



This is a repository copy of *A repeated cross-sectional survey assessing university students' stress, depression, anxiety, and suicidality in the early stages of the COVID-19 pandemic in Poland.*

White Rose Research Online URL for this paper:
<http://eprints.whiterose.ac.uk/166251/>

Version: Accepted Version

Article:

Debowska, A. orcid.org/0000-0002-3035-3945, Horeczy, B., Boduszek, D. et al. (1 more author) (2020) A repeated cross-sectional survey assessing university students' stress, depression, anxiety, and suicidality in the early stages of the COVID-19 pandemic in Poland. *Psychological Medicine*. ISSN 0033-2917

<https://doi.org/10.1017/S003329172000392X>

© 2020 The Authors. This is an author produced version of a paper subsequently published online in *Psychological Medicine*. Article available under the terms of the CC-BY-NC-ND license (<https://creativecommons.org/licenses/by-nc-nd/4.0/>).

Reuse

This article is distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND) licence. This licence only allows you to download this work and share it with others as long as you credit the authors, but you can't change the article in any way or use it commercially. More information and the full terms of the licence here: <https://creativecommons.org/licenses/>

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.



eprints@whiterose.ac.uk
<https://eprints.whiterose.ac.uk/>

A repeated cross-sectional survey assessing university students' stress, depression, anxiety, and suicidality in the early stages of the COVID-19 pandemic in Poland

Agata Debowska ^{1,2}, Beata Horeczy ^{3,4}, Daniel Boduszek ^{5,6}, Dariusz Dolinski ⁷

Author Note:

¹ Faculty of Psychology, The University of Sheffield, Sheffield, UK

² Faculty of Psychology and Law, SWPS University of Social Sciences and Humanities, Poznan, Poland

³ Anesthesiology and Intensive Care Department with the Center for Acute Poisoning, St. Jadwiga Provincial Clinical Hospital, Rzeszow, Poland

⁴ Medical College, University of Rzeszow, Rzeszow, Poland

⁵ Faculty of Psychology, SWPS University of Social Sciences and Humanities, Katowice, Poland

⁶ Department of Psychology, University of Huddersfield, Huddersfield, UK

⁷ Faculty of Psychology, SWPS University of Social Sciences and Humanities, Wroclaw, Poland

Paper accepted for publication in *Psychological Medicine*

Correspondence concerning this article should be addressed to Agata Debowska, The University of Sheffield, Department of Psychology, Cathedral Court, 1 Vicar Lane, Sheffield S1 2 LT, United Kingdom, contact email:

a.debowska@sheffield.ac.uk

The time of the COVID-19 pandemic can be emotionally challenging and stressful to all persons affected, and in particular those sub-groups of the population that are at an increased risk of mental health problems. One such vulnerable group constitute university students (Wang et al., 2020).

Using a repeated cross-sectional study design, we assessed stress, depression, anxiety, and suicidality among medical, psychology, and other students ($N = 7228$, 81% female; M age = 22.78, $SD = 4.40$). Participants were recruited via 10 Polish universities and the Students' Parliament of the Republic of Poland. Data collection occurred in five stages, during the first two months of the COVID-19 pandemic in Europe (March – April 2020). The stages differed from one another in the amount and type of lockdown-type measures, with stage 4 being characterised by the strictest restrictions (see note in Table 1).

Depression, anxiety, and stress levels in the past week were measured using the Depression Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1995). The frequency and intensity of suicidal ideation and impulses in the past 24 hours were measured using the Depressive Symptom Inventory – Suicidality Subscale (DSI-SS; Joiner, Pfaff, & Acres, 2002).

We performed 2 (gender) x 5 (study stage) between groups ANOVAs to explore the differences between males and females and five stages of data collection on suicidality, depression, anxiety, and stress (Table 1). Our findings demonstrate a significant increase in depression as the pandemic was progressing. Specifically, depression scores in study stages 3, 4, and 5 increased significantly from stage 1. Stages 3, 4, and 5 differed from stage 1 in that lockdown-type measures mostly relying on social distancing and isolation were introduced to control the spread of the disease (Figure 1). Loneliness was previously found to contribute to the development of

depressive symptoms (Grygiel et al., 2013). The present findings, therefore, may indicate that because students had to isolate to avoid infection, their desire for social connectedness was not met, resulting in more symptoms of depression.

We also found that female students scored significantly higher than male students on depression, anxiety, and stress. Anxiety and stress levels were higher among women at all study stages, including stage 1, which could indicate that these gender differences were present before the pandemic. Indeed, there is substantial empirical evidence collected at a time when there was no crisis indicating that women, compared with men, report higher levels of anxiety and stress (Gentry et al., 2007; McLean & Anderson, 2009). Interestingly, Anderson and Manuel (1994) found that women experienced greater amounts of stress in response to an earthquake than men. Therefore, it seems that gender differences in stress and anxiety precede the pandemic, but the pandemic may deepen this discrepancy.

As for depression, men and women reported a similar number of symptoms at stage 1, but there was a substantial gender difference in depression scores in the subsequent study stages, with women experiencing more symptoms. Although both genders recorded an increase in the symptoms of depression as the pandemic was progressing, the increase was more pronounced in females. Our finding highlights a potential pandemic effect on the emergence of gender differences in depression. We theorise that this may be due to increased caring responsibilities, more worry about the well-being of family and friends, or an unmet need for social connectedness, all of which are more likely to affect women than men.

Table 1. Descriptive Statistics Including Means (Ms) and Standard Deviations (SDs) for Suicidality, Depression, Anxiety, and Stress Across the Study Stages and Genders

		Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Suicidality	Males					
	<i>M</i>	1.27	1.09	1.37	1.53	1.64
	<i>SD</i>	2.02	1.60	2.10	2.27	2.41
	<i>N</i>	90	35	635	434	188
	Females					
	<i>M</i>	1.28	1.37	1.31	1.32	1.23
	<i>SD</i>	2.11	2.13	2.08	2.14	2.01
	<i>N</i>	454	256	2715	1577	844
	Total					
	<i>M</i>	1.27	1.33	1.32	1.36	1.30
<i>SD</i>	2.09	2.07	2.08	2.17	2.09	
<i>N</i>	544	291	3350	2011	1032	
Depression	Males					
	<i>M</i>	12.11	12.76	12.63	13.24	12.93
	<i>SD</i>	9.69	10.08	10.27	10.75	10.44
	<i>N</i>	87	34	588	401	174
	Females					
	<i>M</i>	12.18	13.82	15.05	15.57	14.53
	<i>SD</i>	10.06	10.41	10.86	11.08	10.48
	<i>N</i>	442	255	2548	1459	806
	Total					
	<i>M</i>	12.17	13.70	14.59	15.07	14.25
<i>SD</i>	9.99	10.36	10.79	11.05	10.49	
<i>N</i>	529	289	3136	1860	980	
Anxiety	Males					
	<i>M</i>	7.06	6.12	6.48	6.58	7.00
	<i>SD</i>	7.10	8.25	7.59	7.34	8.19
	<i>N</i>	87	34	590	402	174
	Females					
	<i>M</i>	10.01	9.36	9.83	10.44	9.39
	<i>SD</i>	9.10	9.45	9.17	9.69	9.09
	<i>N</i>	443	255	2547	1461	808
	Total					
	<i>M</i>	9.52	8.98	9.20	9.61	8.96
<i>SD</i>	8.86	9.39	8.99	9.37	9.98	
<i>N</i>	530	289	3137	1863	982	
Stress	Males					
	<i>M</i>	14.80	15.12	13.25	13.80	14.40
	<i>SD</i>	10.16	10.51	9.76	10.69	10.77
	<i>N</i>	87	34	589	403	174
	Females					
	<i>M</i>	16.95	17.61	17.88	18.62	18.43
	<i>SD</i>	10.16	10.53	10.58	11.04	10.45
	<i>N</i>	442	255	2554	1462	807
	Total					
	<i>M</i>	16.60	17.31	17.01	17.57	17.71
<i>SD</i>	10.18	10.54	10.58	11.14	10.61	
<i>N</i>	529	289	3143	1865	981	

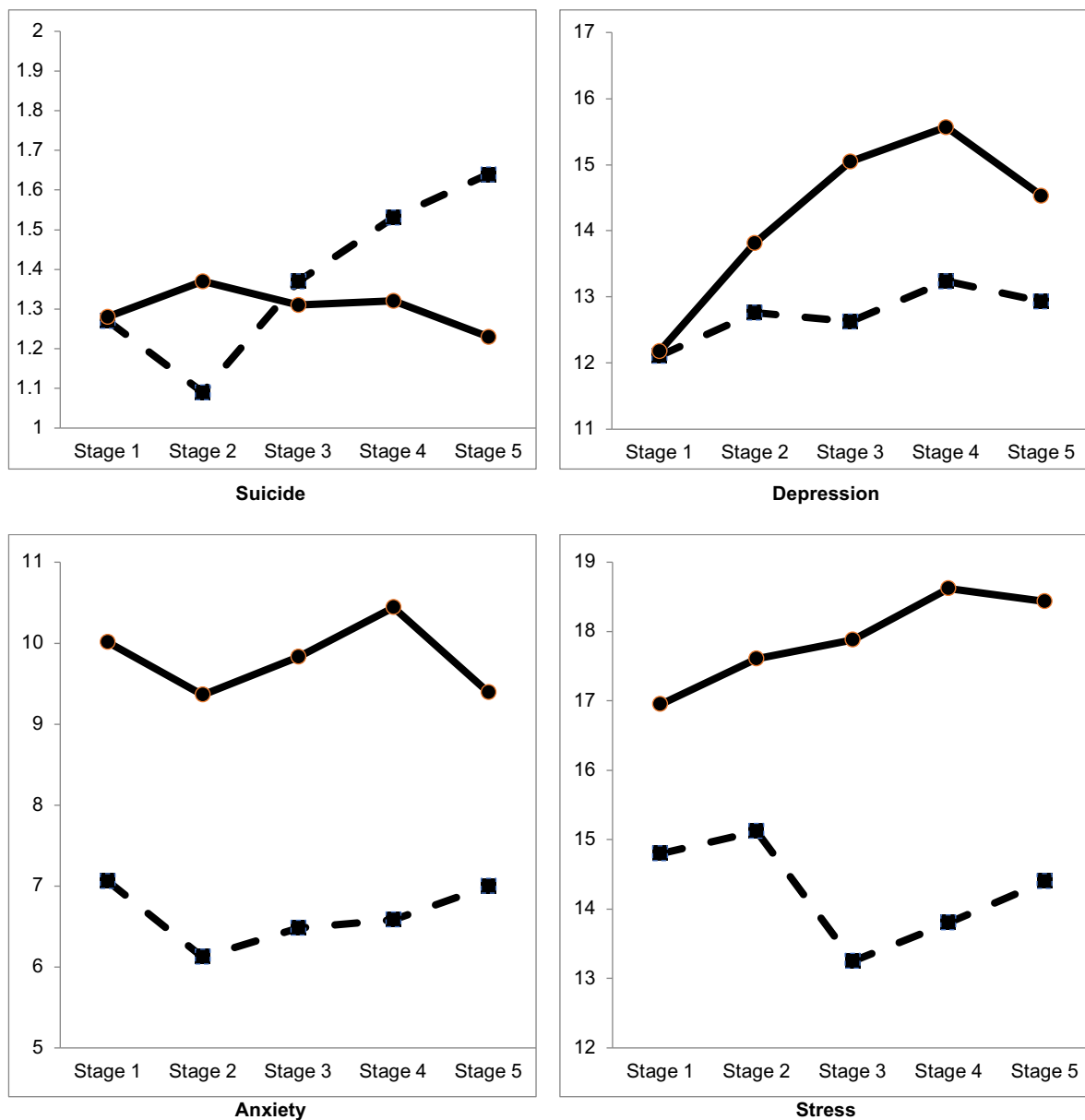
Note. Stage 1 = data collected 1-15 March (first COVID-19 infections in Poland were announced; no lockdown-type measures); Stage 2 = data collected 16-22 March (first lockdown-type control measures, including closing schools and university classes and cancelling mass events); Stage 3 = data collected 23-29 March (strengthening of lockdown-type measures, limiting non-family gatherings to two people and forbidding non-essential travel); Stage 4 = data collected 30 March – 5 April (another tightening of lockdown restrictions occurred, requiring individuals in the streets to be separated by two metres, closing parks, boulevards, beaches, hairdressers and beauty salons, and forbidding unaccompanied minors from exiting their homes); Stage 5 = data collected 6-30 April (all individuals were required to wear face coverings in public spaces; the restriction on public gatherings was loosened)

As for differences between student groups, we found that medical ($p = .016$; Cohen's $d = .12$) and other students ($p < .001$; Cohen's $d = .22$) scored higher than psychology students on depression. With regards to anxiety, other students scored higher than psychology students ($p = .049$; Cohen's $d = .07$). There were no significant differences between the groups on stress and suicidality. These findings may indicate staff and students at psychology departments are more aware of the potential impact of the pandemic on mental health. Thus, staff may offer more support to students and students may create mutual support groups.

We also found that young adult students (18-24 years) scored significantly higher than adult students (≥ 25 years) on suicidality ($p < .001$, Cohen's $d = .25$), depression ($p < .001$, Cohen's $d = .19$), and anxiety ($p < .001$, Cohen's $d = .15$), which confirms the theoretical considerations suggesting that young adult students who are in the processes of achieving important developmental milestones and, at the same time, face stressors associated with academic studies, are particularly prone to psychological distress (Arnett, 2004; Dusselier et al., 2005).

Although this study is not free from limitations, our findings provide insights into stress and mental health among university students during the early stages of the COVID-19 pandemic. Findings can be used for a more effective identification of students who may struggle during next stages of the pandemic and future crises.

Figure 1. A 2 (Gender) by 5 (Study Stages) ANOVA Results



Note. Solid line = females; Dashed line = males. 2 (gender) x 5 (study stage) ANOVAs results indicated no statistically significant interaction between gender and study stage for all variables. With regards to suicidality, there was no significant main effect for gender or study stage. There was a statistically significant main effect for gender ($F(1, 6784) = 8.21, p = .004, \eta^2 = .001$) and study stage ($F(4, 6784) = 2.77, p = .03, \eta^2 = .002$) on depression scores. Post-hoc Tukey HSD test indicated significant differences between stages 1 and 3 ($p < .001$; Cohen's $d = .23$), stages 1 and 4 ($p < .001$; Cohen's $d = .28$), as well as stages 1 and 5 ($p = .003$; Cohen's $d = .20$). There was a statistically significant main effect for gender on anxiety ($F(1, 6791) = 51.78, p = .000, \eta^2 = .008$) and stress ($F(1, 6797) = 49.43, p < .001, \eta^2 = .007$). No significant effect for study stage was recorded on anxiety or stress.

Acknowledgements: The authors are grateful to all participants who took part in this study as well as Heads of participating institutions.

Funding Statement: This research received no specific grant from any funding agency, commercial or not-for-profit sectors.

Declaration of Competing Interest: The authors declare they have no conflicts of interest.

Ethical Standards: The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

References

- Anderson, K. M., & Manuel, G. (1994). Gender differences in reported stress response to the Loma Prieta earthquake. *Sex Roles, 30*(9), 725-733. doi: 10.1007/BF01544672
- Arnett, J. (2004). *Emerging adulthood: The winding road from the late teens through the twenties*. New York, NY: Oxford University Press.
- Dusselier, L., Dunn, B., Wang, Y., Shelley II, M. C., & Whalen, D. F. (2005). Personal, health, academic, and environmental predictors of stress for residence hall students. *Journal of American College Health, 54*(1), 15-24.
<https://doi.org/10.3200/JACH.54.1.15-24>
- Gentry, L. A., Chung, J. J., Aung, N., Keller, S., Heinrich, K. M., & Maddock, J. E. (2007). Gender differences in stress and coping among adults living in Hawaii. *Californian Journal of Health Promotion, 5*(2), 89-102. <https://doi.org/10.32398/cjhp.v5i2.1235>
- Grygiel, P., Switaj, P., Anczewska, M., Humenny, G., Rebisz, S., & Sikorska, J. (2013). *Loneliness and depression among Polish university students: Preliminary findings from a longitudinal study* [Paper presentation]. Annual Meeting of the Bulgarian Comparative Education Society, Plovdiv, Bulgaria. <https://eric.ed.gov/?id=ED567154>
- Joiner Jr, T. E., Pfaff, J. J., & Acres, J. G. (2002). A brief screening tool for suicidal symptoms in adolescents and young adults in general health settings: Reliability and

validity data from the Australian National General Practice Youth Suicide Prevention Project. *Behaviour Research and Therapy*, 40(4), 471-481.

[https://doi.org/10.1016/S0005-7967\(01\)00017-1](https://doi.org/10.1016/S0005-7967(01)00017-1)

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states:

Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck

Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33(3), 335-

343. [https://doi.org/10.1016/0005-7967\(94\)00075-U](https://doi.org/10.1016/0005-7967(94)00075-U)

McLean, C. P., & Anderson, E. R. (2009). Brave men and timid women? A review of the

gender differences in fear and anxiety. *Clinical Psychology Review*, 29(6), 496-505.

<https://doi.org/10.1016/j.cpr.2009.05.003>

Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate

psychological responses and associated factors during the initial stage of the 2019

coronavirus disease (COVID-19) epidemic among the general population in China.

International Journal of Environmental Research and Public Health, 17(5), 1729.

<https://doi.org/10.3390/ijerph17051729>