted, both partner selection and the development of intimate relationships were made more difficult. Experiencing a major health crisis (perhaps the first for many students) and not knowing when the restrictions would end also likely led to increased anxiety, as uncertainty diminishes how efficiently one can anticipate future events and prepare for the future (Grupe and Nitschke 2013). The inability to perform developmental tasks, combined with uncertainty, likely increased generalised anxiety to higher levels in students than in the rest of the population.

The results of our study suggest that, among the pandemic-specific factors contributing to generalised anxiety, the confinement introduced during the pandemic (e.g., time spent indoors and limited freedom of movement, accompanied by exposure to intensive media coverage) had the most prominent effect. It is not clear why the confinement had such an effect. Restrictions on movement are not something typically experienced in everyday life. It is worth noting that a higher prevalence of generalised anxiety disorder was also found in prisoners (Costa et al. 2020; Dadi et al. 2016; Fovet et al. 2020), where it was attributed to, among other things, deprivation of social interaction, deprivation of freedom, rigid rules, constant control of individual actions, and stressful situations (Costa et al. 2020).

Although many people were facing a lack of necessities at the time of the survey, our results showed that this stressor did not seem to have much effect on generalised anxiety among students, nor did domestic or study problems. Students reported a slightly increased workload during the pandemic, probably related to the transition to online learning, but this factor did not seem to contribute to their generalised anxiety. They reported both negative and positive effects of the pandemic on their academic performance. In their responses to an open-ended question, they mostly mentioned reduced motivation and difficulties in organizing their study and daily activities. It seems that this was a common problem at different levels of education during the first wave of the pandemic (e.g., Podlogar et al. 2020; Uršič and Puklek Levpušček 2020). On the other hand, the reduction of stress and the reorientation of the individual towards personal goals were mentioned as positive effects of the crisis, results that demonstrate how the unique conditions caused by the pandemic do not necessarily lead to distress. For some individuals, it provided an impetus and set the stage for the achievement of the goals.

Health problems factored as a predictor of student generalised anxiety (they were marginally significant, but their effect size was similar to the effect of confinement). Similarly, Wang et al. (2020) reported that anxiety was lower among students who stated that they were healthy. Physical pain, fatigue and sleep disturbances are listed among the physical symptoms of generalised anxiety disorder

(American Psychiatric Association 2013), so finding that health problems served as a predictor for generalised anxiety is not surprising. Unfortunately, we cannot be sure whether health problems preceded participants' generalised anxiety or were one of its consequences. Our results also demonstrated an association between anxiety experienced during the pandemic and neuroticism. This is unsurprising considering that recent interpretations of the construct of worrying (which is an important aspect of both neuroticism and anxiety) emphasise the role of concern for the future (Holaway et al. 2008), a concern that was also reported by students in our research. Finally, we found that loss of perceived control independently contributed to generalised anxiety in students. Loss of perceived control can be attributed to feelings of reduced control over salient events as control shifts from an internal to an external locus (Gallagher et al. 2014) due to the far-ranging effects of the pandemic (i.e., from believing that one has control over given situations to believing that the outcome depends on external factors). This result is consistent with previous studies (e.g., Conversano et al. 2020) that have found internal locus of control to be a protective factor against anxiety. We conclude that feeling in control of the situation is important for psychological well-being during a health crisis.

Limitations of the study

Our research has several limitations, such as the exclusive use of self-assessment scales, the cross-sectional nature of the study, voluntary participation (since stressed individuals may have a greater need to participate in studies like ours to express their concerns and problems), snowball sampling and the unbalanced gender structure of the sample, so our results should be treated with caution. A longitudinal observation of a larger sample using instruments with good psychometric characteristics would be desirable to shed more light on the different psychological responses to the Covid-19 pandemic. Qualitative studies should be conducted as a complement to quantitative studies to examine more closely how students experience the reduction in social contacts, how motivation changes over time and why, what academic issues are the most important for motivation, the effects of intensive use of video conferencing and other types of technology, etc. Nevertheless, our findings are important insofar as they were collected during the critical first wave of the Covid-19 pandemic—that is, under special psychological circumstances when the virus and the consequences of Covid-19 were still not well understood and the pandemic was a new situation that required lifestyle adjustments.

Implications of the findings

It is worth emphasising that the psychological reactions to the pandemic of the student participants varied greatly from one individual to another. Some did not report anxiety, and some experienced persistently increasing anxiety. When health crises occur, it is necessary to study as accurately and promptly as possible at local

levels how students experience the crisis and cope with stress. It is necessary to study their psychological problems—including anxiety—to design the most effective interventions, address the factors contributing to anxiety and reduce the risk of developing the generalised anxiety disorder. Appropriate interventions, both at the level of the individual and of society as a whole, are key to successfully managing the impact of crises on mental health.

The results of the present study have several implications. Although the contribution of health problems to generalised anxiety did not reach statistical significance, it is important that students with health problems receive regular medical care as at normal times to avoid possible generalised anxiety. Among the most prominent risk factors identified for generalised anxiety were the effects of confinement, loss of perceived control and neuroticism. Generalised anxiety increased in students with higher levels of neuroticism, i.e., whose negative emotional responses to stress are more pronounced, in students who were more susceptible to the effects of stressors (e.g., inconvenience caused by the pandemic and government-imposed regulations) and in students who perceived a loss of control (e.g., things did not turn out the way they wanted, their problems accumulated). These findings suggest that regulations designed to prevent the further spread of the virus need to be well thought out and communicated respectfully, empathically and consistently to mitigate stress and prevent negative emotions and anxiety. Students (and others) should be made aware that reactions like anxiety, if not persistent and debilitating, are normal and adaptive and can even be expected in situations such as the pandemic or other health crises.

Generalised anxiety among students seemed to be reinforced by the uncertainty and perceived uncontrollability of the situation. This indicates that a reduction of uncertainty and a certain degree of control would be helpful for emerging adults to prevent their anxiety (e.g., Grupe and Nitschke 2013). Uncertainty could be reduced by providing relevant, targeted and evidence-based information, both through the traditional media and through public authorities, such as university directors and teachers. Students should be informed about Covid-19 in general and the specific negative effects of the virus: awareness and understanding of Covid-19 among university students was associated with a lower likelihood of experiencing mild anxiety (Chang, Yuan et al. 2020). It is also important to inform students about generalised anxiety disorder and the available treatment options for the disorder—in addition to providing technology-based help or guided self-help interventions for students with clinically high generalised anxiety as well as subclinical samples experiencing mild anxiety (Kanuri et al. 2015). Such interventions and regular mental health screenings of students may need to be planned in cooperation with universities to achieve sufficient coverage.

Also, it is important to draw attention to academic processes and implementations during the pandemic. It has been shown that a higher cognitive load focuses attention on neutral, positive or non-threatening stimuli and prevents the mind from wandering towards worries (Najmi et al. 2015), so increasing the academic workload could act as a kind of prevention against anxiety. To reduce the perception of losing control, students should be given the support for and opportunity to make

decisions and short-term plans so that they can make easily achievable milestones, create schedules to strengthen their motivation, believe more fully they are in control and manage problems successfully to find appropriate solutions. In the study by Podlogar et al. (2020), the use of such strategies was associated with a more constructive perception of the situation during the pandemic. Such interventions could be integrated into the study processes and applied in an academic context.

In conclusion, our study showed that during the first wave of the Covid-19 pandemic, university students experienced higher levels of anxiety than the non-student population. During an ongoing (health) crisis that involves severe restrictions and lifestyle changes, students who are just learning to navigate adulthood should be considered a vulnerable group. More systematic attention should be paid in public policy, information dissemination, and academic settings to helping students cope with the increased anxiety and other difficulties of the Covid-19 era.

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GENERALIZIRANA ANKSIOZNOST PRI SLOVENSKIH ŠTUDENTIH MED EPIDEMIJO COVIDA-19

Povzetek: Pandemija covid-19 je po vsem svetu povzročila negotovost, strahove in skrbi ter s tem povečala možnost pojavljanja anksioznosti. V spletni anketi, ki smo jo izvedli aprila 2020 na vzorcu Slovencev, starih 18 let in več, smo zbrali podatke o generalizirani anksioznosti, nevroticizmu, psihosocialni ranljivosti, izgubi zaznanega nadzora in vplivu različnih z epidemijo povezanih težav. Prispevek predstavlja rezultate 110 študentov (med njimi 78 % žensk) ter jih primerja z rezultati neštudentov ($n = 779$). Ugotovili smo, da so bili za študente v primerjavi z ostalimi udeleženci značilni višja generalizirana anksioznost, večja izguba zaznanega nadzora in večji vpliv težav, povezanih z epidemijo. Pri študentih je bila generalizirana anksioznost pozitivno povezana z vplivom z epidemijo povezanih omejitev, izgubo zaznanega nadzora in nevroticizmom. Študija izpostavlja dejavnike tveganja za generalizirano anksioznost študentov med zdravstveno krizo in podaja možne usmeritve za razvoj preventivnih ukrepov.

Ključne besede: covid-19, generalizirana anksioznost, zaznani nadzor, stres, študenti

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