



WILL TEMPORARY DEPRIVATION FROM PHYSICAL INTERACTION MAKE YOU ANXIOUS? Understanding Loneliness and Anxiety Among Students

Nurul Rashidah binti Mohamed Roseli, Muhammad Shuib bin Rosli

Author correspondence: rashidahroseli@gmail.com

ABSTRACT

Infectious disease may require social isolation in order to prevent the disease from spreading. However, minimising the risk of infectious disease is done in the cost of increasing the risk of mental health issues. In Malaysia, during the Covid-19 pandemic, educational institutions were shut down due to Movement Control Order. Students in colleges were told to return home, however some were stranded and isolated in their hostel rooms. The group of students include international students who could not return to their countries. This study focuses on the impact of the isolation on loneliness and anxiety. It is proven by simple linear regression analysis that the loneliness has a significant causal effect on anxiety level. A correlation trend is also observed between students' family income and anxiety. Even though COVID-19 has been declared as epidemic, communities should be alert with future risks with the increase of communicable disease around the world. Moving forward, this study suggests improvement for the quarantine procedure and overall program development for universities. More focus should be given on integrating international students to the local community, virtual relationship building programs and support services. Researcher recommends that future research is conducted to understand the recovery process from elevated loneliness and anxiety during the epidemic. Even though the lockdown is over, the country is still dealing with the aftermath especially regarding people's well-being.

Keywords: *loneliness, anxiety, isolation, COVID-19, aftermath*

INTRODUCTION

Harris (2000) defined pandemic the spread of disease to all over the world, or at least crossed significant number of countries which resulted in damage to a copious amount of human. This definition is among the earliest internationally standardized definitions, paraphrased from the Dictionary of Epidemiology. Later in 2011, World Health Organization (WHO) released the medical definition of influenza pandemic (World Health Organization, 2011). Influenza pandemic is characterized by newly discovered harmful viral subtype, lack of human immunity towards the virus, high infectious to human, infection among people in various parts of the world in a short period.

While pandemic is not something new, an extremely large scale of pandemic is a global crisis we never experienced. Coronavirus Disease 2019 which is also known as COVID-19 has affected over 38 million people in 211 countries (Malaysia Ministry of Health, 2020). The death toll had increased to over 630,000 people within just approximately six months since the virus started in December 2019. This statistics is far more execrable as compared to the previous pandemic announced by WHO, Influenza A virus subtype H1N1 which only recorded 126 168 cases worldwide, with less than 700 fatal cases (LeDuc & Barry 2004; World Health Organization, 2009).

The origin of COVID-19 is concluded to be in Wuhan, a city located in Hubei province of China, based on the history of the 41 earliest diagnosed patients who claimed to visit the Wuhan's Human Seafood Wholesale Market prior to getting infected (Sohrabi et al., 2020). China academician was the first to discover this virus after a month of unexplained increase of pneumonia cases in Hubei province. Symptoms shown by infected patients include fever, cough, fatigue body and shortness of breath (Tian, Hu, Lou, Chen, Kang, Xiang, Chen, Wang, Liu, Liu, Chen, Zhang, Li, Li, Lian, Niu, Zhang, & Zhang, 2020). While the initial symptoms are similar to non life-threatening flu, the disease harms patients' internal organs dreadfully. Signs of respiratory dysfunction and cardiac injury were found in the fatal patients' post-mortem data (Ruan, Yang & Wang, 2020).

The virus became a serious concern due to the fact that it has various transmission methods. The virus can be transmitted directly by skin-to-skin touch, indirectly by surface touch and 'airborne transmission' by droplet sprays such as sneeze and cough (Asadi, Bouvier, Wexler & Ristenpart, 2020). We can be infected just by staying in the same room with an infected person. Due to uncontrolled increase in number of cases, numerous countries had to resort to the most drastic solution which is a lockdown initiated by China. Following Wuhan, other countries such as Scotland and England adapted the lockdown idea with respective models (Mahase, 2020).

As in Malaysia, the government has introduced the model of Movement Control Order (MCO) on 18th of March 2020. In summary, there are four major restrictions imposed on the people in Malaysia. Firstly, assembly and movements are completely prohibited. Secondly, no one is allowed to cross the border out from Malaysia. Thirdly, only essential needs products and services are allowed to operate, the rest were shut down and closure of all educational institutions including higher learning institutions. Citizens were ordered to stay at home unless for necessary matters such as clinical needs and getting food. The restrictions were constantly enforced with the

role of authorities such as policemen and soldiers.

The restriction is enforced even more strictly on public universities. Gates of the campuses were shut down during MCO. Students who were staying outside of campus were not allowed to enter the campus and students who were staying inside the campus were instructed to stay in the campus compound. They were not even allowed to go out from their own room except to go to toilets and take food from the counter. As the restriction was enforced, food was provided and precautionary healthcare measures such as COVID-19 swab test was conducted on the students.

During the first press conference regarding MCO on 16th of March 2020, the announced duration was fourteen days starting 18th of March 2020 to 31st of March 2020 (Muhammad, 2020). Thinking that the MCO was really going to end in two weeks' time, thousands of students remained on campus before the administration decided to close the gates. In fact, some of the students did not return home because they were completing their internship course. However, the MCO was then extended to 3rd of May 2020 and higher learning institute students were only gradually allowed to return home starting the 27th of April 2020 after several weeks of discussions and meetings at higher management such as Department of Higher Education (JPT), Malaysia Ministry of Higher Education (KPT) and other parties (Muhammad, 2020).

While MCO is a preventive measure to stop the virus from infecting more people, there is still a great price to pay. Researchers found out that MCO is nevertheless harmful for the citizens' mental health too. Due to the closure of premises and educational institutions, citizens were unable to go to work and had less chance to socially interact with the community. Studies reported that the negative impact of lockdown on mental health is evidenced. Stress, anxiety and other mental health illness are detected among various sample of adult respondents in numerous parts of the world including Malaysia (Gualano, Lo Moro, Voglino, Bert, & Siliquini, 2020; Wang, Pan, Wan, Tan, Xu, McIntyre & Ho, 2020; Munk, Schmidt, Alexander, Henkel & Hennig, 2020; Wei, Yee, Baskaran, Subramaiam & Partheeban, 2020)

The case is even worse for the university students, as they were separated from their family. The month of March was the middle of a semester for all programs in Universiti Utara Malaysia (UUM). Some of the students had to stay in campus for internship program, yet they were terminated early from the company due to MCO. UUM itself had to replace the weeks of practicum requirements the students missed with reports to compensate their training and asked the organizations to postpone the internship program to a later date. They also had to quickly adapt to the remote learning and fully online teaching method.

The external pressure was even stronger, as media constantly release their projection of post-pandemic job loss and unemployment with fear-mongering headlines (Zainuddin (2020); Patho Rahman (2020); Halid (2020)). Meanwhile in social media platform, it can be observed in the news comment sections that outside citizens were constantly bashing them as incompetent and spoiled individuals. Their requests and complaints were receiving demeaning responses from netizens. Throughout the semester, there were complaints the number of application for deferment and discontinuation were piling up. In conclusion, they were socially detached from the outside world and trapped with inevitable restrictions. All of these circumstances are

theoretically harmful and supported by evidences from the other parts of the world, however in the context of UUM the arguments are yet to be proven.

There were three issues underlying the formation of this study. Firstly, the isolation and uncertainties experienced by university students may trigger anxiety. Cao, Fang, Hou, Han, Xu, Dong and Zheng (2020) in their study indicated that isolation measures and delays in opening educational institutions are risky moves that put students' mental health at stake.

Secondly, there is a serious concern that the mechanism of lockdown that minimizes social interaction improves the likeliness of problematic level of loneliness. Groarke, Berry, Graham-Wisener, McKenna-Plumley, McGlinchey and Armour (2020) pointed that loneliness is an alarming mental health disturbance since the implementation of lockdown started. A comparative study in Western setting has also indicated the elevated level of loneliness before and after the lockdown (Elmer., Me-pham,, & Stadtfeld (2020).

Thirdly, loneliness itself is a psychological disturbance that leads to other mental illness. Loneliness has been proven to predict elevated level of psychological disturbances (Shrira, Bodner, Avidor, Bergman, Cohen-Fridel, Keisari & Hoffman, 2020). Fourthly, despite the end of Covid-19 pandemic, other infectious diseases that require quarantine such as Influenza and monkeypox are emerging and there is a potential risk for another localised lockdown.

This study is conducted to answer these questions; (1) Is there any significant relationship between loneliness and anxiety? (2) Is there any relationship between economy status and loneliness? (3) Can loneliness mediate the level of anxiety among university students, specifically during lockdown?

Theoretical Explanation of Loneliness and Anxiety

Loneliness is explained in Whitehorn's Theory of Loneliness. This theory is the basis for the instrument used in this research. In defining loneliness, Whitehorn highlighted the concept of 'desired intimacy' and 'intimacy' which refers to one's expectation on intimacy and the real intimacy that has been achieved. As highlighted by Sisenwein (1964), every person has his own expectation or desired concentration and expression of intimacy. However, another person's expression or level of response may not match his desire and expectation. In this lonely state, a person feels alienated, misunderstood, unaccepted and exhibits problematic behavior such as aggression and mourning. Whitehorn (1961) also indicated that due to undesirable nature of loneliness, a person may experience loneliness anxiety: the excessive fear / worry of getting lonely. Researcher suggests that this theory focuses on unfulfilled desire while Weiss's theory focused on the types of desire. Thus, people who are receiving less social interaction than desired or normally received tend to develop mental health issues.

Next, anxiety is explained using Two Factor Approach to Anxiety by Aaron Beck (1988). This model is the base of Beck Anxiety Inventory (BAI) which is utilized in this study. According to this model, anxiety response can be categorized into emotional arousal and physiological arousal (Beck, Epstein, Steer & Brown, 1988). When someone is anxious, someone will experience unpleasant, nervous feelings. This feelings

are referred to as anxiety at emotional level. Besides, the body will feel uncomfortable as well and exhibit response such as trembling. In normal state, a healthy person's hand should not tremble. However when he is anxious, he may tremble.

Emotional arousal includes fear of worst case scenario, scared and hopeless. The feeling may feel very intense that it interrupts with one's functioning of daily life. For example, one may be unable to focus during exam due to the intense fear of dying. Meanwhile, examples of the physiological arousal includes trembling, breathing troubles and dizziness. These symptoms may go unnoticed as a person may not be aware that these are anxiety symptoms.

METHODOLOGY

As per highlighted by Hussin, Ali and Zamzuri Noor (2014), a research must be conducted using technique, procedure and method that are proven to be reliable and valid. This inductive research is conducted to test hypotheses that are made based on existing theories and data. (Hussin et. al, 2014). This research is a basic research conducted to provide a detailed information on a phenomenon and the root cause of the phenomenon (Berawi, 2017). Researcher conducted this research to explain the level of loneliness and anxiety among UUM students who were stranded during MCO. The development of intervention plan or effectiveness of current intervention is not the primary focus for this research. This is because, a cross-sectional research is not sufficient to conclude the effectiveness of an intervention. Moreover, an inductive research is conducted based on existing theories and data. Researcher builds up new hypotheses based on literature reviews and tests them (Hussin et. al, 2014).

Cross sectional design is applied whereby a survey is conducted towards a heterogeneous sample which consists of a few distinct groups at the same time (Berawi, 2017). This method is chosen because researcher attempts to compare the level of loneliness between UUM students who were stranded and those who were not stranded during MCO. Based on purpose dimension, this research is explanatory. It is conducted to explain loneliness, gender, citizenship and socioeconomic status as factors of anxiety. Furthermore, this research utilizes the quantitative approach. The data is encoded into numerical data and analyzed using statistical methods to produce the results. Researcher considers this research as both descriptive and empirical, because it uses both descriptive analysis and cause-effect analysis (Berawi, 2017). Therefore, the information obtained can be generalized to other public universities that share similar criteria s UUM population.

Research Location

The research is conducted in UUM Sintok, Kedah Darul Aman. Respondents are selected among students who registered in this campus. The reason for choosing this UUM as the research location is because it is one of the public universities in Malaysia. Public universities fully adhere to specific restrictions for universities that are enforced by National Security Council and Ministry of Higher Education. Besides, it is convenient for 30 researcher to obtain the data from UUM administration as a postgraduate candidate in this campus. 3.3 Research Population The population for this research is the UUM students from any program. According to data obtained

from Students Accommodation Centre (SAC), the number of UUM students during the MCO was 15, 231. From this number, 12 427 managed to return home or were staying out of the campus before the gate closure on the 22nd of March 2020. This makes up 81.59% UUM students. Remaining 2804 were stranded in campus, which makes up 18.41% of UUM students.

Sampling Strategy

Since this research is a quantitative research, it is compulsory to use probability or random sampling to avoid researchers' bias on selecting the sample. Therefore, researcher selected stratified random sampling to represent the different strata in the population. Thus, the percentage of individual from a strata in a sample, must adhere to the percentage of the strata in the population. In this research, the sample is divided into two strata: students who stay in campus and outside campus during MCO. 3.3.2 Sample Size According to Krejcie and Morgan (1970) the appropriate sample size to represent 15 231 students is 375. Out of this number, there were 81.59% students who not staying in 31 campus during MCO. Therefore, the sample size for students who are staying in campus is 306. Meanwhile, 18.41% students were staying in campus during MCO. Therefore, the sample size for stranded students is 69. The sample also included male, female, local and international students. Since the research is conducted online, researcher obtained the contact list of students staying in campus during MCO from Students Accommodation Centre (SAC). The questionnaire is mailed to them personally to make sure their representation in the sample is accurate.

Data Collection

A researcher must adhere to certain procedure to obtain the respondents data as these data were protected by UUM management. This is to ease the researcher for the process of tracking down UUM students who were stranded in the campus during MCO. Besides, after collecting the data, researcher needs to select appropriate tests to be conducted to answer the research objectives listed in Chapter One.

Research Procedure

The full list of UUM stranded students is obtained from Student Accommodation Centre (SAC, UUM), with the approval from Department of Students Affair (JHEP, UUM). The process is initiated with the permission from the Dean of School of Applied Psychology, Social Work and Policy (SAPSP), University Utara Malaysia, College of Arts 32 and Sciences (UUM CAS). All the permission documents are attached in Appendices section. This research is conducted in September and October, in the midst COVID-19 pandemic. Due to the risky situation in Kedah, researcher contacted the students and mailed them the questionnaire. Respondents are asked to fill the informed consent form, which is provided in the questionnaire. After completing the online form, the responses are submitted to researcher's mail.

Research Instrument

Loneliness and anxiety are both subjective and abstract in nature. Therefore, research instruments are used to objectify and measure the rate of these variables.

As stated by previous scholars, research must be conducted by using instruments that are proven to be valid and reliable. As suggested by Abu Bakar, Mohd Salleh and Fuad Mohd Karim (2017), researcher first compatibility, validity and reliability of a ULS-3 and BAI before using them to collect data. To increase the likelihood of usability of an instrument, researcher uses instruments that are proven to be reliable by third-party researchers (Lepp, Barkley & Karpinski, 2013; Dalbudak et. al, 2012). In this study, the researcher selects UCLA Loneliness Scale Version 3 (ULS-3) developed by Russel (1996) as an instrument to measure loneliness. The scale consists of 20 items consisting of 11 positively scored items and 9 negatively scored items. Russel (1996) conducted the reliability test for this instrument on students, nurses, educators and senior citizens. The minimum Cronbach alpha obtained from the tests is 0.89 33 while the maximum is 0.94. This indicates that the scale is highly reliable.

Another third party review among Turkish college students managed to score 0.86, which is also a high coefficient for internal consistency. Furthermore, researcher utilized Beck's Anxiety Inventory developed by Beck, Epstein, Steer and Brown (1988). This instrument consists of twenty-one items. Twelve of the items measure somatic symptoms while nine remaining items measure subjective feelings of anxiety. Beck, Epstein, Steer and Brown (1988) declared the internal consistency as 0.92 which is considered excellent. The internal consistency was tested again by Dalbudak, Evren, Aldemir, Coskun, Yildirim and Udurlu (2012) among university students in Ankara which resulted in 0.90 coefficient of Cronbach alpha. A more recent reliability test conducted among university students in United States of America managed to achieve an excellent coefficient of 0.92 (Lepp, Barkley & Karpinski, 2013).

Variable	Frequency	Percentage	Mean
Gender			
Male	89	23.7	
Female	286	76.3	
Citizenship			
Local	339	90.4	
International	36	9.6	
Family income			
B40 (RM4849 and below)	271	72.3	
M40 (RM4850 - RM10959)	86	22.9	
T20 (Above RM10959)	18	4.8	
Location during MCO			
In Campus		18.4	
Out Campus		81.6	
Loneliness			50.05
Low	57	15.2	
Moderate	152	40.5	
High	166	44.3	
Anxiety			21.7
Low	210	56	
Moderate	110	29.3	
Severe	55	14.7	

RESULTS AND DISCUSSION

A Table 1 demonstrated the descriptive analysis of the data. Respondents are categorised into a few groups based on their demographic information. Majority of the respondents are from B40 family which defined as the total family income of RM4849 and below (Haron,2020). Majority of the respondents are female and staying out of the campus during the movement control order. This sample dynamic managed to reflect the population dynamic which is an advantage to produce more generalizable results.

Variable	Frequency	Percentage	Mean
Gender			
Male	89	23.7	
Female	286	76.3	
Citizenship			
Local	339	90.4	
International	36	9.6	
Family income			
B40 (RM4849 and below)	271	72.3	
M40 (RM4850 - RM10959)	86	22.9	
T20 (Above RM10959)	18	4.8	
Location during MCO			
In Campus		18.4	
Out Campus		81.6	
Loneliness			50.05
Low	57	15.2	
Moderate	152	40.5	
High	166	44.3	
Anxiety			21.7
Low	210	56	
Moderate	110	29.3	
Severe	55	14.7	

Table 2: Correlation between Family Income, Loneliness and Anxiety

Item	Loneliness		Std Deviation	
	Sig.	r	Sig.	r
Family income	0.03*		0.57	
	-0.12		-0.03	

*p<0.05

Pearson Correlation test has been conducted to identify the relationship between family income and loneliness. Results show that there is a significant negative and weak relationship between family income and loneliness [$r(373) = -0.12, p < 0.05$]. The larger the amount of family income, the lower the level of loneliness. Therefore, H_0 is rejected. There is a significant relationship between family income

and loneliness. It is also important to note that majority of the respondents showed moderate to high level of loneliness. This reflects a sense of disconnectedness from the local society, which was highlighted by Cheung, & Yue (2012) as an essential component to build resilience against crisis.

Besides that, Pearson Correlation test has been conducted to identify the relationship between family income and anxiety. Results show that there is no relationship between family income and anxiety [$r(373) = -0.03, p > 0.05$]. Therefore, H_0 is accepted.

This finding indeed aligned with previous finding of a research conducted by McQuaid, Cox, Ogunlana, and Jaworska (2021) which concluded that there exists a significant correlation between loneliness and also family income. Lower income households tend to produce lonely individual, which in turn experienced higher scores of anxiety and depression.

Table 3: Simple linear regression to determine the mediation effect of loneliness on anxiety

Variable	F	df (regression)	df (residual)	Sig.	B (constant)	B (loneliness)
Loneliness	94.70	1	373	0.00	-8.329	0.599

* $p < 0.05$

Simple linear regression test was conducted to identify whether loneliness does mediate anxiety among UUM students or not. Results show that loneliness is a significant mediator of anxiety [$F(1, 373) = 94.7, p < 0.05$]. There were 20.2% of the changes in anxiety level contributed by loneliness. The regression model successfully predicts the level of anxiety [$\text{Anxiety} = -8.239 + 0.599(\text{Loneliness})$]. Therefore, the null hypothesis is rejected. It means that loneliness is a significant mediator that influences the level of anxiety among UUM students. This finding correlates with Banerjee & Rai (2020) findings about how loneliness can open the door towards a number of mental health issues including anxiety and depression.

CONCLUSION

Researcher discovers that there is a significant relationship between family income and loneliness. The poorer the person, the lonelier he is. This finding aligns with the previous research conducted by Shovestul et.al (2020). Previously, it was found that the group of people who are living in higher household income area are less likely to demonstrate high level of loneliness. This is because people with high income are more likely to have leisure time for their social relationships compared with lower income family.

No significant relationship is found between family income and anxiety. This means that everyone, regardless of their family income possess the same risk of having anxiety. This finding contradicts previous longitudinal research conducted among youth in French (Melchior, Chastang, Walburg, Arseneault, Galéra & Fombonne, 2010). It was previously found that growing up in low income family elevates the intensity of anxiety symptoms.

There is one valid explanation for this contradiction. Malaysia is an Asian country that upholds collectivism values. For Malaysians, it is cruel to leave someone hungry by the street without giving any donation. In fact, Malaysia is highly ranked in the World Giving Index 2013 and the rank is reported to increase (Isa, Irpan, Bahrom, Salleh & Ridzuan, 2015). Therefore, privileged people are constantly helping the poor. During MCO, numerous charity movements emerge and the hashtag #kitajagakita went viral. UUM management staffs also play their significant part by providing food, psychology and healthcare support for the students who were staying in campus. The widely available resources explain why the 'the poorer you are, the more anxious you become' trend does not apply to UUM students.

Findings show that loneliness can significantly mediate the anxiety level among UUM students. This finding is consistent with previous research that identified loneliness as one of predictors of anxiety in several populations (Tull et. al, 2020; Shrira et. al, 2020). There is a solid explanation for these consistent findings. Human beings naturally crave for social interaction and quality communication. Therefore, we tend to fulfill the needs and worry when the needs are not fulfilled (Whitehorn, 1961).

Researcher recommends that more social-based virtual programs are conducted to improve the quality of social relationships among the students even when they are not meeting physically as often as the days before the pandemic. Most English-based programs that are currently available in UUM are academic-oriented such as online seminar and workshops. Such programs provide great intellectual input for the international students, however it is less beneficial for students' social life. Centre of Authority for international students should conduct consistent social activities for the international students such as telematch or virtual family day. The purpose of these enjoyable programs is to enhance international students' social interaction, which in return will help to reduce their loneliness. As the saying goes, all work and no play makes Jack a dull boy. This is in tandem with the findings of Luchetti, Lee, and Sutin (2021) which discovers that social interaction, either in physical or digital means, is an initiative to curb loneliness. Their findings is based upon the objectively defined loneliness as a feeling of connection, and does not necessarily requires physical presence of others.

Furthermore, to ease the anxious thoughts about the future, universities should focus on promoting their employability opportunities and success stories among their existing students. The promotions are normally done to attract new students, however, it can also reassure the students about their biggest concern - what is next after graduation? With the extreme uncertainties in this era, reassurance can help to reduce anxious thoughts and thus prevents panic among the students.

Limitation and Future Research

While the samples managed to represent the university population, a few limitations must be taken into consideration. Firstly, the population only covers the public university, which receive relatively more facilities and financial support as compared to private universities. Thus, a further research to compare the mental health between students in both institution is relevant. Should there be a gap between both, a detailed analysis and intervention should be planned.

Secondly, while the study managed to depict a detailed picture of the impact

of lockdown, there is yet a way to identify whether or not this effect sustains after lockdown and pandemic. There is a possibility that these students are yet to recover from the crisis, judging from evidences from other parts of the world. For example, a longitudinal study from a college in Austria showed that the depressive, anxiety and insomnia symptoms rate persists even six months after the lockdown and the Covid-19 cases has drastically dropped (Pieh, Budimir, Humer & Probst, 2020). However, this finding is inconsistent with results from Italy where no worsening symptom is recorded. A future research is relevant to identify whether the symptoms among students in Malaysia persists, worsens or improves. This data will be helpful in guiding the tailoring of necessary intervention plan.

Last but not least, considering the alerting statistics of loneliness, there is a need to gain the data on possible risk factors such as relationship quality, family strength and etc to understand the root cause of the issue. However, the data is not yet captured by the study and leaves a room for future extension of the research. As the world moves forward with new norm, physical interaction are expected to stay less compared to before pandemic. This calls for the development of adaptation strategy to maintain the mental health while improving the technology usage.

REFERENCES

- Abu Bakar, A., Y., Salleh, A. & Fuad Mohd Karim, D., N. (2017). *Pengujian dan Penilaian Psikologi dalam Kaunseling*.
- Asadi, S., Bouvier, N., Wexler, A., S. & Ristenpart D., R. (2020) The coronavirus pandemic and aerosols: Does COVID-19 transmit via expiratory particles?, *Aerosol Science and Technology*, 54(6), 635-638, DOI: 10.1080/02786826.2020.1749229.
- Aschwanden, D., Strickhouser, J. E., Sesker, A. A., Lee, J. H., Luchetti, M., Stephan, Y., ... & Terracciano, A. (2021). Psychological and behavioural responses to coronavirus disease 2019: The role of personality. *European journal of personality*, 35(1), 51-66.
- Banerjee, D., & Rai, M. (2020). Social isolation in Covid-19: The impact of loneliness. *International Journal of Social Psychiatry*, 66(6), 525-527. <https://doi.org/10.1177/0020764020922269>
- Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). An inventory for measuring clinical anxiety: psychometric properties. *Journal of consulting and clinical psychology*, 56(6), 893-897.
- Berawi, F. M. (2017). *Metodologi Penyelidikan: Panduan Menulis Tesis*. Sintok; UUM Press.
- Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry research*, 287, 1-5.
- Cheung, C. K., & Yue, X. D. (2012). Sustaining Resilience Through Local Connectedness Among Sojourn Students, *Social Indicators Research*, 111, 785-800.
- Dalbudak, E., Evren, C., Aldemir, S., Coskun, K. S., Yildirim, F. G., & Ugurlu, H. (2013). Alexithymia and personality in relation to social anxiety among university students. *Psychiatry research*, 209(2), 167-172.
- 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).
- Gloster, A. T., Rhoades, H. M., Novy, D., Klotsche, J., Senior, A., Kunik, M., Wilson, N., & Stanley, M. A. (2008). Psychometric properties of the Depression Anxiety and Stress Scale-21 in older primary care patients. *Journal of affective disorders*, 110(3), 248–259. <https://doi.org/10.1016/j.jad.2008.01.023>
- Groarke, J. M., Berry, E., Graham-Wisener, L., McKenna-Plumley, P. E., McGlinchey, E., & Armour, C. (2020). Loneliness in the UK during the COVID-19 pandemic: Cross-sectional results from the COVID-19 Psychological Wellbeing Study. *PloS one*, 15(9), e0239698.
- Grov, C., Golub, S. A., Parsons, J. T., Brennan, M., & Karpiak, S. E. (2010). Loneliness and HIV-related stigma explain depression among older HIV-positive adults. *AIDS care*, 22(5), 630–639. <https://doi.org/10.1080/09540120903280901>
- Grupe, D. W., & Nitschke, J. B. (2013). Uncertainty and anticipation in anxiety: an integrated neurobiological and psychological perspective. *Nature reviews. Neuroscience*, 14(7), 488–501. <https://doi.org/10.1038/nrn3524>
- Gualano, M. R., Lo Moro, G., Voglino, G., Bert, F., & Siliquini, R. (2020). Effects of Covid-19 lockdown on mental health and sleep disturbances in Italy. *International Journal of Environmental Research and Public Health*, 17(13), 4779.
- Hajdúk, M., Dančík, D., Januška, J., Svetský, V., Straková, A., Turček, M., Vašečková, B., Ľubica, F., Heretik, A., & Pečeňák, J. (2020). Psychotic experiences in student population during the COVID-19 pandemic. *Schizophr Res.* doi:10.1016/j.schres.2020.05.023.
- Halid, S. (2020, April 9). COVID-19: Kira-kira 78,372 responden hilang pekerjaan. *Berita Harian*. Retrieved from: <https://www.bharian.com.my/berita/nasional/2020/04/674919/covid-19-kira-kira78372-responden-hilang-pekerjaan>
- Haron, S. (2020) Pendapatan Dan Perbelanjaan Isi Rumah M40 Dan B40 Mengikuti Negeri. *Jabatan Perangkaan Malaysia*.
- Harris, S. S. (2000). *A Dictionary of Epidemiology*, Fourth Edition.pdf.
- Hussin, F., Ali, J., & Noor, M. S. Z. (2014). *Kaedah penyelidikan & analisis data SPSS*. I Universiti Utara Malaysia Press.
- IPSOS (2020). *Global Advisor Predictions 2020 [Ebook]* (p. 13). Retrieved from <https://www.ipsos.com/sites/default/files/ct/news/documents/2020-01/predictions2020-global-advisor-charts-ipsos.pdf>
- Isa, N. A. M., Irpan, H. M., Bahrom, H. B., Salleh, A. B. M., & Ridzuan, A. R. B. (2015). Characteristic affecting charitable donations behavior: Empirical evidence from Malaysia. *Procedia Economics and Finance*, 31, 563-572.
- Krejcie, R., V. & Morgan, W. (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*, 30 (3), 607-610.
- Leal, P. C., Goes, T. C., da Silva, L. C. F., & Teixeira-Silva, F. (2017). Trait vs. state anxiety in different threatening situations. *Trends in psychiatry and psychotherapy*, 39(3), 147-157.
- LeDuc, J. W., & Barry, M. A. (2004). SARS, the First Pandemic of the 21st Century. *Emerging Infectious Diseases*, 10(11), e26. https://doi.org/10.3201/eid1011.040797_02.
- Lepp, A., Barkley, J. E., & Karpinski, A. C. (2014). The relationship between cell phone use, academic performance, anxiety, and satisfaction with life in college stu-

- dents. *Computers in human behavior*, 31, 343-350.
- Louise, H. (2020). Loneliness | psychology. Retrieved 19 August 2020, from <https://www.britannica.com/science/loneliness#ref122184>
- Luchetti, M., Lee, J. H., Aschwanden, D., Sesker, A., Strickhouser, J. E., Terracciano, A., & Sutin, A. R. (2020). The trajectory of loneliness in response to COVID-19. *American Psychologist*, 75(7), 897.
- Mahase, E. (2020). Covid-19: How does local lockdown work, and is it effective? *BMJ*. <https://doi.org/10.1136/bmj.m2679>.
- Malaysian Healthcare Performance Unit (2016). *Malaysian Mental Healthcare Performance: Technical report 2016*, Ministry of Health Malaysia: Putrajaya.
- McQuaid, R. J., Cox, S. M., Ogunlana, A., & Jaworska, N. (2021). The burden of loneliness: Implications of the social determinants of health during COVID-19. *Psychiatry research*, 296, 113648.
- Meda, N., Pardini, S., Slongo, I., Bodini, L., Zordan, M. A., Rigobello, P., ... & Novara, C. (2021). Students' mental health problems before, during, and after COVID-19 lockdown in Italy. *Journal of psychiatric research*, 134, 69-77.
- Melchior, M., Chastang, J. F., Walburg, V., Arseneault, L., Galéra, C., & Fombonne, E. (2010). Family income and youths' symptoms of depression and anxiety: alongitudinal study of the French GAZEL Youth cohort. *Depression and Anxiety*, 27(12), 1095-1103.
- Muhammad, H. (2020). PKP: 53,000 pelajar IPT mula pulang pada Isnin - Ismail Sabri. *Berita Harian*. Retrieved from <http://www.astroawani.com/berita-malaysia/pkp53-000-pelajar-ipt-mula-pulang-pada-isnin-ismail-sabri-239960>. Access date: 22nd of August 2020.
- Munk, A. J., Schmidt, N. M., Alexander, N., Henkel, K., & Hennig, J. (2020). Covid-19—Beyond virology: Potentials for maintaining mental health during lockdown. *PloS one*, 15(8), e0236688.
- Palgi, Y., Shrira, A., Ring, L., Bodner, E., Avidor, S., Bergman, Y., Cohen-Fridel, S., Keisari, S., & Hoffman, Y. (2020). The loneliness pandemic: Loneliness and other concomitants of depression, anxiety and their comorbidity during the COVID-19 outbreak. *Journal of affective disorders*, 275, 109–111. <https://doi.org/10.1016/j.jad.2020.06.03>.
- Patho Rahman, M., A. (2020, April 29). COVID-19: Kadar pengangguaran susulan PKP diketahui bulan depan. *Berita Harian*. Retrieved from: <https://www.bharian.com.my/berita/nasional/2020/04/683067/covid-19-kadarpengangguaran-susulan-pkp-diketahui-bulan-depan>. Access date: 22nd of August 2020.
- Pieh C, Budimir S, Humer E and Probst T (2021) Comparing Mental Health During the COVID-19 Lockdown and 6 Months After the Lockdown in Austria: A Longitudinal Study. *Front. Psychiatry* 12:625973. doi: 10.3389/fpsy.2021.625973
- PMO (2020), The Prime Minister's Special Message on COVID-19, retrieved from <https://www.pmo.gov.my/2020/03/perutusan-khas-yab-perdana-menteri-mengenai-covid-19-16-mac-2020/?highlight=speech%2016%20march>.
- Rokach, A. (2018). The effect of gender and culture on loneliness: A mini review. *Emerging Science Journal*, 2(2), 59-64.
- Ruan, Q., Yang, K., & Wang, W. (2020). Clinical predictors of mortality due to CO-

- VID19 based on an analysis of data of 150 patients from Wuhan, China. *Intensive Care Med* (46). <https://doi.org/10.1007/s00134-020-05991-x>.
- Russell, D. W. (1996). UCLA Loneliness Scale (Version 3): Reliability, Validity, and Factor Structure. *Journal of Personality Assessment*, 66(1), 20–40. doi:10.1207/s15327752jpa6601_2
- Russell, D., Cutrona, C. E., Rose, J., & Yurko, K. (1984). Social and emotional loneliness: an examination of Weiss's typology of loneliness. *Journal of personality and social psychology*, 46(6), 1313.
- Russell, D., Peplau, L. A., & Ferguson, M. L. (1978). Developing a measure of loneliness. *Journal of personality assessment*, 42(3), 290-294.
- Samuels, T. (2019). "Socioeconomic Status's Impact on the Experience of Loneliness" *Sociology & Anthropology Theses*.
- Shanmugam, H., Juhari, J. A., Nair, P., Ken, C. S., & Guan, N. C. (2020). Impacts of COVID-19 pandemic on mental health in Malaysia: A single thread of hope. *Malaysian Journal of Psychiatry*, 29(1).
- Shovestul, B., Han, J., Germine, L., & Dodell-Feder, D. (2020). Risk factors for loneliness: The high relative importance of age versus other factors. *PloS one*, 15(2), e0229087.
- Shrira, A., Ring, L., Bodner, E., Avidor, S., Bergman, Cohen-Fridel, S. Shoshi, K. & Hoffman, Y. (2020). The loneliness pandemic: loneliness and other concomitants of depression, anxiety and their comorbidity during the COVID-19 outbreak. *Journal of Affective Disorders*.
- Sinclair, S. J., Siefert, C. J., Slavin-Mulford, J. M., Stein, M. B., Renna, M., & Blais, M. A. (2012). Psychometric evaluation and normative data for the depression, anxiety, and stress scales-21 (DASS-21) in a nonclinical sample of US adults. *Evaluation & the Health Professions*, 35(3), 259-279.
- Sisenwein, R. J. (1964). *Loneliness and The Individual As Viewed By Himself And Others* (Order No. 6504768). Available from ProQuest Dissertations & Theses Global. (302124279). Retrieved from <http://eserv.uum.edu.my/docview/302124279?accountid=42599>.
- Sohrabi, C., Alsafi, Z., O'Neill, N., Khan, M., Kerwan, A., Al-Jabir, A., Iosifidis, C., & Agha, R. (2020). World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). *International journal of surgery (London, England)*, 76, 71–76. <https://doi.org/10.1016/j.ijssu.2020.02.034>.
- Tian, S., Hu, N., Lou, J., Chen, K., Kang, X., Xiang, Z., Chen, H., Wang, D., Liu, N., Liu, D., Chen, G., Zhang, Y., Li, D., Li, J., Lian, H., Niu, S., Zhang, L., & Zhang, J. (2020). Characteristics of COVID-19 infection in Beijing. *Journal of Infection*, 80(4), 401-406.
- Tough, H., Brinkhof, M. & Siegrist, J. & Fekete C. (2018). The impact of loneliness and relationship quality on life satisfaction: A longitudinal dyadic analysis in persons with physical disabilities and their partners. *Journal of Psychosomatic Research*. Retrieved from: 110. 10.1016/j.jpsychores.2018.04.009.
- Tull, M. T., Edmonds, K. A., Scamaldo, K. M., Richmond, J. R., Rose, J. P., & Gratz, K. L. (2020). Psychological Outcomes Associated with Stay-at-Home Orders and the Perceived Impact of COVID-19 on Daily Life. *Psychiatry research*, 289, 113098.

- Advance online publication. <https://doi.org/10.1016/j.psychres.2020.113098>
- Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., McIntyre, R. S., & Ho, C. (2020). A longitudinal study on the mental health of general population during the COVID19 epidemic in China. *Brain, behavior, and immunity*.
- Wang, G., Zhang, X., Wang, K., Li, Y., Shen, Q., Ge, X., & Hang, W. (2011). Loneliness among the rural older people in Anhui, China: prevalence and associated factors. *International Journal of Geriatric Psychiatry, 26*(11), 1162-1168.
- Watson, D., Clark, L. A., Weber, K., Assenheimer, J. S., Strauss, M. E., & McCormick, R. A. (1995). Testing a tripartite model: II. Exploring the symptom structure of anxiety and depression in student, adult, and patient samples. *Journal of abnormal Psychology, 104*(1), 15.
- Wei, Young, Baskaran, Subramaiam, & Partheeban (2020). "Self-Reported Compliance and Mental Health Concerns Towards COVID-19 Pandemic: Malaysian Undergraduate Student's Perspective.", *International Journal of Biomedical and Clinical Sciences, 5*(3), 204 – 216.
- Wei, M., Russell, D. W., & Zakalik, R. A. (2005). Adult attachment, social self-efficacy, self-disclosure, loneliness, and subsequent depression for freshman college students: A longitudinal study. *Journal of counseling psychology, 52*(4), 602.
- Weiss, K. J., & Rosenberg, D. J. (1985). Prevalence of anxiety disorder among alcoholics. *The Journal of clinical psychiatry*.
- Whitehorn, J. C. (1961). On loneliness and the incongruous self image. *Annals of Psychotherapy, 2*(1), 15-17.
- World Health Organization (2011). The classical definition of a pandemic is not elusive. *Bull World Health Organization, 89*(7), 540-541. doi: 10.2471/blt.11.088815
- Xu, S., Qiu, D., Hahne, J., Zhao, M., & Hu, M. (2018). Psychometric properties of the short-form UCLA Loneliness Scale (ULS-8) among Chinese adolescents. *Medicine, 97*(38).
- Yassin, M. (2020). Teks Ucapan Perutusan Khas Pakej Rangsangan Ekonomi Prihatin Rakyat (PRIHATIN). Retrieved from <https://www.pmo.gov.my/ms/2020/03/teksucapan-perutusan-khas-pakej-rangsangan-ekonomi-prihatin-rakyatprihatin/?highlight=unprecedented%20in%20history>. Accessed on 22nd of August 2020.
- Zainuddin, M., Z. (2020). 778 800 Penganggur setakat April 2020. Retrieved from: <https://www.bharian.com.my/bisnes/lain-lain/2020/06/700528/778800-penganggur-setakat-april-2020> Access date: 22nd of August 2020.