

Mental Health Disorder among Malaysian Universities Students during COVID-19 Pandemic

Vikniswari Vija Kumaran¹, Mohd Khairi Ismail^{2*}, Sharmila Thinagar³, Siti Nurul Munawwarah Roslan⁴

¹Faculty of Business and Finance, Universiti Tunku Abdul Rahman
vikniswarivk@utar.edu.my

²Faculty of Business and Management, Universiti Teknologi MARA Cawangan Terengganu
khairiismail@uitm.edu.my

³Department of Business Studies, HELP University
sharmila.t@help.edu.my

⁴School of Accounting & Finance, Taylor's University
munawwarah.Roslan@taylors.edu.my

*Corresponding Author

<https://doi.org/10.24191/ajue.v18i3.18965>

Received: 10 May 2022

Accepted: 15 July 2022

Date Published Online: 31 July 2022

Published: 31 July 2022

Abstract: In Malaysia, the prevalence of mental diseases has risen dramatically over the last decade. University students tend to be particularly vulnerable to the harmful effects of quarantine when compared to the general population. Indeed, even before the COVID-19 pandemic, young adults' mental health was already a global concern. Young adults (aged 16-24 years) have been demonstrated to be especially vulnerable to mental health difficulties during prior lockdowns. Furthermore, increased public and clinician knowledge of mental health issues has likely resulted in improved reporting and identification of mental disorders. The study aims to evaluate Malaysian students' mental health, particularly from private universities during the COVID-19 pandemic. This study used a quantitative research approach. Descriptive analysis and Exploratory Factor Analysis (EFA) were used to analyze the data collected among university students in Malaysia. The results show that Malaysian university students were facing mental health issues due to high anxiety and depression. Furthermore, results of this study show that high level of depression, anxiety, and stress among Malaysian universities students incurred due to a drastic change in the education system especially in teaching delivery. Overall, this study will contribute to the advancement of research on the mental health and well-being of tertiary education students, particularly in Malaysia for their future growth and further development of the education system.

Keywords: COVID-19, Exploratory Factor Analysis (EFA), Mental Health, Universities students

1. Introduction

The World Health Organization declared the global epidemic of coronavirus disease 2019 (COVID-19) a public health emergency on January 30, 2020. The French government authorized a quarantine from March 17 to May 11, 2020, following the lead of numerous nations such as China and Italy. Unnecessary travel was prohibited, and citizens were asked to stay at home. A recent analysis of the literature suggested that quarantine measures could have detrimental psychological impacts, including symptoms of posttraumatic stress, tension, anxiety, and depression, based on lockdown experiences described in reaction to prior outbreaks.

During the early stages of the COVID-19 epidemic, students in China were more likely than older individuals to experience worry, anxiety, and depression because of the outbreak. There are many studies about stress, anxiety, and depression in the related scientific literature. The theoretical model stated that socio-environment stress with internal biological processes directs the pathogenesis of depression. Stress affects the physical, mental and emotional factor that causes bodily or mental tension (Shiel, 2018). A person will respond to a stimulus or the physiological consequences of that response. Anxiety is a feeling of tension, apprehension, nervousness, and worry. While depression is an emotion, a symptom, or a disease, someone feels sad or loses interest in activities once enjoyed, which leads to various emotional and physical problems. In addition, it can decrease a person's ability to function normally (Muskin, 2021).

In Malaysia, the prevalence of mental diseases has risen dramatically over the last decade. Malaysia is making the transition from a middle-income to a high-income country, with significant cultural and lifestyle changes because of growing urbanization and globalization, as well as higher levels of perceived stress. Furthermore, increased public and clinician knowledge of mental health issues has likely resulted in improved reporting and identification of mental disorders (Zhang, et al., 2020). Health crises, such as the COVID-19 pandemic, cause psychological changes for workers and students, and these changes are triggered by fear, anxiety, and depression. The pandemic has widespread public panic in the affected countries, resulting in thousands of deaths, anxiety, and psychosocial stress among the population, as well as financial losses (Al Shehri, 2015). As a result, it's critical to comprehend the scope of a pandemic impact on mental health and other parts of life (Davico et al., 2020).

The extension of Movement Control Order (MCO) causes educational institutions to switch to new norm which is via online to maintain social distancing and decrease infections (Sheikh et al., 2020). The university students are affected due to the drastically altered learning landscape and the sudden switched from face-to-face to distance online learning during the COVID-19 lockdown. Besides, COVID-19 pandemic also caused the inequalities in education systems. It caused students stayed at homes where they had issues in accessing internet connection and other facilities and resources like clean water, safe homes, and adequate health care. This pandemic also increased the fear of not being able to mitigate with online chats, webinars, or learning platforms, which in the end cause the student not to master content. Higher education main aim is to develop leadership awareness, competencies, critical thinking and diversity (Schreiber and Ludeman, 2021). However, the fear increases the implication for mental health problems among students as most of the physical activities appeared to be a factor that could cause mental disorders such as anxiety or depression. According to Islam et al. (2020), majority of higher education students are facing anxiety, depression, and stress.

Additionally, uncertainty and the potential of not performing well in the academic progression could hurt students' mental health. For example, Strickland (2021) found that the more prominent public universities had a lower Mental Well-being Index (MWI) than smaller private institutions. This study also reveals that institutions with a higher tuition fee have a higher MWI than others (Strickland 2021). Moreover, most private universities pay more fees than public universities, and fear is one of the main factors that will affect the students' mental health. This study focused mainly on private higher learning institution as a sample due to mental health issues that were found high among private university students compared to public university students. Thus, the main objective of this study is to evaluate the mental health state of students in Malaysian universities particularly private universities at a critical moment in the current crisis as an addition to the body of knowledge of the existing literature.

2. Literature Review

According to Nasir and Hameed (2021), due to the spread of COVID-19, students of all levels have been affected largely due to isolation and coping with the virtual learning system. Malaysia is one of the top countries in the Asia-Pacific region for higher education (Knight and Morshidi, 2011; Lee, 2014), however poor mental health among university students is one of the country's growing concerns. According to The Star (2021), Malaysian students' mental health issues are becoming worse. Based on the health screening conducted by the Education and Health Ministries revealed that 100000 school

pupils were at risk of suffering from depression and sadness. Experts declared that anxiety and depression are the top causes of mental health disorders among Malaysian students (Kotera, et al., 2020). Malaysian university students exhibited greater levels of depression (15.36), anxiety (17.41), and stress than students in the United Kingdom (18.68). A recent study done by Sim et al. (2021) shows that students faced a variety of difficulties, including a sense of isolation and tension because of their inability to use an online learning platform, boredom and loneliness, and a lack of motivation.

Happiness was found to be a protective factor, while the work-life balance was found to be a risk factor that can predict students' negative emotional symptoms during the coronavirus disease (COVID-19) pandemic, according to a recent study by Wan et al. (2021). According to Wan et al. (2021), university students report moderate to severe stress (22 percent), anxiety (34.3 percent), and depression (37.3 percent) symptoms. It was discovered that the participants' mean levels of anxiety, sadness, and stress were moderate, and a high number of students exhibited severe psychological distress. Female students are somewhat more stressed than male pupils. Furthermore, religion, anxiety, and depression had a substantial unfavorable yet non-stressful relationship.

Religion also works as a depressive-prevention factor. Meanwhile, some components of religion (such as abstinence from bad acts and frequent execution of good deeds) are a significant protective factor against anxiety and depression, respectively. In retrospect, it appears that mental health and religion have something in common when it comes to dealing with psychological distress (Greenstein, 2016). As a result, this is a vital stage in the development of rising mental health services, when the incorporation of religious elements into therapeutic practice may aid in the healing process for psychological health issues. A significant percentage of the variation in stress levels was due to disease perception, which included personal control, comprehension, and emotions. Furthermore, religious expression showed a significant moderating influence on the relationship between illness perception and stress characteristics.

Depression, anxiety, loneliness, work avoidance, and procrastination are some of the symptoms that may be overlooked and so ignored because of technology addiction, particularly during pandemics. It has progressed to the point where it has drawn the attention of researchers, mental health providers, and specialists. Unfortunately, persons suffering from the disease are unaware that they are going through a phase of delightful, addictive self-appeal through extended hours of social networking, entertainment, and internet browsing. This experience is negatively impacting their psychological well-being. However, Abd Aziz et al. (2021) found technostress is a significant factor that might influence student satisfaction and performance. Furthermore, during the current Covid-19 epidemic period, which has led to a protracted mobility restriction order (MCO) for students, regardless of whether they live at home or on campus, this unpleasant scenario may worsen.

According to Kadir and Mohd (2021), there are substantial links between the model of positive youth development (PYD), namely confidence and connection, and well-being, whereas purpose in life and hope are indirectly linked to the 2Cs (confidence and connection) of PYD and well-being. As a result, mental health professionals working with Malaysian emerging adult university students must rethink and redefine their treatment plans to incorporate confidence, connection, life purpose, and hope. The 5Cs (competence, confidence character, connection, and caring) model of excellent youth development developed by Lerner and colleagues decreases stress, anxiety, and depression in children and adolescents (Lerner, 2009), therefore, it can be utilized in the Malaysian education system to create a conducive atmosphere for higher education learning.

One of the methods to examine the degree of depression, anxiety, and stress that students by using DASS. DASS is a written screening test to identify a level of depression, anxiety, and one's stress. With this screening test, you can know your mental health status, whether you are stressed, worried, or depressed. DASS is an instrument to assess the level of an individual for an analysis of depression and anxiety. DASS has no implications for patients or individuals in classification systems such as discrete diagnostic manuals, statistic mental disorders (DSM), and disease classification. DASS only assesses depression, anxiety, and stress (Psychology Foundation of Australia, 2011). The DASS approach used 21 items after modification earlier stage (42 items). Most mental health studies use DASS to recognize the reliability and validity of its items in various areas of study. Hence, DASS is a recognized instrument for measuring pressure symptoms, anxiety, and stress.

As a result, this study adds to the body of knowledge in the current literature by investigating mental health disorders among Malaysian students from private universities during the COVID-19

epidemic. Additionally, this research will examine the degree of sadness, anxiety, and stress that students at private institutions experience.

3. Research Methodology

This study adopted descriptive research by conducting a survey. The researchers have administered the online survey and issued it to students pursuing their studies at certain private universities. The questionnaire is distributed online between July 2021 to December 2021, for the students currently studying at a private university. Before distributing the questionnaire, a population setting is necessary to determine the study's sample size. For this study, the study population was students between year one to year three studying in a private university. It uses purposive sampling techniques and aims to consider all students across states in Malaysia who are currently pursuing their studies in private universities. Purposive sampling also known as judgmental, selective, or subjective sampling, is a form of non-probability sampling in which researchers rely on their judgment when choosing members of the population to participate in their surveys. The research questionnaire contains 2 sections, the first section is the profile of the respondent, and the second section is the Depression Anxiety Stress Scale (DASS). Respondent profiles contain information such as gender, age, race, state of residence, number of family members, and educational information. While the second section is the depression anxiety stress scale (DASS) which measures the respondents' information related to depression, anxiety, and stress. For data collection, the study uses a google form link to observe almost 500 targeted respondents; however, only 384 valid response rates were received, approximately 76.8%. Hence, the response rate is sufficient and valid for a cross-sectional study, as Sekaran (2003) supported.

The analysis of the study uses descriptive analysis and a depression anxiety stress scale (DASS). The data were analyzed using the 22.0 Statistical Package for Social Science (SPSS) software involving an analysis of the exploration factor (EFA). Analysis of the exploration factor is a multivariate technique to reduce the factors to several sets of smaller variables. This technique is used to explore large data sets to produce a set of variables known as factors to be interpreted more easily and meaningfully (Hair et al, 2014). There are three stages for factor analysis procedures that identify correlations between factors, extracting factors, and twisting Factors. The value of the item with a high correlation is placed in a similar construct while the value of a low correlation item is in different constructs. The Community (Communality) values for extracting factors show that the value of 0 does not contribute to the variance change while the value of 1 contributes 100 percent of the overall variation changes. Rotary factors are categorized according to the same characteristics or similar components and eliminate irrelevant items. Table 1 shows the Goodness-of-Fit Index Analysis of Exploration Factors. Reliability analysis is determined by the value of Cronbach Alpha. A value exceeding 0.60 and higher shows higher reliability while a value of less than 0.60 is considered low and unacceptable.

Table 1. Goodness-of-fit for Exploratory Factor Analysis (EFA)

Exploratory Factor Analysis`'s index	Proposed value	Sources
Bartlett`s Test of Sphericity (Sig < 0.05)	< 0.05	
Kaiser-Mayer-Olkin (KMO)	> 0.60	
	> 0.50	Hair et. al. (2014)
Factor Loading	≥ 0.50	
Eigenvalue	≥ 1.00	
Percent variance	≥ 60%	

Sig means Significance

4. Results and Discussion

Table 2 shows the profile of the respondents representing mostly Chinese students from private universities in Malaysia. Most students are from Perak state and are pursuing their first year of full-time undergraduate studies in Malaysia's private universities. Besides, most students stay with their families

with four to five members. In addition, from the aspects of a healthy life, most students sleep between seven to eight hours per day.

Table 2. Respondent Profile

Gender	Percentage (%)	Family Members	Percentage (%)
Male	32.8	2- 3 Members	6.9
Female	67.2	4 – 5 Members	59.2
Age		> 5 Members	33.9
19 – 20 Years old	54.6	Sleeping Hours	
21- 22 Years old	42.5	< 7 hours	24.7
23 – 24 Years old	2.9	7 – 8 hours	61.8
Race		> 8 hours	13.5
Malay	2.0	Education Level	
Chinese	89.1	Undergraduate	97.7
Indian	7.5	Postgraduate	2.3
Others	1.4	Studying Mode	
State		Full time	96.0
Kedah	6.9	Full time with a Part-time job	4.0
Penang	11.2	Academic Year	
Perak	43.4	1 st Year	74.1
Selangor	9.8	2 nd Year	13.5
Kuala Lumpur	1.1	3 rd Year	12.4
Melaka	3.4		
Negeri Sembilan	2.3		
Johor	15.2		
Pahang	1.1		
Kelantan	1.1		
Terengganu	1.4		
Sabah	1.4		
Sarawak	1.4		

Number of Respondents, n = 384
(Source: Author's calculation, 2021)

Table 3 shows the DASS score for 384 respondents. Analysis of DASS divides individuals into five categories: standard, mild, moderate, severe, and extremely severe. The implementation of the Movement Control order (MCO) that creates a new norm in the life of the students affects their education. DASS's analysis shows that 22.1 percent of respondents experience depression at mild levels,

29.9 percent at moderate levels, and 10 percent at a severe level. In addition, analysis shows that there are students with mild stress problems at 39.9 percent, 17.2 percent students at a moderate level, and 4.3 percent at a severe level. While for anxiety, there are students with mild problems at 5.5 percent, 39.9 percent students at a moderate level, and 20.1 percent at a severe level. Overall, students with mental health issues will be addressed effectively with high depression, stress, and anxiety levels. It is because mental health problems will affect their education and the overall quality of their life.

Table 3. DASS-21 Score with Components of Mental Health

DASS-21 Score	Percentage (%)
Depression	
Normal	37.9
Mild	22.1
Moderate	29.9
Severe	4.0
Extremely severe	6.0
Stress	
Normal	38.5
Mild	39.9
Moderate	17.2
Severe	2.3
Extremely severe	2.0
Anxiety	
Normal	34.5
Mild	5.5
Moderate	39.9
Severe	8.6
Extremely severe	11.5

Number of Respondents, n = 384
(Source: Author's own calculation, 2022)

Initially, the factorability of the 18 DASS items was examined by using Exploratory Factor Analysis (EFA). Table 4 shows the result of Exploratory Factor Analysis (EFA) for DASS-21. Several well-recognized criteria for the factorability of a correlation were used. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.821, above the commonly recommended value of 0.6, and Bartlett's test of sphericity was significant with 0.000, $p < .05$). The analysis yielded three factors explaining a total of 68.84% of the variance for the entire set of variables. The Cronbach alpha value for all the three factors is more than 0.7 and it shows that all the latent are highly correlated. Given these overall indicators, factor analysis was deemed to be suitable for all 18 items.

TABLE 4. Exploratory Factor Analysis DASS-21

Construct	Factor		
	1	2	3
I felt downhearted and blue	0.846		
I couldn't seem to experience any positive feeling at all	0.782		
I felt that I had nothing to look forward to	0.751		
I found it difficult to work up the initiative to do things	0.669		
I was unable to become enthusiastic about anything	0.653		
I felt I wasn't worth much as a person	0.644		
I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)		0.830	
I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)		0.824	
I was worried about situations in which I might panic and make a fool of myself		0.779	
I felt scared without any good reason		0.761	
I experienced trembling (eg, in the hands)		0.712	
I was aware of the dryness of my mouth		0.632	
I felt that I was using a lot of nervous energy			0.802
I found it hard to wind down			0.784
I felt that I was rather touchy			0.773
I found myself getting agitated			0.750
I tended to over-react to situations			0.680
I found it difficult to relax			0.658
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)		0.821	
Bartlett's Test of Sphericity		0.000	
Eigenvalue	2.983	1.631	1.606
Percent variance	28.858	24.595	15.387
Cumulative variance	28.858	53.453	68.840
Cronbach alpha	0.862	0.732	0.701

Factor 1 is labeled as depression by the students due to the high loadings by the following items, where the students felt down hearted and blue, couldn't seem to experience any positive feeling at all, feel that had nothing to look forward to, found difficult to work up the initiative to do things, not able to become enthusiastic about anything, and feel wasn't worth much as a person. The first factor explained 28.858% of the variance. In this study, most of the respondents were female, with 67.2%, which contributed to a higher risk of depressive symptoms among the female students, who were found to have less social support due to campus closure. This study supports the findings of Van de Velde et al. (2021), who found that female students, students with fewer social support resources and in a more disadvantaged socioeconomic position, and students with a migration background are more likely to

experience depressive symptoms. Social support is highly important as it will reduce the psychological problem. Less social support caused students to feel depressed, as they always felt like they had nothing positive in their lives and had no initiative to do anything in their lives.

Factor 2 is labeled as anxiety by the students due to high loadings by the following items, feel the sense of heart rate increase in the absence of physical exertion, experience breathing difficulty, worried about situation in which can make their self-panic and make fool of their self, felt scared without any good reason, experience trembling, and experience dryness of the mouth. The second factor explained 24.595% of the variance. The result from Table 1 shows that 24.7% of the students have less than 7 hours of sleep time and 61.8% of the students have enough sleep time between 7 and 8 hours every day. Poor sleep quality is associated with the risk of anxiety. Good sleep quality is important for students during their studies because it is necessary for their mental well-being and is linked to anxiety. Students who are sleep deprived are more likely to be anxious, while those who are anxious are more likely to have difficulty falling asleep. The result from this study is aligned with Van Der Helm (2010), where the study stated that sleep deprivation reduced the identification of angry and happy emotional expressions. Sleep deprivation studies show that sleep is needed for adequate emotional regulation and that sleep interruptions or insufficient sleep can lead to emotional regulation problems, which is one of the most common symptoms of sleep problems.

Factor 3 is labeled as stress by the students due to high loadings by the following items, felt that they are using a lot of nervous energy, students found it hard to wind down, students felt that they were rather touchy, found themselves self-getting agitated, tended to over-react to situations and they found it difficult to relax. The third factor explained 15.387% of the variance. The learning tasks contributed the most to the students' stress during the pandemic COVID-19. During the pandemic, the students must adapt to the new challenges where they must use more technology during the learning session. However, it goes without saying that new technology will not have the same impact on all socioeconomic categories in our society. Children from low-income families do not have access to the benefits of educational technology (Ahmed, 2020). The academic workload, separation from school, and fears of contagion had negative effects on college students' health via perceived stress.

As a result of this study, students' mental health issues are becoming worse, and shows that anxiety and depression are the top causes of mental health disorders among students. The findings from this study show that students felt depression, anxiety, and stress as education has seen drastic changes in teaching delivery. The transition to online learning has been rapid, presenting students with a variety of novel challenges. Depression, anxiety, and stress among students have resulted in a variety of negative symptoms.

5. Conclusions and Implications

The present study analyses the mental health of private university students in Malaysia. The study's results showed that most university students face stress, depression, and anxiety at different levels. The findings also conclude that first-year students face higher depression, stress, and anxiety than students from the second and third years during the COVID-19 pandemic due to adaptation to online learning issues. Overall, the result shows that there is a substantial increase in depression, anxiety, and stress level which reflect the mental health disorder among university students in Malaysia because of the COVID-19 pandemic.

Hence, this study could bring awareness to the universities, colleges, and parents about students' mental health state and their growing mental health issues. With that, parents could bring an atmosphere for university students without pressure on their future academic and professional careers by offering recovery help from the government. Whereas universities and colleges could also apply 5Cs (competence, confidence, character, connection, and caring) to build a positive circle to reduce students' mental illness problems and conduct more relevant programs in the university to protect depression. Students need to familiarize themselves with the acceptance of new technology aimed at reducing the risk of infection cases and being able to continue learning online (Johan et al., 2021).

On 1st April 2022, Malaysia will enter the "Transition to Endemic" phase of Covid-19, with all restrictions on business operating hours lifted and prayer activities permitted without physical separation. Schools and University will reopen phase by phase with strictly followed with all the SOP's. University students who are facing with mental health issues can take this opportunity to reduce all their

depression, stress, and anxiety by start to mingle and communicate with their friends, watching movie, join with study group and any other universities activities. Stress, depression, and anxiety, in general, is a common issue in student life, it may be advantageous to some but disadvantageous to others. When students can deal with all these three issues effectively, it can motivate them to strive for their improvement and goals. Otherwise, it may cause problems to arise, affecting students' mental health and causing harm to their well-being.

6. Co-Author Contribution

The authors affirmed that there is no conflict of interest in this article. Author 1 wrote the introduction, and conclusion and overlook the whole article. Author 2 wrote the discussion and findings. Author 3 prepared the literature review and overlook the format of the article. Author 4 wrote the research methodology and analysis.

7. References

- Abd Aziz, N., Awang Kader, M., & Ab Halim, R. (2021). The Impact of Technostress on Student Satisfaction and Performance Expectancy. *Asian Journal of University Education (AJUE)*, 17(4), 538-552. <https://doi.org/10.24191/ajue.v17i4.16466>.
- Adhikari, S., Meng, S., Wu, Y., Mao, Y., Ye, R., & Wang, Q. et al. (2020). Epidemiology, causes, clinical manifestation and diagnosis, prevention and control of coronavirus disease (COVID-19) during the early outbreak period: a scoping review. *Infectious Diseases of Poverty*, 9(1). <https://doi.org/10.1186/s40249-020-00646-x>
- Ahmed, A. (2020). Synchronizing pedagogy and technology in post COVID scenario. *International journal of creative research thoughts*, 8(6), 243-246.
- Al Shehri, A.M. (2015). A lesson learned from Middle East respiratory syndrome (MERS) in Saudi Arabia. *Med Teach*. Suppl 1: S88-93. <https://doi.org/10.3109/0142159X.2015.1006610>. PMID: 25803593.
- Antony, M., Bieling, P., Cox, B., Enns, M., & Swinson, R. (1998). Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and a community sample. *Psychological Assessment*, 10(2), 176-181. <https://doi.org/10.1037/1040-3590.10.2.176>.
- Muskin, R. P. (2021). What are Anxiety Disorders?. [online] American Psychiatric Association. Available at: <<https://www.psychiatry.org/patients-families/anxiety-disorders/what-are-anxiety-disorders>> [Accessed 19 July 2022].
- Chen, D., Xu, W., Lei, Z., Huang, Z., Liu, J., Gao, Z., & Peng, L. (2020). Recurrence of positive SARS-CoV-2 RNA in COVID-19: A case report. *International Journal of Infectious Diseases*, 93, 297-299. <https://doi.org/10.1016/j.ijid.2020.03.003>.
- Davico, C., Ghiggia, A., Marcotulli, D., Ricci, F., Amianto, F. & Vitiello B. (2020). Psychological Impact of the COVID-19 Pandemic on Adults and Their Children in Italy. *SSRN 3576933*.
- Greenstein, L. (2016). The Mental Health Benefits of Religion & Spirituality. Retrieved on 8 May 2022 from <https://www.nami.org/Blogs/NAMI-Blog/December-2016/The-Mental-Health-Benefits-of-Religion-Spiritual>.
- Gritsenko, V., Skugarevsky, O., Konstantinov, V., Khamenka, N., Marinova, T., Reznik, A., & Israelowitz, R. (2020). COVID 19 Fear, Stress, Anxiety, and Substance Use Among Russian and Belarusian University Students. *International Journal of Mental Health and Addiction*. <https://doi.org/10.1007/s11469-020-00330-z>.
- Islam, M., Barna, S., Raihan, H., Khan, M., & Hossain, M. (2020). Depression and anxiety among university students during the COVID-19 pandemic in Bangladesh: A web-based cross-sectional survey. *PLOS ONE*, 15(8), e0238162. <https://doi.org/10.1371/journal.pone.0238162>.
- Hair Jr, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European business review*.

- Johan, Z. J., Hafit, N. I. A., & Tusyanah, T. (2021). Technology Addiction among UiTM Puncak Alam and UNNES Semarang Students. *Asian Journal of University Education (AJUE)*, 17(4), 511-526.
- Kannarkat, J.T., Smith, N.N., McLeod-Bryant, S.A. (2020). Mobilization of telepsychiatry in response to COVID-19—moving toward 21st century access to care. *Adm Policy Ment Health*, 47(4):489-491. <https://doi.org/10.1007/s10488-020-01044-z>.
- Knight, J., & Morshidi, S. (2011). The complexities and challenges of regional education hubs: focus on Malaysia. *Higher Education*, 62(5), 593-606. <https://doi.org/10.1007/s10734-011-9467-2>.
- Lerner, R. M. (2009). "The positive youth development perspective: theoretical and empirical bases of a strengths-based approach to adolescent development," in *The Oxford Handbook of Positive Psychology*, eds S. J. Lopez and C. R. Snyder (Oxford: Oxford University Press), 149–163.
- Menon, S. (2021). Students need 'right support' for good mental health, experts say. *The Star*. Retrieved 8 May 2022, from <https://www.thestar.com.my/news/education/2021/12/12/students-need-right-support-for-good-mental-health-experts-say>.
- Nasir, S., & Hameed, M. (2021). Impact of COVID-19 on the learning processes of typically developing and special needs students in Pakistan. *Asian Journal of University Education (AJUE)*. 17 (3), 67-75. DOI: <https://doi.org/10.24191/ajue.v17i3.14526>
- Nicola, M., Alsafi, Z., Sohrabi, C., Kerwan, A., Al-Jabir, A., & Iosifidis, C. et al. (2020). The socioeconomic implications of the coronavirus pandemic (COVID-19): A review. *International Journal Of Surgery*, 78, 185-193. <https://doi.org/10.1016/j.ijso.2020.04.018>.
- Sekaran, U. (2003) *Research Methods for Business: A Skill-Building Approach*. 4th Edition, John Wiley & Sons, New York.
- Schreiber, B., & B Ludeman, R. (2021). *COVID-19 challenges for student affairs and services globally*. University World News. Retrieved 22nd September 2021, from <https://www.universityworldnews.com/post.php?story=20200911105653974>.
- Sheikh, A., Sheikh, A., Sheikh, Z., and Dhami, S. (2020). Reopening schools after the COVID-19 lockdown. *J. Glob. Health* 10:010376. <https://doi.org/10.7189/jogh.10.010376>.
- Shiel, W. C. (2018). Medical definition of stress. *MedicineNet.*, 2020. Retrieved from <https://www.medicinenet.com/script/main/art.asp?articlekey=20104>.
- Sim, S., Sim, H., & Quah, C. (2021). Online Learning: A Post Covid-19 Alternative Pedagogy for University Students. *Asian Journal of University Education (AJUE)*, 16(4), 137-151. <https://doi.org/10.24191/ajue.v16i4.11963>.
- Strickland, J. (2021). Are Private or Public College Students More Stressed? Reddit May Hold the Answer. Retrieved 13th September 2021, from <https://health.howstuffworks.com/mental-health/coping>
- Van Der Helm, E., Gujar, N., & Walker, M. P. (2010). Sleep deprivation impairs the accurate recognition of human emotions. *Sleep*, 33(3), 335-342.
- Wang, C., Pan, R., Wan, X., et al. (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. *Int J Environ Res Public Health*, 17(5):1729. <https://doi.org/10.3390/ijerph17051729>.
- Zhang, J., Lu, H., Zeng, H., Zhang, S., Du, Q., Jiang, T. et al. (2020). The differential psychological distress of populations affected by the COVID-19 pandemic. *Brain Behav Immun*; 87:49–50.