

ANXIETY TOWARDS ONLINE LEARNING DURING THE PANDEMIC COVID-19 AMONG STUDENTS AT PUBLIC UNIVERSITY KELANTAN

Nurhayati Sayuti, Nur Adibah Solihin Sulaiman

Program Kejururawatan, Pusat Pengajian Sains Kesihatan,
Universiti Sains Malaysia

Corresponding Author's Email: adibahsolihin@usm.my

Article history:

Received : (3 September 2023)
Accepted : (6 December 2023)
Published : (31 December 2023)

KEBIMBANGAN TERHADAP PEMBELAJARAN ATAS TALIAN SEMASA PANDEMIK COVID-19 DALAM KALANGAN PELAJAR DI UNIVERSITI AWAM KELANTAN

ABSTRAK

Kebimbangan dalam kalangan pelajar universiti meningkat terutama semasa pembelajaran atas talian semasa krisis COVID-19 dan ianya telah mengganggu proses pembelajaran biasa pelajar. Kajian keratan rentas dilakukan terhadap 409 orang peserta. Borang soal selidik diberikan kepada peserta yang memenuhi kriteria kajian melalui atas talian. Objektif umum bagi kajian ini untuk menilai kebimbangan terhadap pembelajaran atas talian semasa pandemik COVID-19 dalam kalangan pelajar prasiswazah di Pusat Pengajian Sains Kesihatan, USM, Kelantan. Data dianalisis dengan statistik deskriptif dan 'Chi-Square', dengan menggunakan 'Statistical Package of Social Sciences' (SPSS) 26.0. Kebanyakan peserta mempunyai kebimbangan yang normal 347 (84.8%), dengan hanya 53 (13.0%) mengalami tahap kebimbangan ringan hingga sederhana dan hanya sembilan (2.2%) mengalami kebimbangan teruk. Kajian ini juga menunjukkan tiada hubungkait antara data demografik (jantina, umur, kaum, bidang pengajian, tahun pengajian, penempatan semasa) dengan tahap kebimbangan semasa pembelajaran atas talian. Intervensi yang sewajarnya perlu dilaksanakan untuk mereka yang mengalami kebimbangan semasa menjalani pembelajaran dalam talian semasa pandemik supaya pelajar prasiswazah dapat mencapai kualiti prestasi akademik dan kesihatan mental yang baik.

Kata kunci: Kebimbangan, Pembelajaran dalam talian, COVID-19, Pelajar universiti

ABSTRACT

The anxiety of university students has become increasingly vital since online learning has become the first platform for delivering education as the COVID-19 crisis has interrupted the common learning process of students. A cross-sectional study was conducted on 409 participants. A self-administered questionnaire was given to the participants that fit the inclusion criteria via online platform. The general objective of this study is to assess the anxiety on online learning during the pandemic COVID-19 among undergraduate students at the School of Health Sciences, USM, Kelantan. The data was analyzed by descriptive statistics and Chi-Square test by using Statistical Package of Social Sciences (SPSS) 26.0. Most of the participants have a normal range of anxiety 347 (84.8%) with only 53 (13.0%) experienced mild to moderate anxiety levels and only nine (2.2%) experienced marked to severe anxiety levels. There is no statistically significant association between socio-demographic data (gender, age, ethnicity, field of study, year of field, current accommodation) and level of anxiety on online learning. Proper interventions for those experienced anxiety while conducting online learning during pandemic so that the undergraduate students can have good quality of academic performance as well as good mental health.

Keywords: *Anxiety, Online learning, COVID-19, University students*

Introduction

Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) which known as COVID-19 was first identified in late of December in 2019 which origin from Wuhan, China (Temsah et al., 2020). The World Health Organization (WHO) announced the situation as a global pandemic on March 11, 2020 (Kapasia et al., 2020). Since COVID-19 was declared as a global pandemic, therefore, this emergence of a new coronavirus was a public health emergency of international concern and become one of the major threats to global public health since it can impact both physical and mental health. Previously, by the time of severe acute respiratory syndrome (SARS) and the equine influenza outbreak, there is documentation of damaging psychological implications (Sprang & Silman, 2013).

COVID-19 was first detected during January 2020 in Malaysia. On March 18, 2020, a 'Movement Control Order' (lockdown) has been announced which aiming to control this COVID-19 outbreak (Sundarasan et al., 2020). Primarily measures taken reduced the outbreak such as lockdowns, social distancing, strict isolation, emergency remote teachings and uncertainty and delays in the opening of schools and universities which significantly contributed to the implications of socio-psychological well-being and anxiety levels of the students (Sundarasan et al., 2020).

The psychological issues accompany this global development of coronavirus disease (COVID-19) outbreak have rapidly gives the public health burden (Torales et al., 2020). A study

conducted by evaluating the effects of mental health on COVID-19 has reported a higher prevalence of moderate to severe self-reported of depressive and anxious symptomatology among the population in general (Wang et al., 2020) to uncertainty and health-related fears effects. This COVID-19 outbreak has placed an unexceptional mental health burden especially to the students which requires further investigation and immediate intervention (Grubic et al., 2020).

Implementation of physical distancing measures in response to COVID-19 resulted in the tertiary education institutions that have shifted to another crisis online learning format expected to further worsen academic stressors for university students (Grubic et al., 2020). National governments forced millions of people including researcher, academic, corporate personnel, and students, to stay safe, isolate themselves, or implement a whole or partial lockdown globally as the disease spread faster across the world (Cooper, Mondal & Antonopoulos, 2020). Therefore, physical access to the classroom has been restricted due to this imposing lockdown which took a long time.

The teaching environment and delivery methods have change and this become a massive adjustment burden for the university. Therefore, online learning becomes the first platform for delivering education and training as the COVID-19 crisis has interrupted the common learning process, teaching and learning of students, teaching calendar and assessments (Nik Ahmad Zuky, Baharuddin & Rahim, 2020). Over 87% of the world's student's population, which involves more than 160 countries were affected by the lockdown in a report from UNESCO (Araújo et al., 2020). This extraordinary crisis needs to be improved so that online education has its opportunity for 1.2 million university students including about 130,000 international students in Malaysia, mostly had affected by closures (Abdullah et al., 2020).

There was a study conducted on the psychological effects of the COVID-19 epidemic on students in China (Cao et al., 2020). Furthermore, there is also a recent study of the psychological impacts of students on online learning during the pandemic COVID-19 done in Indonesia (Irawan et al., 2020). Yet, there is no detailed research on students' anxiety conducting online learning during this COVID-19 pandemic among undergraduate students in Kelantan, Malaysia. Therefore, this study aimed to explore the level of anxiety on online learning among students during the COVID-19 pandemic particularly in Kelantan.

Methods

This cross-sectional study was conducted among undergraduate students in the School of Health Sciences, Universiti Sains Malaysia by using self-administered questionnaires distributed between January 2021 until March 2021.

The undergraduate students were selected as respondents based on the criteria of inclusion and exclusion. Inclusion criteria include undergraduate students Year 1, 2 and 3 at School of Health

Sciences, Universiti Sains Malaysia that able to understand, speak and write in English. The exclusion criteria include diploma in Nursing students and Year 4 undergraduate students at the School of Health Sciences. A convenience sampling technique was applied to recruit respondents for this study. This convenience sampling was selected those participants which of their convenient accessibility and proximity to the researcher plus helps to overcome many of the limitations associated with research (Taherdoost, 2016).

The questionnaire comprised 26 items and categorized into two parts which are Section A and B. Part A consists of socio-demographic data which comprises of six questions that include age, gender, ethnicity, field of study, year of study and current accommodation. Part B consists of 20 questions regarding the level of anxiety by assessing the anxiety level of participants during online learning in their daily life. using Zung's self-rating anxiety scale (Sundarasan et al., 2020). The participants had to tick the answer which employs a Likert-type scale of 1 – 4. Items 1 – 20 are as follow with available responses of 1 = Never or very rare, 2 = Sometimes, 3 = Often and 4 = Very Often or always.

Data for this study was collected after receiving letter of approval from Research Ethics Committee (Human) of Universiti Sains Malaysia (USM/JEPeM/20120665) and Dean of Health Sciences, Universiti Sains Malaysia before conducting the study. The respondent that fulfills the inclusion criteria was approached and written consent was obtained from respondents that are willing to take part in the study and completed questionnaire.

Data analysis

The descriptive analysis was employed to analyse socio-demographic characteristics of the participants and the level of anxiety while Chi-Square was used to analyse the association between socio-demographic characteristics (gender, age, ethnicity, field of study, year of study and current accommodation) with anxiety using IBM SPSS Statistic version 26.0.

Results and Discussion

Socio-demographic Data

The total number of students who participated in this study was 409. Table 1 summarizes the socio-demographic data of the respondents. which consist of 333 (81.4%), while male is 76 (18.6%) in term of gender. The age of the participants was categorized into four groups. The majority of the participants that are aged between 18-21 years old is 252 (61.6%), followed by age group between 22-

25 years' old which is 151 (37%), then age group of 26-29 years old of 5 (11%) and the least of participants that from age group of above 29 years' old which is 1 (0.2%).

The ethnicity of the participants is categorized into five groups which are Malay become the highest participants which is 325 (79.5%), followed by Chinese of 44 (10.8%), then, Indian of 22 (5.4%), Bumiputera of 15 (3.7%) and the least of other ethnicity consists of Indonesian and Siamese of 3 (0.7%). For the field of study, majority of the participants is from Nursing which is 93 (22.7%), followed by Forensic Science of 46 (11.2%) participants, Dietetics of 45 (11.0%) participants, Environmental & Occupational health of 43 (10.5%) participants, Nutrition of 40 (9.8%) participants, Exercise & Sports Science of 39 (9.5%) participants, Medical Radiation of 37 (9.0%) participants, Biomedicine of 36 (8.8%) participants, Speech Pathology of 16 (3.9%) participants and the least participants is from Audiology of 14 (3.4%).

For the year of study, majority of participants are from year two, which of 159 (38.9%), followed by year one of 142 (34.7%) and the least participants from year three, which is 108 (26.4%). Whereas, current accommodation can be categorized into four which are the majority of participants are currently at the family home with 370 (90.5%), followed by college residency which is 34 (8.3%), then from rented house of 4 (1.0%) and the least is at rented apartment of 1 (0.2%) participant.

Table 1: Socio-demographic data (n=409)

Variable	Frequency (n)	Percentage (%)
Gender		
Male	76	18.6
Female	333	81.4
Age		
18 – 21 years	252	61.6
22 – 25 years	151	37.0
26 – 29 years	5	1.1
Above 29 years	1	0.2
Ethnicity		
Malay	325	79.5
Chinese	44	10.8
Indian	22	5.4
Bumiputera	15	3.7
Other	3	0.7
Field of study		
Audiology	14	3.4
Biomedicine	36	8.8
Dietetics	45	11.0
Environmental & Occupational Health	43	10.5
Exercise & Sports Science	39	9.5
Forensic Science	46	11.2
Medical Radiation	37	9.0
Nursing	93	22.7
Nutrition	40	9.8

Speech Pathology	16	3.9
Year of study		
Year 1	142	34.7
Year 2	159	38.9
Year 3	108	26.4
Current accommodation		
College residency	34	8.3
Rented house	4	1.0
Rented apartment	1	0.2
Family home	370	90.5

Level of Anxiety of Undergraduate Students

The level of anxiety among undergraduate students in the School of Health Sciences, USM is presented in Table 2. Most of the participants have a normal range of psychological distress of 347 (84.8%), with only 53 (13.0%) experienced mild to moderate anxiety levels and only nine (2.2%) experienced marked to severe anxiety levels. Whereas, there is no participant experiencing extreme anxiety level. The mean level of psychological distress in this study is 1.17 (S.D 0.434). This finding is in accordance with a study of psychological impact of COVID-19 and lockdown among university students in Malaysia, where the highest participants experienced normal, 904 (92.0%), mild to moderate anxiety, 51 (5.2%) and moderate to severe, 28 (2.8%) anxiety levels (Sundarasan et al., 2020).

The results in this study also similar to another study on college students in China which stated that about three-quarters of participants, 5367 (75.1%) experienced no symptoms of anxiety, whereas the proportions of participants with mild, moderate and severe anxiety are 1518 (21.3%), 196 (2.7%) and 62 (0.9%), respectively (Cao et al., 2020). Moreover, the result in this study shows similar to another study among university students in Malaysia which stated that 689 (70.1%) of the participants are categorized as having normal levels of anxiety, whereas the proportions of participants with minimal to moderate, marked to severe and most extreme levels of anxiety are 201 (20.4%), 65 (6.6%) and 28 (2.8%), respectively (Kamaludin et al., 2020).

Table 2: Level of anxiety of undergraduate students (n=409)

Anxiety	n	Percentage	Mean (SD)
Normal range	347	84.8	1.17 (0.434)
Mild to moderate anxiety levels	53	13.0	
Marked to severe anxiety levels	9	2.2	
Extreme anxiety levels	0	0.0	

There are 20 questions regarding anxiety in which each question is rated on Likert scale 1 to 4. Table 3 summarizes the frequency of anxiety among undergraduate students at the School of Health Sciences.

Table 3: Frequency of anxiety among undergraduate students (n=409)

Item	Frequency (Percentage)			
	Never or very rare	Sometimes	Often	Very often or always
I feel more nervous than usual	88 (21.5)	255 (62.3)	48 (11.7)	18 (4.4)
I feel afraid for no reason at all	161 (39.4)	194 (47.4)	45 (11.0)	9 (2.2)
I get upset easily	83 (20.3)	198 (48.4)	94 (23.0)	34 (8.3)
I feel like I'm falling apart	112 (27.4)	197 (48.2)	72 (17.6)	28 (6.8)
I feel nothing is all right and something bad will happen	154 (37.7)	190 (46.5)	52 (12.7)	13 (3.2)
My arms and legs shake and tremble	269 (65.8)	121 (29.6)	16 (3.9)	3 (7)
I am bothered by headaches	157 (38.4)	181 (44.3)	62 (15.2)	9 (2.2)
I feel weak and get tired easily	77 (18.8)	189 (46.2)	115 (28.1)	28 (6.8)
I do not feel calm and cannot sit still easily	194 (47.4)	175 (42.8)	34 (8.3)	6 (1.5)
I can feel my heart beating fast	187 (45.7)	178 (43.5)	38 (9.3)	6 (1.5)
I am bothered by dizzy spells	257 (62.8)	122 (29.8)	26 (6.4)	4 (1.0)
I have fainting spells	352 (86.1)	51 (12.5)	6 (1.5)	0 (0)
I cannot breathe in and out easily	319 (78.0)	74 (18.1)	12 (2.9)	4 (1.0)
I get feelings of numbness and tingling in my fingers and toes	283 (69.2)	105 (25.7)	15 (3.7)	6 (1.5)
I am bothered by stomach aches or indigestion	191 (46.7)	169 (41.3)	38 (9.3)	11 (2.7)
I go to the toilet often	155 (37.9)	193 (47.2)	56 (13.7)	5 (1.2)
My hands are usually wet and cold	257 (62.8)	103 (25.2)	38 (9.3)	11 (2.7)
My face gets hot and flushes	270 (66.0)	116 (28.4)	17 (4.2)	6 (1.5)
I cannot fall asleep easily	116 (28.4)	161 (39.4)	85 (20.8)	47 (11.5)
I have nightmares	222 (54.3)	146 (35.7)	32 (7.8)	9 (2.2)

Association between selected socio-demographic characteristics (gender, age, ethnicity, field of study, year of study and current accommodation) with anxiety of undergraduate students

Based on Table 4, the result of this study revealed that there is no statistically significant association between gender and level of anxiety on online learning of undergraduate students (p-value = 0.257). Majority of the participants in this study are female, 333 (81.4%) while the remaining participants are male with 76 (18.6%). The result of this study is similar with the study of Sundarasan et al., (2020) which 590 (90.4%) of the participants are female while remaining 314 (95.2%) are male, stated that there is no significant association between gender with level of anxiety with p-value = 0.026. A previous study done in Spain also indicated that there is higher prevalence of anxiety in women with 54.2% and the remaining are men with 46.9% (Torre et al., 2019).

The result from this study revealed that there is no statistically significant association between age and level of anxiety on online learning of undergraduate students (p -value = 0.990). Majority of the participants in this study are in the age group of 18-21 years old with 252 (61.6%) experienced mild to moderate, 31 (7.5%) and marked to severe anxiety level, 5 (1.2%). The findings of this study similar with the other study which also stated that the participant from age group of 19-25 years old with 836 (85.0%) experienced mild to moderate, 46 (5.5%) and moderate to severe anxiety level, 25 (3.0%), stated that there is no statistically significant association between age and level of anxiety (p -value = 0.069) (Sundarasan et al., 2020). Another study revealed that most of the students in the early twenties of 21-24 years old showed higher anxiety with 66.57%, stated that there is no statistically significant between age and level of anxiety (p -value = 0.668) (Islam et al., 2020).

The result from this study revealed that there is no statistically significant association between ethnicity and level of anxiety on online learning of undergraduate students (p -value = 0.845). The majority of participants in this study are Malay, 45 (11%) experienced mild to moderate anxiety level compared with Chinese, 3 (0.7%), Indian, 2 (0.5%) and Bumiputera, 3 (0.7%). The finding is corresponded to another study conducted by Sundarasan et al., (2020) shows that there is no statistically significant association between ethnicity and level of anxiety (p -value = 0.378). This result findings is also similar with other study of Irfan et al., (2020) which higher level of anxiety increases by 1.7 times among Chinese students in comparison to other ethnicities, stated that there is no statistically significant between ethnicity and level of anxiety (p -value = 0.071).

This study shows no statistically significant association between field of study and level of anxiety on online learning of undergraduate students (p -value = 0.194). The majority of the participants in this study are from Forensic Science, nine (2.2%) course in School of Health Sciences experienced mild to moderate and participants from Environmental & Occupational Health, three (0.7%) course experienced marked to severe anxiety level. Another study mentioned that medical students were less stressed than nursing and non-health university students, stated that there is no statistically significant association between field of study and level of anxiety (p -value = 0.385) (Al-Rabiaah et al., 2020). This is contrary to another study where there is a statistically significant association between field of study and level of anxiety, stated that students in management-related studies, 295 (30.0%) have a higher level of anxiety compared to healthcare and medical students, 273 (27.7%) (p -value = 0.005) (Sundarasan et al., 2020).

The result of this study revealed that there is no statistically significant association between year of study and level of anxiety on online learning of undergraduate students (p -value = 0.664). The majority of participants from year two experienced mild to moderate, 19 (4.6%) and the participants from year three experienced marked to severe anxiety levels, 4 (1.0%). The findings are similar to a study by Sundarasan et al., (2020) which stated that there is no statistically significant association between year of study and level of anxiety (p -value = 0.848). The findings are contrast with another

study done in China which indicated that there were found statistically significant association between the year of study and the level of anxiety of grade one from those of grade two and three (p-value \leq 0.001) (Wang & Zhao, 2020). There is also statistically significant association between the year of study and the level of anxiety of grade two and three (p-value \leq 0.001) (Wang & Zhao, 2020).

The result from this study revealed that there is no statistically significant association between current accommodation and level of anxiety on online learning of undergraduate students (p-value = 0.873). The majority of participants are stayed at family home, 50 (12.2%) experienced mild to moderate and nine (2.2%) experienced marked to severe anxiety levels. This finding contrast to another study where there is a statistically significant association between current accommodation and level of anxiety where students who stay alone experienced the highest anxiety levels compared to those staying with family and friends (p-value = 0.004) (Sundarasan et al., 2020). Moreover, the findings are contrast with another study which stated that there is statistically significant association between current accommodation and level of anxiety where living with parents are another favorable factor against feeling anxious (p-value = 0.017) (Cao et al., 2020).

Table 4: Association between selected socio-demographic characteristics with anxiety of undergraduate students (n=409)

Variable	n (%)				p value
	Normal	Mild to moderate	Marked to severe	Extreme	
Gender					
Male	68 (16.6)	8 (2.0)	0 (0.0)	0 (0.0)	0.257
Female	279 (68.2)	45 (11.0)	9 (2.2)	0 (0.0)	
Age					
18 – 21 years	216 (52.8)	31 (7.5)	5 (1.2)	0 (0.0)	0.990
22 – 25 years	125 (30.6)	22 (5.3)	4 (1.0)	0 (0.0)	
26 – 29 years	5 (1.1)	0 (0.0)	0 (0.0)	0 (0.0)	
Above 29 years	1 (0.2)	0 (0.0)	0 (0.0)	0 (0.0)	
Ethnicity					
Malay	272 (66.5)	45 (11.0)	8 (2.0)	0 (0.0)	0.845
Chinese	40 (9.8)	3 (0.7)	1 (0.2)	0 (0.0)	
Indian	20 (4.9)	2 (0.5)	0 (0.0)	0 (0.0)	
Bumiputera	12 (2.9)	3 (0.7)	0 (0.0)	0 (0.0)	
Other	3 (0.7)	0 (0.0)	0 (0.0)	0 (0.0)	
Field of study					
Audiology	11 (2.7)	3 (0.7)	0 (0.0)	0 (0.0)	0.194
Biomedicine	29 (7.1)	6 (1.5)	1 (0.2)	0 (0.0)	
Dietetics	38 (9.3)	6 (1.5)	1 (0.2)	0 (0.0)	
Environmental & Occupational Health	38 (9.3)	2 (0.5)	3 (0.7)	0 (0.0)	
Exercise & Sports Science	30 (7.3)	8 (2.0)	1 (0.2)	0 (0.0)	
Forensic Science	37 (9.0)	9 (2.2)	0 (0.0)	0 (0.0)	
Medical Radiation	32 (7.8)	4 (1.0)	1 (0.2)	0 (0.0)	
Nursing	88 (21.5)	4 (1.0)	1 (0.2)	0 (0.0)	
Nutrition	31 (7.6)	8 (2.0)	1 (0.2)	0 (0.0)	

Speech Pathology	13 (3.2)	3 (0.7)	0 (0.0)	0 (0.0)	
Year of study					
Year 1	121 (29.6)	18 (4.4)	3 (0.7)	0 (0.0)	0.664
Year 2	138 (33.7)	19 (4.6)	2 (0.5)	0 (0.0)	
Year 3	88 (21.5)	16 (3.9)	4 (1.0)	0 (0.0)	
Current accommodation					
College residency	31 (7.6)	3 (0.7)	0 (0.0)	0 (0.0)	0.873
Rented house	4 (1.0)	0 (0.0)	0 (0.0)	0 (0.0)	
Rented apartment	1 (0.2)	0 (0.0)	0 (0.0)	0 (0.0)	
Family home	311 (76.0)	50 (12.2)	9 (2.2)	0 (0.0)	

Significant different at $p < 0.05$; statistical test Chi-square

Conclusion

In a nutshell, undergraduate students at the School of Health Sciences, USM, Kelantan shows a normal range of anxiety. In addition, there is no statistically significant association between socio-demographic data (gender, age, ethnicity, field of study, year of field, current accommodation) and level of anxiety on online learning of undergraduate students. The findings of this study should prompt the school management to implement proper interventions for those who experienced anxiety while conducting online learning during the pandemic so that undergraduate students can have good quality of academic performance as well as good mental health.

References

- Abdullah, J., Wan Ismail, W., Mohamad, I., Ab Razak, A., Harun, A., Musa, K., & YY, L. (2020). A critical appraisal of COVID-19 in Malaysia and beyond. *Malays J Med Sci*, 27(2), 1–9. <https://doi.org/10.21315/mjms2020.27.2.1>, 2020
- Al-Rabiaah, A., Temsah, M. H., Al-Eyadhy, A. A., Hasan, G. M., Al-Zamil, F., Al-Subaie, S., Alsohime, F., Jamal, A., Alhaboob, A., Al-Saadi, B., & Somily, A. M. (2020). Middle East Respiratory Syndrome-Corona Virus (MERS-CoV) associated stress among medical students at a university teaching hospital in Saudi Arabia. *Journal of Infection and Public Health*, 13(5), 687–691. <https://doi.org/10.1016/j.jiph.2020.01.005>
- Araújo, F. J. de O., Lima, L. S. A. de, Cidade, P. I. M., Nobre, C. B., & Neto, M. L. R. (2020). Impact Of Sars-Cov-2 And Its Reverberation In Global Higher Education And Mental Health. *Psychiatry Research*, 288 (January), 112977. <https://doi.org/https://doi.org/10.1016/j.psychres.2020.112977>
- Baticulon, R. E., Alberto, N. R. I., Baron, M. B. C., Mabulay, R. E. C., Rizada, L. G. T., Sy, J. J., Tiu, C. J. S., Clarion, C. A., & Reyes, J. C. B. (2020). Barriers to online learning in the time of COVID-19: A national survey of medical students in the Philippines. *MedRxiv*, 1–19.
- 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, 112934. <https://doi.org/https://doi.org/10.1016/j.psychres.2020.112934>
- Cooper, I., Mondal, A., & Antonopoulos, C. G. (2020). Chaos, Solitons and Fractals A SIR model assumption for the spread of COVID-19 in different communities. *Chaos, Solitons and Fractals: The Interdisciplinary Journal of Nonlinear Science, and Nonequilibrium and Complex Phenomena*, 139, 110057. <https://doi.org/10.1016/j.chaos.2020.110057>
- Grubic, N., Badovinac, S., & Johri, A. M. (2020). Students' mental health in the midst of the COVID-19 pandemic: A call for further research and immediate solutions. *International Journal of Social Psychiatry*, 66(5), 517–518. <https://doi.org/10.1177/0020764020925108>
- Irawan, A. W., Dwisona, D., & Lestari, M. (2020). Psychological Impacts of Students on Online Learning During the Pandemic COVID-19. *Jurnal Bimbingan Dan Konseling (E-Journal)*, 7(1), 53–60. <https://doi.org/10.24042/kons.v7i1.6389>
- Irfan, M., Shahudin, F., Hooper, V. J., Akram, W., & Abdul Ghani, R. B. (2020). The psychological impact of coronavirus on university students and its socioeconomic determinants in Malaysia. *MedRxiv, October*. <https://doi.org/10.1101/2020.10.27.20220723>
- Islam, M. A., Barna, S. D., Raihan, H., Khan, M. N. A., & Hossain, M. T. (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>
- Kamaludin, K., Chinna, K., Sundarasan, S., Khoshaim, H. B., Nurunnabi, M., Baloch, G. M., Sukayt, A., & Hossain, S. F. A. (2020). Coping with COVID-19 and movement control order (MCO): experiences of university students in Malaysia. *Heliyon*, 6(11), e05339. <https://doi.org/10.1016/j.heliyon.2020.e05339>
- Kapasias, N., Paul, P., Roy, A., Saha, J., Zaveri, A., Mallick, R., Barman, B., Das, P., & Chouhan, P. (2020). Impact of lockdown on learning status of undergraduate and postgraduate students during COVID-19 pandemic in West Bengal, India. *Children and Youth Services Review*, 116(June), 105194. <https://doi.org/10.1016/j.chilyouth.2020.105194>
- Nik-Ahmad-Zuky, N. L., Baharuddin, K. A., & Abdul Rahim, A. F. (2020). Online Clinical Teaching and Learning for Medical Undergraduates during the COVID-19 Pandemic: The Universiti Sains Malaysia (USM) Experience. *Education in Medicine Journal*, 12(2), 75–80. <https://doi.org/10.21315/eimj2020.12.2.8>
- Sprang, G., & Silman, M. (2013). Posttraumatic Stress Disorder in Parents and Youth After Health-Related Disasters. *Disaster Medicine and Public Health*, 7(1), 105-110. <https://doi.org/https://doi.org/10.1017/dmp.2013.22>
- Sundarasan, S., Chinna, K., Kamaludin, K., Nurunnabi, M., Baloch, G. M., Khoshaim, H. B., Hossain, S. F. A., & Sukayt, A. (2020). Psychological Impact of COVID-19 and Lockdown among

- University Students in Malaysia: Implications and Policy Recommendations. *International Journal of Environmental Research and Public Health Article*, 17(6206), 1–13. <https://doi.org/10.3390/ijerph17176206>
- Taherdoost, H. (2016). Sampling Methods in Research Methodology; How to Choose a Sampling Technique for Research. *International Journal of Academic Research in Management (IJARM)*, 5(2), 18–27.
- Temsah, M. H., Al-Sohime, F., Alamro, N., Al-Eyadhy, A., Al-Hasan, K., Jamal, A., Al-Maglouth, I., Aljamaan, F., Al Amri, M., Barry, M., Al-Subaie, S., & Somily, A. M. (2020). The psychological impact of COVID-19 pandemic on health care workers in a MERS-CoV endemic country. *Journal of Infection and Public Health*, 13(6), 877–882. <https://doi.org/10.1016/j.jiph.2020.05.021>
- Torales, J., O’Higgins, M., Castaldelli-Maia, J. M., & Ventriglio, A. (2020). The outbreak of COVID-19 coronavirus and its impact on global mental health. *International Journal of Social Psychiatry*, 66(4), 317–320. <https://doi.org/10.1177/0020764020915212>
- Torre, J. A., Fern, T., Jos, A., Amezcua-prieto, C., & Mateos, R. (2019). Anxiety, Family Support and Employment Status in First-Year University Students in Spain. *International Journal of Environmental Research and Public Health Article*, 16(February), 1209. <https://doi.org/10.3390/ijerph16071209>
- Wang, Chongying, & Zhao, H. (2020). The Impact of COVID-19 on Anxiety in Chinese University Students. *Frontiers in Psychology*, 11(January), 1–8. <https://doi.org/10.3389/fpsyg.2020.01168>
- Wu, J., Tennyson, R. D., & Hsia, T. (2010). Computers & Education A study of student’s satisfaction in a blended e-learning system environment. *Computers & Education*, 55(1), 155–164. <https://doi.org/10.1016/j.compedu.2009.12.012>