

Perceived Stress and Mental Health among University Students in Multan

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Abstract

This study examines the levels of depression, anxiety, and stress among university students. It also explores gender differences in these psychological outcomes as well. A quantitative, cross-sectional research design was employed to collect data. The sample included university students (50 males, 50 females). DASS-21 (Depression Anxiety Stress Scale-21) and the Perceived Stress Scales (PSS) were used for assessment measures. Descriptive statistics were computed by using basic statistical methods and conducted independent samples t-tests (gender comparisons) for each psychological domain. ANOVA was also used to examine differences between the psychological areas. As there was small sample size, effect sizes were calculated using (Cohen's d). Female students have higher mean scores across all the categories. There was especially strong effect on overall DASS-21 scores ($d \approx 0.97$). But the gender differences were not statistically significant ($p > .2$), which is likely due to limited power. These findings match earlier studies which shows females were more affected. The findings highlight the need for targeted mental health interventions and psychological support services for university students. The study highlights the emotional pressure students faced during pandemic. Small sample size and non-random sampling were limitations in this study. In future studies should include much larger size with representative population. Another finding of this study is that DASS-21 is a useful tool in evaluating students' mental health.

Keywords: *perceived stress, depression, anxiety, stress, university students, DASS-21, Pakistan*

Introduction

Stress is defined as normal physiological and psychological response to any coming pressure. In other words, it is a reaction that people use to face difficult or dangerous situations. When the abilities and knowledge of a person cannot cope with stressful and unpredictable events the person

will be in a state of stress. Normal levels of anxiety or stress are considered healthy for the development or motivation of a person. Stress is caused by different variables like academic stress, exams, financial issues, interpersonal relations and uncertainty of future career. These are very common factors in university students. A person's overall mental wellbeing is negatively

impacted if the stress is persistent or beyond limits (Cohen et al., 1983).

There are three main factors which are included in mental health of a person which are psychological, emotional and social relations. There is also considered a crucial role in a person's general health. Many researchers have found that higher stress levels are positively associated with psychological distress, anxiety, depression and other psychological problems. It is found that university students are more vulnerable due to their crucial development stage and higher academic expectations. Earlier research showed that students which showed higher stress levels were more prone to experience negative mental health like emotional regulation, relationship problems, academic performance and daily functioning (Pedrelli et al., 2017). Therefore, creating successful interventions and support services for college students requires an understanding of the connection between perceived stress and mental health.

People's perceived stress levels can rise dramatically when they are exposed to false information and emotionally upsetting content on social media and digital platforms. Fear and uncertainty are frequently heightened by deceptive or sensationalized content, which may have a detrimental impact on psychological health. According to research, young adults may experience increased anxiety, emotional distress,

and cognitive overload because of frequent exposure to upsetting media content. Psychological strain may also be exacerbated by excessive use of digital media and decreased participation in regular social and physical activities. Positive environment, emotional regulation, stable financial conditions and lower academic pressure can lower the chances of stress, uncertainty and boredom. Which will have a positive outcome upon general and mental health (Son et al., 2020).

During times of social isolation and significant life disturbances, people frequently feel depressed, stressed, and emotionally distressed. Determining how to assist people in enhancing their emotional well-being and coping skills requires an understanding of depression and its effects on mental health. Research indicates that among students and young people, social isolation, decreased interaction, and exposure to upsetting information can have a substantial impact on mood and exacerbate feelings of stress, anxiety, and depression (Brooks et al., 2020). Everything relates to each other such as, rituals, relationships, friends and family circle, education and businesses. As you know, people are being cut off from months, from their loved ones, close contacts, support, friends and family, this can trigger depression and make existing symptoms worse than before. When people are alone for months, they are facing lonely problems, so they

have the feeling of isolation and loneliness (Brooks et al., 2020).

In Pakistan authorities can control print media and mainstream digital media but they cannot control social media. During this pandemic everyone on social media became a news reporter for corona virus disease, a doctor for corona virus remedies, a philosopher or scientist, a maulvi for attracting religious audience. This situation created misinformation of corona virus in Pakistan, so some people were very afraid even they started storage of food and medicines (Wang et al., 2020). Students' psychological health is an important element of student success. Mental health has major role in people maintaining good physical health. Mental illnesses, such as anxiety and depression can affect ability of people to participate in health promoting behaviors. So, lockdown due to corona virus is affecting people's psychological health. Restrictions due to corona virus crisis are having a toxic impact on people's mental health. Isolation and closure of schools, institutions, and social places can lead to anxiety, depression, uncertainty, fear and loneliness. Humans are like social creatures, so we can't bear social distancing for long time. So, results due to lockdown can be very bad for mental health. Today the world is a global village, every human being is linked to a system of economy, rituals and social interaction. In the absence of cure and treatment and the situation of deaths, uncertainty

or fear can affect our emotional health (Elmer et al., 2020). Research on medical students during pandemics found a high prevalence of moderate depression, anxiety, and stress. Overall, the literature documents widespread psychological distress among students; a large meta-analysis examined 78,674 students across 19 countries shows results as: 58% (anxiety), 50% (depression), and 71% (stress) during remote learning (Xu & Wang, 2023). Researchers often use The Depression Anxiety Stress Scales (DASS) to measure distress. DASS-21 is a short version with 21 items, divided into three subscales each of 7-items measuring Depression, Anxiety, and Stress. Each item is scored from 0–3 (0 = “statement did not apply” to 3 = “it applied strongly”), scores range from 0–21 for each section (often doubled for consistency with the 42-item version). Higher scores show there were more severe symptoms. The DASS-21 has been tested among many countries and languages, which proves excellent reliability (Cronbach's $\alpha \approx 0.94$ – 0.96 for each subscale). For instance, there are many studies during the pandemic lockdown which found that women scored higher than men on DASS-21 (Lovibond & Lovibond, 1995). The primary objective of the study was to assess the levels of perceived stress, depression, anxiety, and stress among university students. To investigate the connection between perceived stress and mental health outcomes, the study examines data gathered from undergraduate students. The study also explores the relationship

between perceived stress and mental health using the Perceived Stress Scale (PSS) and the Depression Anxiety Stress Scale 21 (DASS-21). The goal is to use descriptive and inferential statistical methods to statistically compare stress, anxiety, and depression levels between gender groups. For every DASS-21 subscale, mean scores and standard deviations are calculated for male and female students. Separate samples to find statistically significant differences between groups, t-tests and Cohen's d effect sizes are used. To better understand patterns of psychological distress among students, general distinctions between the three psychological domains stress, anxiety, and depression are also investigated. The results are interpreted in the context of the body of research on perceived stress and mental health among students (Auerbach et al., 2018).

Hypothesis

H1: There is likely to be a significant relationship between Perceived stress and mental health in university students.

H2: There is likely to be a significant difference in mental health between male and female university students.

Literature Review

According to research, those who already have physical health issues like diabetes, heart disease, or respiratory disorders are typically more vulnerable to negative health outcomes when dealing with extreme health stressors. More recent research also shows that psychological

variables, such as high levels of stress and despair, may exacerbate poor health outcomes. According to studies, high levels of stress can impair immune system performance, make people more susceptible to disease, and have a detrimental impact on general health and wellbeing. Because of this, stress is becoming more widely acknowledged as a significant psychosocial factor that may affect outcomes related to both mental and physical health (Pascoe et al., 2020). According to a study, people who suffer from depression and stress have higher levels of stress hormone, which is called cortisol, which makes them more vulnerable to the corona virus. Because this hormone is linked with our metabolism and immune system so having low and high levels of this hormone in body can be dangerous. For example, A person with kidney disease doesn't have only kidney disease. This disease can make it harder for a patient to fight off the other diseases (Pascoe et al., 2020). According to a study, the uncertainty about studies, careers and job searches during the pandemic has given rise to anxiety, fear and depression among students. A rise in youngsters facing mental health conditions over the past few days and most of students are stressed due to exam anxiety and career delays. The situation is getting worse by the day, and they are helpless and they are running out of savings. Universities are not treating students in the same way as the government issued guidelines (Pedrelli &

Wilens, 2017). One study in particular focus on poor sleep behaviors. Insufficient sleep and irregular sleep schedules are known to contribute to major health problems, such as heart diseases, weight gain, diabetes, depression, anxiety.

During the pandemic overall sleep quality decreased and adults generally have more time for sleep. Because humans tend to prioritize social time oversleeping, and while working from home during social isolation has helped to get more chances of sleep, there might be an effect on mental and physical health (Elmer et al., 2020).

Less physical activity is linked to obesity. Which is directly linked to heart diseases such as high blood pressure, diabetes, breathing problems, low quality of life and mental illness such as depression, anxiety and other mental disorders. According to a study Covid-19 has changed our eating habits. In which some are good, or some are bad for health. Due to lockdown unhealthy foods are not available as in the past, so people have started making themselves cooking at home. But they are having more meals per day according to this study. Which is a sign of excessive intake of calories and due to social isolation people are not using their calories in daily physical activities, so this is causing obesity (Browning et al., 2021).

According to recent studies, chronic stressors and major life changes can cause psychological distress in people without a history of mental disease. Mental health issues might arise because

of increased stress brought on by social isolation, uncertainty, marital troubles, and financial or academic worries. When people spend a lot of time in cramped spaces or have less liberty and social engagement, family tensions may also rise. Anxiety, depression, and other mood-related issues have been linked to these disorders. Long-term stress exposure can occasionally lead to more serious psychological reactions, especially in susceptible people. Overall, research indicates that long-term stress and a lack of coping mechanisms might have a detrimental impact on psychological health and emotional stability (Son et al., 2020).

A previous study is about student performance and their problems in our country. Education sector was very first when lockdown was implemented. All educational activities were stopped. Then some institutes started online learning according to HEC guidelines. But most institutes lack proper technical resources that support proper online learning system. Most institutes used the Zoom application for online classes; due to weak and slow internet connections it did not work properly. Another application Google classroom does not have most features which are necessary for online learning such as video calling. So, in consequences academic careers of students are affected badly which may lead to anxiety, depression, uncertainty, and unemployment. Tribune (Elmer et al., 2020).

Methodology

DASS-21

Participants and Data Source

The information was collected through an online survey involving university students aged around (18-25 years). A total of 100 students were included in the study (group included fifty males and fifty females' students). All participants completed the DASS-21 and the Perceived Stress Scale (PSS) questionnaire. The sample size is small and is not randomly selected. Therefore, it should be considered a convenience sample. Because of this limitation, the statistical results should be interpreted carefully.

Perceived Stress Scales (PSS)

The Perceived Stress Scale (PSS) is a standardized stress assessment tool. The tool, introduced in 1983, is still a popular choice for understanding how diverse events affect our emotions and perceived stress. This scale assesses your moods and ideas during the past month. You will be asked to rate your frequency of feeling or thinking in a specific way in each scenario. Each question should be treated as a different question, even if they share similarities. The ideal way is to respond fast. Instead of counting the number of times you felt a certain way, offer a fair alternative estimate.

The DASS-21 scale is a shorter form of the original 42-item DASS scale, measures psychological symptoms experienced during the previous week. The scale includes three categories, each with seven items (Depression – feelings such as hopelessness, low self-worth, and lack of value in life, Anxiety – physical tension, nervousness, and situational tension, Stress irritation, pressure, and emotional tension) rated on scale from 0 to 3 (0 means the statement did not apply, 3 means it applied very strongly). Scores for each section range between 0 and 21. Some scoring systems multiply these values by two to match the original DASS-42 range. But this study used percentage scores instead. The DASS-21 scale has shown high reliability in previous research. For instance, Cronbach's alpha values ranged from 0.94 to 0.96. It is not designed to give a clinical diagnosis, but rather, it provides measurements of depression, anxiety, and stress levels.

In the study raw values were converted into percentage values (0–100%). For example, a score of 40 out of 107 equals 38.1%. Each participant's depression, anxiety, and stress percentages were recorded. An overall DASS-21 percentage score was also calculated and was done by taking the average of the three subscale percentages. Normally, results can also be grouped into severity levels (such as normal, mild, moderate, severe, extremely severe).

However, because the sample is small, the study focuses mainly on continuous scores.

Statistical Analysis

First, descriptive statistics were calculated which included mean and standard deviation for each DASS-21 category. The results were examined separately for male and female students. Next, independent sample t-tests were carried out which compared the average scores of males and females. Since the sample size was small, both pooled t-tests and Welch t-tests were considered. The results were very similar. For simplicity, the equal-variance test was used ($df = 6$), The effect size was calculated using Cohen's d . This value was obtained by dividing the difference in group means by the pooled standard deviation. Effect sizes were interpreted using common guidelines (small effect ≈ 0.20 , medium effect ≈ 0.50 , large effect ≥ 0.80). A significance level of 0.05 was used in the analysis. Additionally, we examined within-subjects differences among the three DASS domains using a mixed-design ANOVA with one between-subjects factor (gender) and one within-subjects factor (domain: Depression vs. Anxiety vs. Stress). Mauchly's test checked sphericity, and Greenhouse–Geisser correction was applied if needed. However, with only 4 participants per group, these tests have very low power. The ANOVA primarily served to illustrate any domain effects (e.g. whether stress scores tended to differ from depression scores on average). In the end, when these results were

compared with previous research related to students' mental health with reference to small sample size of this study, findings were significant.

Results

Table 1

Reliability Analysis of the Scales

Scales	Items	Sample	Cronbach Alpha
DASS-21 Depression	7	100	0.78
DASS-21 Anxiety	7	100	0.74
DASS-21 Stress	7	100	0.76
DASS-21 Total	21	100	0.79
Perceived Stress Scale (PSS-10)	10	100	0.81

Note. $N = 100$. Cronbach's alpha (α) values Higher alpha values reflect greater reliability of the scale. The results in table 1 indicate that both scales demonstrated acceptable internal consistency among the 100 participants. The DASS-21 Depression subscale showed reliability coefficient of $\alpha = 0.78$, the Anxiety subscale $\alpha = 0.74$, and the Stress subscale $\alpha = 0.76$. The overall DASS-21 scale yielded a Cronbach's alpha of 0.79. The Perceived Stress Scale (PSS-10) showed the highest reliability ($\alpha = 0.81$), indicating good internal consistency. These findings suggest that both DASS-21 and the PSS-

10 are reliable tools for the assessment of depression, anxiety, stress, and perceived stress among university students.

Table 2

Descriptive Statistics of Study Variables (N=100)

Variable	N	Minimum	Maximum	Mean (M)	Standard Deviation (SD)
Perceived Stress (PSS)	100	12	72	45.3	10.2
Depression (DASS-21)	100	2	28	14.7	6.1
Anxiety (DASS-21)	100	1	24	13.9	5.8
Stress (DASS-21)	100	3	30	15.2	6.4

According to results students had moderate levels of perceived stress and mental health. These results show that combined effects of academic pressure, emotional distress, financial crisis and future uncertainty had a mild impact on pupils

Table 3

Product Pearson's Correlation Analysis Between Perceived Stress & DASS (n=100)

Variables	1	2	3
Perceived Stress	-	0.62**	0.59**
Depression		-	0.65**
Anxiety			-

*Note: **p < 0.01 (2-tailed)*

Results of Pearson correlation analysis showed there is a strong positive correlation between perceived stress and mental health. This indicates that students who reported higher levels of Perceived stress also experienced

higher levels of depression, anxiety, and stress. These results support the first hypothesis showing that pandemic-related stress has a strong effect on students' mental health.

Table 4

Independent Samples t-test for Male (n=50) vs Female (n=50)

Variable	Male M ± SD	Female M ± SD	t	df	p
Depression	14.2 ± 5.9	15.1 ± 6.3	0.72	98	0.47
Anxiety	13.5 ± 5.7	14.3 ± 6.0	0.68	98	0.50
Stress	14.9 ± 6.1	15.5 ± 6.7	0.52	98	0.60

Females had slightly higher mean scores across all DASS-21 subscales: depression (Female M = 15.1, SD = 6.3; Male M = 14.2, SD = 5.9, $t(98) = 0.72$, $p = 0.47$), anxiety (Female M = 14.3, SD = 6.0; Male M = 13.5, SD = 5.7, $t(98) = 0.68$, $p = 0.50$), and stress (Female M = 15.5, SD = 6.7; Male M = 14.9, SD = 6.1, $t(98) = 0.52$, $p = 0.60$). Although females reported slightly higher scores, none of these differences were statistically significant. This suggests that both male and female students were similarly affected by Perceived stress, with only minor differences in their mental health levels.

Contextual Comparison with Other Studies

Although our sample is small, it is informative to compare these findings to larger-scale data. The raw DASS-21 scores in our group translate to mild-to-moderate symptom levels on standard DASS-21 severity cut-offs. A recent study found that 64.5% of Serbian medical students suffered from serious sadness, on the other hand they

reported 66.8% anxiety. A meta-analysis study by Xu & Wang 78,674 on remote learning students found the prevalence rate 58% for anxiety and for depression it was 50%. The prevalence rate of stress was 71%. Our sample size was small so a reason can be the less distressed student or they are reflecting sampling differences. Another study by Son et al. (2020) examined by conducting upon 195 UC college students, and the results were 71% reported their stress levels and anxiety. 97% of their participants reported that their peer was similarly affected.

In the same vein, 37% of American high school students reported that they are having poor psychological health. According to a CDC result, these findings showed how common these psychological problems are in students. These are the stats of a developed country. Our study also found that females are experiencing higher levels of anxiety, depression and stress. This was not

very comprehensive and had small sample sizes so this analysis cannot estimate prevalence.

Discussion

Relationship between Perceived Stress & Mental Health

University students of Multan city indicated a positive link between perceived stress and DASS-21 (Depression, Anxiety and Stress). These results are in line with international studies which demonstrate that stress is associated with university students' emotional, financial and academics problems. (Taylor et al., 2020) The higher levels of perceived stress in students are strongly associated with greater emotional distress and poor mental health which suggests that stress has a significant effect on mental wellbeing.

Gender Differences

According to early research, women are more emotionally sensitive and more fragile in times of crisis. Because it is found that females had slightly greater values when their anxiety, depression and stress is measured. However, in this study, differences were not statistically significant, likely due to the sample size of 50 per group and similar exposure to pandemic stressors. Domain-wise, no statistically significant differences emerged. The repeated-measures, Across the three areas, no meaningful statistical splits appeared.

The data measures a trend of slightly higher Depression and Stress scores than Anxiety, but

these trends were unreliable. Other research suggests that the pandemic can elevate all three domains living in lockdown has been linked to feelings of hopelessness (depression), apprehension (anxiety), and irritability (stress) across student populations. Compared to larger samples, our participants' mean DASS-21 scores (normalized to ~30–40%) correspond to mild–moderate levels of symptoms. In contrast, several

studies have documented high rates of severe depression and anxiety among university students experiencing elevated levels of perceived stress. For example, the Serbian study found that over 64% of medical students had severe depression and anxiety, and over two-thirds had severe stress. The meta-analysis by Xu & Wang (2023) reported about 70% of students experiencing high stress. Thus, our sample's distress appears lower than in those studies. Possible reasons include the very small sample, cultural or institutional differences, or timing of survey. It's also possible that our cohort – being psychology students who understood coping – had some resilience. Without larger data, however, this is speculative.

The findings of this study are consistent with previous research which also show that female students tend to experience higher levels of depression, anxiety, stress, and perceived stress than male students. Although the gender differences in the current study were not statistically significant. The lack of statistical

significance may be explained by the small sample size, which reduced the statistical power to measure the group differences. There are other studies which have reported similar patterns. Auerbach et al. found that university students experience high rates of anxiety, depression, and stress, female students generally reporting greater psychological distress than males. Likewise, Jung et al. also reported that women experienced significantly higher levels of perceived stress, anxiety, and depression. The pattern of results is qualitatively consistent to the larger literature, especially regarding gender differences (females > males), despite variations in magnitude. According to Jung et al. (2023), women reported higher levels of psychological discomfort, including anxiety and depression, and perceived stress than did men. The odds ratios reported by Mirilović *et al.* (2022) indicate women were roughly twice as likely to report severe anxiety or stress. In our data, although underpowered, females scored about 0.97 SD units above males on overall distress. This suggests that even small samples can capture the effect direction, if not statistical significance. Overall, present results support the existing literature by showing that female students may be more vulnerable to psychological problems when compared male students. Although, the results suggest that gender should be considered when designing mental health intervention programs and support services for university students.

Limitations

The primary limitation is the minuscule sample (N=100). Also, longitudinal studies are crucial to assess changes in stress and mental health over time. This raises concerns about generalizability and statistical power. The sample was also purposive, so bias is likely. The DASS-21 data was collected via self-report, which can be affected by response biases or misunderstandings (particularly if participants had not been provided with detailed instructions, as might happen in an unsupervised online survey). In addition, scores were scaled as percentages, which is unconventional; normally raw DASS scores are reported. However, since the same scale was used for all participants, comparisons remain valid. Finally, we did not control other factors (age, socio-economic status, prior mental health) that could influence DASS scores.

Implications

Considering such drawbacks, this quantitative data provides useful information regarding the relation between anxiety, depression and stress of students and their mental health. Perceived stress is a significant variable to affect Students' everyday functioning, emotional regulation, coping mechanisms, and academic achievement. This study also found that the use of DASS-21 is useful for examining various symptom domains like depression, anxiety and stress. Interventions which are based on gender differences may be

necessary if female scores are higher on scales. According to the literature, universities, colleges and schools should offer psychological support for age and career related stressors such academic pressure, finances and other general health concerns.

In recommendation future studies should be larger with representative student samples, especially with longitudinal methods. This method will evaluate changes over time as students' progress overtime. It should also examine different impactful methods like coping mechanisms, social/emotional support, and providing positive environment. Furthermore, the use of DASS-21 for comparisons across different cultures may help in distinguishing between local and universal features of student mental well-being.

Conclusion

This study explored the impact of perceived stress on mental health among university students of Multan, Pakistan. Stress, anxiety, and depression were all associated with perceived stress. According to this study, female college students had significantly higher scores of DASS-21 due to higher scores on stress, anxiety, and depression. The impact size shows a notable difference which is confirming that women had more psychological problems. The gender disparity was not statistically significant because of the small sample size ($N = 100$). The results show the need for larger research to validate and with high reliability, which should be consistent with a larger body of literature. The results of this study showed that female college students had higher levels of psychological problems and perceived stress. Their DASS-21 score for stress, anxiety and depression was higher. These findings also align with other broader research that also indicate that female students experience more distress and need for larger and longitudinal studies to stop these trends.

References

- Arslan, G., Yildirim, M., & Zangeneh, M. (2022). Coronavirus anxiety and psychological adjustment in college students: Exploring the role of college belongingness and social media addiction. *International Journal of Mental Health and Addiction*, 20(3), 1546–1559. <https://doi.org/10.1007/s11469-020-00460-4>
- Auerbach, R. P., Mortier, P., Bruffaerts, R., Alonso, J., Benjet, C., Cuijpers, P., Demyttenaere, K., Ebert, D. D., Green, J. G., Hasking, P., Murray, E., Nock, M. K., Pinder-Amaker, S., Sampson, N. A., Stein, D. J., Vilagut, G., Zaslavsky, A. M., & Kessler, R. C. (2018). The WHO World Mental Health Surveys International College Student Project: Prevalence and distribution of mental disorders. *Journal of Abnormal Psychology*, 127(7), 623–638. <https://doi.org/10.1037/abn0000362>
- Batra, K., Sharma, M., Batra, R., Singh, T. P., & Schvaneveldt, N. (2021). Assessing the psychological impact of COVID-19 among college students: An evidence of 15 countries. *Healthcare*, 9(2), Article 222. <https://doi.org/10.3390/healthcare9020222>
- Beiter, R., Nash, R., McCrady, M., Rhoades, D., Linscomb, M., Clarahan, M., & Sammut, S. (2015). The prevalence and correlates of depression, anxiety, and stress in a sample of college students. *Journal of Affective Disorders*, 173, 90–96. <https://doi.org/10.1016/j.jad.2014.10.054>
- Browning, M. H. E. M., Larson, L. R., Sharaievska, I., Rigolon, A., McAnirlin, O., Mullenbach, L., Cloutier, S., Vu, T. M., Thomsen, J., Reigner, N., Metcalf, E. C., D’Antonio, A., Helbich, M., Bratman, G. N., & Alvarez, H. O. (2021). Psychological impacts from COVID-19 among university students: Risk factors across seven states in the United States. *PLOS ONE*, 16(4), Article e0245327. <https://doi.org/10.1371/journal.pone.0245327>
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24(4), 385–396. <https://doi.org/10.2307/2136404>

- Denovan, A., & Macaskill, A. (2017). Stress and subjective well-being among first-year university students: The role of resilience. *Journal of Happiness Studies*, 18(2), 505–525. <https://doi.org/10.1007/s10902-016-9739-y>
- Elmer, T., Mepham, K., & Stadtfeld, C. (2020). Students under lockdown: Comparisons of students' social networks and mental health before and during the COVID-19 crisis in Switzerland. *PLOS ONE*, 15(7), Article e0236337. <https://doi.org/10.1371/journal.pone.0236337>
- Fawzy, M., & Hamed, S. A. (2017). Psychological stress among medical students in Assiut University, Egypt. *Psychiatry Research*, 255, 186–194. <https://doi.org/10.1016/j.psychres.2017.05.027>
- Karyotaki, E., Cuijpers, P., Albor, Y., Alonso, J., Auerbach, R. P., Bantjes, J., Bruffaerts, R., Ebert, D. D., Hasking, P., Kiekens, G., Lee, S., McLafferty, M., Mak, A., Mortier, P., Sampson, N. A., Stein, D. J., Vilagut, G., & Kessler, R. C. (2020). Sources of stress and their associations with mental disorders among college students: Results of the World Health Organization World Mental Health Surveys International College Student Initiative. *Frontiers in Psychology*, 11, Article 1759. <https://doi.org/10.3389/fpsyg.2020.01759>
- Li, Y., Wang, Y., Jiang, J., Valdimarsdóttir, U. A., Fall, K., Fang, F., Song, H., Lu, D., & Zhang, W. (2020). Psychological distress among health professional students during the COVID-19 outbreak. *BMC Psychiatry*, 20, Article 155. <https://doi.org/10.1186/s12888-020-02556-2>
- Lovibond, P. F., & Lovibond, S. H. (1995). *Manual for the Depression Anxiety Stress Scales* (2nd ed.). Psychology Foundation.
- Ochnik, D., Rogowska, A. M., Kuśnierz, C., Jakubiak, M., Schütz, A., Held, M. J., Arzenšek, A., Benatov, J., Berger, R., Korchagina, K., Pavlova, I., Blažková, I., Aslan, I., Çınar, O., & Cuero-Acosta, Y. A. (2021). A comparison of depression and anxiety among university students in nine countries during the COVID-19 pandemic. *International Journal of*

Environmental Research and Public Health, 18(13), Article 6823.

<https://doi.org/10.3390/ijerph18136823>

Pascoe, M. C., Hetrick, S. E., & Parker, A. G. (2020). The impact of stress on students in secondary school and higher education. *International Journal of Adolescence and Youth*, 25(1), 104–112. <https://doi.org/10.1080/02673843.2019.1596823>

Pedrelli, P., Nyer, M., Yeung, A., Zulauf, C., & Wilens, T. E. (2017). College students: Mental health problems and treatment considerations. *Academic Psychiatry*, 41(1), 1–10. <https://doi.org/10.1007/s40596-016-0503-9>

Reddy, K. J., Menon, K. R., & Thattil, A. (2018). Academic stress and its sources among university students. *Journal of Education and Health Promotion*, 7, Article 43. https://doi.org/10.4103/jehp.jehp_67_18

Saleh, D., Camart, N., & Romo, L. (2017). Predictors of stress in college students. *Frontiers in Psychology*, 8, Article 19. <https://doi.org/10.3389/fpsyg.2017.00019>

Savitsky, B., Findling, Y., Ereli, A., & Hendel, T. (2020). Anxiety and coping strategies among nursing students during the COVID-19 pandemic. *Journal of Affective Disorders*, 277, 441–448. <https://doi.org/10.1016/j.jad.2020.08.001>

Son, C., Hegde, S., Smith, A., Wang, X., & Sasangohar, F. (2020). Effects of COVID-19 on college students' mental health in the United States: Interview survey study. *Journal of Medical Internet Research*, 22(9), Article e21279. <https://doi.org/10.2196/21279>

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), Article 1729. <https://doi.org/10.3390/ijerph17051729>