

Depression, Anxiety, Stress and Its Association with Coping Strategies among Malaysian University Students

*Bushra Abdul Halim, Siti Fairus Fuzi, Siti Ramizah Jama, Siti Nursyahira Zainudin, Nordinah Jusoh Hussain, Nurul Emyza Zahidi, Wan Hartini Wan Hassan

College of Computing, Informatics and Mathematics, Universiti Teknologi MARA (UiTM) Melaka Branch, Alor Gajah Campus, Melaka, Malaysia

*bushra270@uitm.edu.my, ctfairus@uitm.edu.my, ramizah@uitm.edu.my, sitinursyahira@uitm.edu.my, dianah642@uitm.edu.my, nurulemyza@uitm.edu.my, whartini@gmail.com

Corresponding Author: Bushra Abdul Halim

Abstract: Malaysia is one of the countries transitioning from the pandemic phase to an endemic phase of Covid-19. The spread of Covid-19 had a significant impact on university students, affecting their mental health just as it did for many others. This study investigates depression, anxiety, and stress symptom levels among Malaysian university students and the coping strategies used to prevent or reduce these psychological distress symptoms. A web-based questionnaire was developed using Google Forms to collect data from students who were selected non-randomly from three public universities and one from a private university in Malaysia. Patient Health Questionnaire-9 (PHQ-9), Generalized Anxiety Disorder-7 (GAD-7), and Perceived Stress Scales-10 (PSS-10) were used for measuring depression, anxiety, and stress respectively. The coping strategies were measured using five strategies: seeking social support for emotional reasons, seeking social support for instrumental reasons, acceptance, mental disengagement, and humanitarian. The study findings indicated that 60.7% had depression symptoms, 30.4% had anxiety symptoms, and 86.3% had stress symptoms at moderate-to-severe levels. Acceptance was the most preferred coping strategy among the students while seeking social support for instrumental reasons was the least preferred coping strategy. Students with severe depression levels used mental disengagement coping strategies more than those with mild symptoms. Mental disengagement coping strategy was associated with severe anxiety symptoms compared to mild and minimal symptoms. Seeking social support for emotional reasons was also associated with moderate anxiety symptoms compared to mild anxiety symptoms.

Keywords: *Depression, anxiety, stress, coping strategies, Covid-19 pandemic*

1. Introduction

In Malaysia, Covid-19 was first reported on 25th January 2020. The fifth wave which occurred from February to May 2022 due to the Delta variant followed by the Omicron variant was first detected in November 2021 (Yu et al., 2022). Malaysia announced the transition of COVID-19 from pandemic to endemic phase on 1st April 2022 (TheStar, 2022). The spread of COVID-19 can impact the mental health of people in different communities as COVID-19 not only causes physical health concerns but also results in several psychological disorders (Salari et al., 2020). This impact extends to university students, as it does to many others. Psychological disorders or distress such as depression, anxiety, and stress, can affect many people without being realized.

On the surface, depression, anxiety, and stress do share similarities, but there are distinct differences between them. Hysenbegasi et al. (2005) defined depression as a common disorder that affects an individual's ability to carry out daily activities, including those required by the workplace. From students' perspectives, academic performance is often seen as directly comparable to workplace performance (Hysenbegasi et al., 2005). Anxiety is an internalized arousal of fear that may be real or imaginary and it is an unconscious reaction to depressive tendencies which may turn into severe fear or panic (Asif et al., 2020). Stress is viewed as a threat that challenges people's well-being, leading to biological and psychological disturbances that may increase the risk of disease (Cohen et al., 2016). Studies in India by Chaudhary et al. (2021) and Italy by Villani et al. (2021) among university students reported that 28.7% and 72.93% of students had depression symptoms while 51.5% and 35.33% had anxiety symptoms, respectively. In a sample of university students in Brazil by Lopes & Nihei (2021) was found to have anxiety of 52.5% which was higher than the earlier studies in India and Italy. The studies were all conducted during the Covid-19 pandemic. These findings suggest a negative impact of Covid-19 on students' mental health.

Coping is redefined as cognitive and behavioral efforts employed in response to external or internal demands that any individual deems to be threats to their well-being (Freire et al., 2020). In coping, different strategies and techniques were used to manage the situation. Coping is either problem-focused or emotion-focused. Problem-focused coping is aimed at problem-solving or doing something to alter the source of the stress while emotion-focused coping is aimed at reducing or managing the emotional distress that is associated with the situation (Carver et al., 1989). For the current study, five coping strategies were used; seek social support for emotional reasons, seek social support for instrumental reasons, acceptance, mental disengagement, and humanitarian. Seeking social support for emotional reasons refers to getting moral support, sympathy or understanding of a problem at hand while seeking social support for instrumental reasons refers to seeking advice, assistance or information on the problem at hand (Esia-Donkoh et al., 2011). Acceptance is accepting the reality of a stressful situation and mental disengagement refers to using alternative activities, such as games, exercises, and watching movies to take one's mind off a problem (Esia-Donkoh et al., 2011). Humanitarian coping refers to the efforts made by individuals to assist others who are experiencing psychosocial distress (Kamaludin et al., 2020).

To reduce or protect people from adverse psychological impacts during the pandemic, research-based data are needed for the development of intervention strategies. The first objective of this study was to assess the levels of depression, anxiety, and stress among the university student population in Malaysia. The second objective was to examine the coping strategies associated with depression, anxiety, and stress. It is hoped that the data from the study could be used particularly by the universities and the country to develop psychosocial interventions in addressing the psychological distress among students.

2. Literature Review

The COVID-19 pandemic has impacted the daily life and psychological distress of many people. Recent studies have increasingly focused on understanding the prevalence and impacts of depression, anxiety, and stress among university students especially in the context of the ongoing effects of the Covid-19 pandemic. Many research data findings such as Lopes & Nihei (2021), Chaudhary et al. (2021), Villani et al. (2021), Wong et al. (2023) and Fuzi et al. (2024) have shown that young people particularly among university students, were at greater risk for psychological distress during pandemic. These studies show that an increase in stress, anxiety, and depression was observed during the pandemic and particularly during the lockdown period.

A study by Wang et al. (2020) and Qiu et al. (2020) reported moderate to severe depressive symptoms, anxiety symptoms, and stress levels during Covid-19 among Chinese citizens during the epidemic phase of Covid-19 in China. The COVID-19 pandemic situation has produced emotional impact and important symptoms of anxiety, stress and depression in the general population of China, for which, 16.5%, 28.8%, and 8.1% were reported with moderate to severe depression, and anxiety, respectively. The student population was significantly associated with higher stress and anxiety as compared to the working population (Wang et al., 2020). In Spain, 21.3%, 34.2%, and 28.1% of respondents were reported experiencing moderate to extremely severe anxiety, depression, and stress, respectively, and university students presented higher scores in all measures compared to university staff (Odriozola-González et al., 2020). Zhao et al. (2023) found that the prevalence of psychological symptoms like anxiety, depression, insomnia and post-traumatic stress disorder (PTSD) among university students had risen significantly compared to pre-pandemic levels, with factors such as academic pressure, uncertainty about the future, and disruptions to social support systems contributing to these increases.

Carver & Connor-Smith (2010) defined coping as efforts to prevent or reduce threat, harm, or loss, or to lessen the associated psychological distress while Morales-Rodríguez & Pérez-Mármol (2019) defined efforts as to regulate emotions, behaviors, cognitions, psychophysiology, and environmental aspects in response to the stress of everyday events. During the COVID-19 pandemic, the effects of the pandemic crisis on the mental health of undergraduates can be reduced or increased according to the adopted coping strategies (Savitsky et al., 2020). Seeking social support, both emotional and instrumental, has been essential in reducing depression, anxiety and stress. Acceptance, mental disengagement, and humanitarian coping also play significant roles in helping students navigate during pandemic and post-pandemic complexities. A study by Esia-Donkoh et al. (2011) revealed that university students in Ghana used more emotion-focused strategies (acceptance, mental

disengagement, positive reinterpretation and growth, denial, and seeking social support for emotional reasons) than problem-focused strategies (seeking social support for instrumental reasons, active coping, planning, suppression of competing activities, and restraint coping) in managing stress. Acoba (2024) found that among the respondents, 61.3% who actively sought emotional support from friends, family, and significant others experienced a reduction in perceived stress, anxiety, and depression, along with an increase in positive affect. Likewise, Kamaludin et al. (2020), Ramadianto et al. (2022) and Alotaibi et al. (2024) found that students commonly seek emotional or social support to reduce depression. Furthermore, seeking social support for instrumental reasons like study aids, financial assistance, and academic guidance has mitigated stress and facilitated better academic performance. Brown et al. (2023) highlighted that instrumental support, such as practical assistance with academic tasks and logistical challenges, has been crucial for students during the pandemic. Besides seeking emotional support, acceptance is also included as one of the subcomponents of emotion-based coping strategies, with 93.1% in a study by Alotaibi et al. (2024). Similarly, Kamaludin et al. (2020) found that both seeking social support and employing acceptance as coping strategies were significantly associated with levels of anxiety. Additionally, Stronger resilience and usage of humor were associated with significantly lower anxiety levels, while mental disengagement was associated with higher anxiety levels (Savitsky et al., 2020).

Other coping strategies utilized self-management strategies by doing relaxing hobbies including physical exercise, enjoying streaming services and social media, playing with pets, journaling, listening to music, reading, and drawing (Son et al., 2020). A study by Irfan et al. (2021) reported that only 37% of students were aware of mental health support services provided by the universities. Some reasons given by students for not seeking help from tele-counselling services provided by the university during the pandemic; were the condition was not severe enough to seek the services, students felt uncomfortable interacting with unfamiliar people, not comfortable talking about mental health issues over the phone, and lack of trust in the counselling services (Son et al., 2020).

3. Methodology

Study Population, Sample and Sampling Techniques

A cross-sectional study was conducted in this study. The Raosoft sample size calculator was used to obtain an appropriate sample size for the survey study. A minimum of 201 samples was required for a 95% confidence interval and a 5% margin of error for the population distribution of 420 students at 50% response distribution. With this reference, the study used 300 as the sample size. Students studying in diploma and bachelor's degree levels from three selected public universities and one private university in Malaysia were included in the survey study. A purposive sampling technique was employed in this study. The purposive sampling technique is a non-random technique, also called judgment sampling, which is the deliberate choice of a participant due to the qualities the participant possesses, and it does not need underlying theories or a set number of participants. By knowledge or experience, the researcher decides on what needs to be known and sets out to find individuals who can provide the information required (Etikan, 2016).

Data Collection, Instruments and Data Analysis

Based on the previous literature on the psychological impact of the COVID-19 pandemic, the survey questions and the scales were selected. For this study, a questionnaire web-based form was developed using Google Docs Forms and was distributed to the students through WhatsApp from 3rd – 22nd January 2022. The questionnaire contained three sections, namely, a socio-demographic and academic profile section, a psychometric scale section that included the Patient Health Questionnaire-9 (PHQ-9) (Kroenke et al., 2001) for depression scale, Generalized Anxiety Order-7 (GAD-7) (Spitzer et al., 2006) for anxiety scale, and Perceived Stress Scale (PSS) (Chan & La Greca, 2013) for stress scale, and coping strategies items adapted from Esia-Donkoh et al. (2011) and Kamaludin et al. (2020). The obtained data was analyzed by using the software Statistical Package for Social Sciences (SPSS) Version 26.0.

PHQ-9 is a 9-item self-report scale that helps to interpret the individual's severity of depression. The responses are recorded on 4-point ordinal Likert scales from 0 to 3 (0 – not at all, 1 – several days, 2 – more than half the days, 3 – nearly every day). The total score ranges from 0 to 27. A score ≥ 10 signifies moderate to severe depression with significant clinical concern, whereas a score < 10 signifies minimal to mild depression. GAD-7

is a self-report scale developed to diagnose generalized anxiety disorder (GAD). The scale consists of 7 items. The participants' responses are recorded on 4-point ordinal Likert scales ranging from 0 – 3 (0 – not at all, 1 – several days, 2 – more than half the days, 3 – nearly every day). The score ranges from 0 to 21. Similar to PHQ-9, a score ≥ 10 interprets moderate to severe anxiety with significant clinical concern, whereas a score < 10 interprets minimal to mild anxiety. The PSS-10 is a classic stress assessment instrument. It was originally developed in 1983 and remains a popular choice to understand how different situations affect individuals' feelings and perceived stress. The scale consists of 10 items. The participants' responses are recorded on 5-point ordinal Likert scales ranging from 0 – 4 (0 – never, 1 – rarely, 2 – sometimes, 3 – fairly often, 4 – very often). The score ranges from 0 to 40. A score ≥ 14 interprets moderate to high perceived stress, whereas a score < 14 interprets low perceived stress. The analysis used was descriptive statistics for all these three psychometric scales.

For coping strategies, five coping strategies; seeking social support for emotional reasons, seeking social support for instrumental reasons, acceptance, mental disengagement, and humanitarian were assessed. The items of these strategies are measured on a scale of 1 to 4; 1 = never/rarely, 2 = sometimes, 3 = often and 4 = very often/always. For each coping strategy, mean scores for respective items were computed, where higher scores implied a higher level of usage. The analysis used were descriptive statistics and univariate general linear model (univariate GLM) procedures.

4. Results and Discussion

Students' demographic analysis

This study received 300 responses from public and private universities in Malaysia. Table 1 presents the socio-demographic and academic backgrounds of the respondents.

Table 1: Characterization of the socio-demographic and academic of the respondents

Variable	Categories	Frequency	%
Gender	Male	132	44.0
	Female	168	56.0
Age group	18 – 21 years	182	60.7
	22 – 24 years	108	36.0
	25 years and above	10	3.3
Ethnicity	Malay	241	80.3
	Chinese	25	8.3
	Indians	26	8.7
	Bumiputera Sabah/Sarawak	8	2.7
Living arrangement	Alone/friends	70	29.3
	Parents/family	230	70.7
Household income group	Less or equal to RM4,850 (B40)	197	65.7
	RM4,851 or equal to RM10,970 (M40)	88	29.3
	RM10,971 or above (T20)	15	5.0
Household size	1 – 3 people	46	15.3
	4 – 5 people	109	36.3
	6 people and more	145	48.3
Type of university	Private	30	10.0
	Public	270	90.0
Area of Study	Arts/communication/accounting/ business management (Non-science)	107	35.7
	Computer science/engineering/ Science (Science)	193	64.3
Level of study	Diploma	105	35.0
	Bachelor degree	195	65.0

Variable	Categories	Frequency	%
Year of Study	1	132	44.0
	2	117	39.0
	3	37	12.3
	4 and higher	14	4.6
Are you a final-year student?	No	252	84.0
	Yes	48	16.0
Previous education background	Sijil Pelajaran Malaysia (SPM)	109	36.3
	Diploma	96	32.0
	Sijil Tinggi Pelajaran Malaysia (STPM)	46	15.3
	Matriculation/Foundation	49	16.3

Depression, anxiety and stress levels among students

Descriptive statistics were examined for all three psychometric scales to understand the impact of the COVID-19 pandemic on the mental health of university students who participated in this study. Average scores for depression (PHQ-9), anxiety (GAD-7), and stress (PSS-10) were 11.58, 7.20, and 19.26 respectively, indicating depression and stress were at moderate levels, whereas anxiety was at mild levels as illustrated in Table 2. The findings also indicated that symptoms of depression and anxiety were more prevalent than stress during the Covid-19 pandemic.

Table 2: Descriptive statistics and Cronbach's alpha coefficient of the PHQ-7, GAD-7, and PSS-10 among diploma and undergraduate students in Malaysia

Psychometric scales	Interval of scale	Severity level	%	Descriptive statistics				Cronbach's Alpha
				Mean	Median	SD	Range	
PHQ-9	0 - 4	Normal	13.3	11.58 (Moderate)	10	6.582	27 Min = 0 Max = 27	0.891
	5 - 9	Mild	26.0					
	10 - 14	Moderate	29.7					
	15 - 19	Moderately severe	16.0					
	20 - 27	Severe	15.0					
GAD-7	0 - 4	Normal	37.3	7.20 (Mild)	7	5.886	21 Min = 0 Max = 21	0.935
	5 - 9	Mild	32.3					
	10 - 14	Moderate	16.7					
	15 - 21	Severe	13.7					
PSS-10	0 - 13	Low stress	13.7	19.26 (Moderate)	19	6.122	36 Min = 3 Max = 39	0.866
	14 - 26	Moderate stress	73.0					
	27 - 40	High perceived stress	13.3					

The median scores of the PHQ-9, GAD-7, and PSS-10 were found to be 10 (range 0 - 27), 7 (range 0 - 21), and 19 (range 3 - 39), respectively. The median scores obtained in PHQ-9 and PSS-10 subscales were equal to or higher than the cut-off scores 10 and 14 respectively, indicating a higher percentage of students with high scores of PHQ-9 and PSS-10. This study shows that the mental health state among university students was alarming due to the impact of the Covid-19 pandemic along with Movement Control Order (MCO) periods and online learning process, with 60.7% having moderate to severe depression, 30.4% having moderate to severe anxiety, and 86.3% having moderate to high perceived stress. In the current study, the PHQ-9, GAD-7, and PSS-10 scales showed good to excellent internal consistencies, with Cronbach's alpha values of 0.891, 0.935, and 0.866 respectively as shown in Table 2.

Coping strategies used

For this study, five coping strategies were brought into focus; seek social support for emotional reasons, seek social support for instrumental reasons, acceptance, mental disengagement, and humanitarian. Seek social support for emotional reasons, seek social support for instrumental reasons, and acceptance were classified as adaptive copings while mental disengagement and humanitarian were classified as maladaptive copings. Among these copings, the most often used as acceptance (67.7%), followed by mental disengagement (48.3%), humanitarian (39.3%), seeking social support for instrumental reasons (25.0%), and seeking social support for

emotional reasons (22.3%). It can be concluded that most students did not prefer to seek social support but rather to accept or disengage their minds with social media, watching television, or watching videos. This is probably because students think that their psychological conditions are not as serious as seeking social advice or sharing it with other people.

Table 3: Descriptive statistics and the interpretation of coping strategies used

Coping strategy	Mean total usage	SD	Median	Minimum	Maximum	Interpretation
Seek social support for emotional reasons	2.15	0.811	2.00	1.00	4.00	Sometimes
Seek social support for instrumental reasons	2.14	0.865	2.00	1.00	4.00	Sometimes
Acceptance	3.03	0.810	3.00	1.00	4.00	Often
Mental disengagement	2.71	0.690	2.67	1.00	4.00	Sometimes
Humanitarian	2.41	1.032	2.00	1.00	4.00	Sometimes

Table 3 shows descriptive statistics of coping strategies used by the students. High mean scores indicate a higher level of usage of the coping strategy. The range for the scores is from 1 to 4. The results indicated that the coping strategy that is often used by students was acceptance while mental disengagement, humanitarian, seeking social support for emotional reasons, and seeking social support for instrumental reasons were sometimes used as shown in Table 3.

Coping strategies associated with depression, anxiety, and stress

The associations between coping strategies used and levels of depression, anxiety, and stress were tested using univariate general linear model (univariate GLM) procedures. In the analyses, the variances were similar. The results are presented in Table 4.

Table 4: Depression, anxiety and stress and coping strategies

Psychometric scales	Category	N	Coping strategy									
			Seek support emotional reasons.		social for instrumental reasons		Acceptance		Mental disengagement		Humanitarian	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Depression	Normal	40	2.05	0.914	2.08	0.995	3.14	0.940	2.67	0.867	2.30	1.091
	Mild	78	2.03	0.783	2.07	0.772	3.01	0.853	2.56	0.687	2.42	1.038
	Mode	89	2.21	0.688	2.16	0.747	2.95	0.739	2.70	0.593	2.39	0.900
	Severe	93	2.23	0.890	2.21	0.983	3.09	0.782	2.86	0.669	2.46	1.128
	F(3, 296)		1.166		0.415		0.684		2.967*		0.241	
	Sig		0.323		0.742		0.562		0.032		0.867	
	Partial square	eta	0.012		0.004		0.007		0.029		0.002	
	Multiple comparisons								Severe > mild*			
Anxiety	Normal	112	2.01	0.835	2.00	0.861	3.05	0.881	2.63	0.755	2.36	1.073
	Mild	97	2.13	0.766	2.16	0.808	2.95	0.772	2.64	0.654	2.40	0.920
	Mode	50	2.37	0.692	2.31	0.824	3.09	0.754	2.78	0.566	2.48	1.092
	Severe	41	2.29	0.920	2.28	1.011	3.11	0.771	2.99	0.656	2.49	1.121
	F(3, 296)		2.880*		1.978		0.579		3.333		0.252	
	Sig		0.036		0.117		0.629		0.020		0.860	
	Partial square	eta	0.028		0.020		0.006		0.033		0.003	
	Multiple comparisons								Severe > normal*			

Psychometric scales	Category	N	Coping strategy													
			Seek support emotional reasons.		social for		Seek support instrumental reasons		social for		Acceptance		Mental disengagement		Humanitarian	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
	Multiple comparisons		Moderate normal*	>							Severe > mild*					
	Sig		0.040								0.022					
Stress	Low	41	2.30	0.846	2.32	0.799	3.32	0.812	2.85	0.731	2.44	1.050				
	Mode rate	219	2.15	0.786	2.13	0.843	3.00	0.810	2.67	0.687	2.45	1.001				
	High	40	1.99	0.898	2.04	1.027	2.95	0.766	2.78	0.647	2.15	1.167				
	F(2, 297)		1.476		1.147		3.007		1.321		1.472					
	Sig		0.230		0.319		0.051		0.269		0.231					
	Partial square	eta	0.010		0.008		0.020		0.009		0.010					

* p < 0.05 level

Out of the five coping strategies, only mental disengagement was significantly ($F(3, 296) = 2.967, p < 0.05$) associated with the level of depression. The usage of mental disengagement coping strategy was higher in the severe depression group compared to the mild group. Seeking social support for emotional reasons ($F(3, 296) = 2.880, p < 0.05$) and mental disengagement ($F(3, 296) = 3.333, p < 0.05$) coping strategies were significantly associated with the level of anxiety. Students with moderate levels of anxiety used to seek social support for emotional reasons more than normal levels of anxiety students. Meanwhile, the usage of mental disengagement coping strategy was higher in the severe anxiety group compared to the normal and mild groups. Out of five coping strategies, none were significantly associated with the level of stress. Table 4 shows the results. It is concluded that the mental disengagement coping strategy was used by students with severe levels of depression and anxiety while seeking social support for emotional reasons coping strategy was used by students with moderate anxiety levels.

Responses from participants showed that the acceptance coping strategy recorded the highest mean for depression, anxiety, and stress while the lowest was recorded for seeking social support for instrumental reasons strategy for all three psychological distress. It could therefore be inferred from the results that the coping strategies most used by students were acceptance, followed by mental disengagement, humanitarian, social support for emotional reasons, and social support for instrumental reasons. Seeking social support was the least preferred coping strategy by students which was in line with Kamaludin et al. (2020) and Baloch et al. (2021).

Table 5: Correlations between depression, anxiety, stress, and coping strategies

	Depression	Anxiety	Stress	Seek social support for emotional reasons	Seek social support for instrumental reasons	Acceptance	Mental disengagement	Humanitarian
Depression	1	0.807**	0.696**	0.115*	0.084	0.025	0.154**	0.061
Anxiety		1	0.669**	0.146*	0.129*	0.019	0.146*	0.054
Stress			1	-0.066	-0.082	-0.121*	-0.007	-0.092
Seek social support for emotional reasons.				1	0.844**	0.332**	0.454**	0.468**
Seek social support for instrumental reasons.					1	0.289**	0.409**	0.436**
Acceptance						1	0.681**	0.422**

Mental disengagement	1	0.512**
Humanitarian		1

* p < 0.05 level ** p < 0.01 level

The correlations between depression, anxiety, stress, and coping strategies used were tested using Pearson's correlation coefficient (r). Table 5 indicates the correlation between depression, anxiety, stress, and coping strategies. All the depression, anxiety, and stress had strong significant positive correlations with each other. The correlation coefficient between depression and anxiety was 0.807 (p < 0.01), the correlation between depression and stress was 0.696 (p < 0.01), and the correlation between anxiety and stress was 0.669 (p < 0.05). This means depression, anxiety, and stress are strongly positively correlated to each other. As far as coping strategies were concerned, depression and anxiety had significant weak positive correlations with seeking social support for emotional reasons and mental disengagement. Results also revealed that seeking social support for instrumental reasons had a significantly weak positive correlation with anxiety while acceptance had a significantly weak negative correlation with stress. These results concluded that acceptance was associated with significantly lower stress levels while seeking social support for emotional reasons and mental disengagement with significantly higher depression and anxiety levels. Moreover, seeking social support for instrumental reasons was significantly associated with higher anxiety levels. No significant correlation was found between humanitarian and any depression, anxiety, and stress as indicated in Table 5.

Other coping strategies used

The seeking social support strategy either for emotional or instrumental reasons seemed to be unpopular among students. This is further proven by the response of seeking social help from e-counselling services provided by the universities. Only 141 (47%) students knew about the e-counselling services provided by their universities. However, out of 141 students only 23 (16.3%) students seek social support from e-counselling provided by the universities. Results revealed that there was a clear indication that students who knew about the existence of e-counselling support services provided by the universities and sought help from the service were shown to have lower depression, anxiety, and stress symptoms levels compared to students who knew about the existence but did not seek help and students who were not sure and did not seek help. However, the differences were insignificant as shown in Table 6.

When doing physical exercises such as jogging, cycling, strolling, and/or indoor light exercises, results showed that students who often or very often did physical activities significantly (F(3, 296) = 3.639, p < 0.05) experienced lower stress level compared to students who never or sometimes did physical exercises (Table 6). Nevertheless, there were insignificant differences for depression and anxiety even though depression and anxiety were much reduced for students who often or very often did physical exercises. The result indicates that the stress level can be reduced by regularly doing physical exercises.

Table 6: Depression, anxiety, and stress difference for other coping strategies used

Coping strategy	Categories	Mean score	Depression			Mean score	Anxiety			Mean score	Stress		
			SD	F	Sig		SD	F	Sig		SD	F	Sig
E-counselling support service	Not sure and not seeking help	12.21	6.533			7.56	6.194			19.67	6.136		
	Yes, but not seeking help	11.14	6.604	2.186	0.114	6.96	5.506	0.910	0.404	18.96	6.172	1.027	0.359
	Yes, and seek help	9.48	6.473			5.96	5.596			17.96	5.733		
Do physical exercises such as	Never	12.51	7.047			7.56	5.908			20.85	6.540		
	Sometimes	11.87	6.419	1.841	0.140	7.51	5.964	1.230	0.299	19.59	5.792	3.639*	0.013
	Often	10.54	6.804			6.25	5.825			17.31	6.022		

jogging, cycling, strolling, and indoor light exercises.	Very often	8.60	6.104	5.20	4.663	16.80	7.794
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* p < 0.05 level

5. Conclusion, Recommendations and Future Research

According to a study by Rehman et al. (2021), different professionals such as students, healthcare professionals, university staff, and non-university staff were found to experience depression, anxiety, and stress more than others. The result from this present study further confirms that university students represent a vulnerable population for common mental health disorders even during the fifth wave of the Covid-19 pandemic before the transition to the endemic phase. From the findings, it is very clear that a high proportion of students showed moderate to severe levels of depression, anxiety, and stress symptoms during the fifth wave of the Covid-19 pandemic. All of the depression, anxiety, and stress had strong significant positive correlations with each other. It is suggested that the mental health of Malaysian university students should be closely monitored not only during the pandemic but also during non-pandemic periods.

In terms of coping strategies, the usage of seeking social support for emotional reasons and mental disengagement was associated with significantly higher depression and anxiety levels, while seeking social support for instrumental reasons with higher anxiety levels. A significant association of mental disengagement with higher anxiety levels concurred with the study by Savitsky et al. (2020) among nursing students during the COVID-19 pandemic. Acceptance coping strategy was associated with significantly lower stress levels. There were also other coping strategies studies namely e-counselling support services provided by the universities and doing physical exercises. Results showed that e-counselling support services provided by the universities were not popular among students. Hence, it is recommended e-counselling services should be strengthened by having social support groups that consist of lecturers and students so that supportive skills, such as talking and sharing, can be developed and students may then become very comfortable to let out their feelings (Esia-Donkoh et al., 2011). Doing physical exercises was shown to help cope the stress levels but not depression and anxiety which agreed with Villani et al. (2021) and Cheung et al. (2016). Above all, psychological interventions and online telepsychiatry should be strengthened as they could prove to be useful tools in managing psychological distress (Kassim et al., 2022).

Students' backgrounds such as their socio-demographic and academic profiles can be taken into account for future studies to identify the causes of their physiological symptoms and later take action to help them overcome those symptoms with appropriate coping strategies. Therefore, further research can be done with highlighted details about the different symptoms of depression, anxiety, and stress according to socio-demographic, academic, and COVID-19 characteristics as well as different coping strategies concerning socio-demographic and academic characteristics.

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