Original article

Psychological Impact and Coping Style Among Students of National Defence University of Malaysia during the COVID-19 Pandemic

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Abstract

Introduction: The outbreak of COVID- 19 has caused a significant impact on the world's population. This study examines the impact of COVID-19 on the level of depression, anxiety and stress among students of National Defence University of Malaysia (NDUM), and to assess coping styles during this critical time. *Methods*: This was a cross-sectional study conducted during the Conditional Movement Control Order (CMCO) on May 2020 during the COVID-19 pandemic. DASS-21 and BRIEF COPE were used as the assessment toolsfor this study. Data was analysed using descriptive statistics, Independent T-test and One-way ANOVA with comparisons of multiple variables using post-hoc Tukey's test. *Results:* A total of 603 participants were included in the study. Respondents' mean age was 21.06 ± 1.75. They consisted of 52.6% male, 86.9% Malays and 76.9% non-cadets. The prevalence of depression, anxiety and stress were 51.9%, 46.9% and 18.7% respectively. Female, those who are from the Language Centre and non-cadet students, showed a statistically significant higher score of depression, anxiety and stress. A high-stress score was seen in Bachelor degree students compared to Foundation students. Those with no financial sponsorship showed the highest anxiety score. The most common coping style used among the respondents was religion and the least is substance abuse. *Conclusion:* This study has identified the risk groups for developing psychological distress during times of crisis. Thus, there is an urgent need to address the concern on mental health and provide a structured support for them.

Keywords: *university student;DASS; coping; psychological impact; COVID-19*

Introduction

Infection of the novel Coronavirus-19 (COVID-19) was initially detected and diagnosed in a group of patients with atypical pneumonia in Wuhan, Hubei Province, China, on December 2019[1].Four months later, on March 2020, the World Health Organisation (WHO) declared it as a pandemic.[2] As of early January 2022, there are nearly 290 million

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cases of COVID-19 and 5.5 million deaths reported worldwide.[3] There are multiple challenges in the fight against COVID-19 infection including the unavailability of vaccines at the initial phase of COVID-19 as well as the current main concern on emergence of new mutations of the COVID-19 virus. During the initial phase of the pandemic,most countries enforce strict measures to contain COVID-19 outbreaks by limiting public movements. Several strict measures that were implemented include the closure of borders, strict lockdown, restricted movement orders, and isolation.

Even before the COVID-19 pandemic, youth and university students are more vulnerable to psychological disorders compared to the general population.[4,5] In Malaysia, prior to COVID-19, a study by Shamsuddin et al. on mental health among university students in Malaysia shows a high prevalence of depression, anxiety and stress with the vulnerable groups being females, older students and those from lower and higher income household compared to the middleincome household.[6]

During the pandemic, most academic institutions worldwide have abruptly changed their teaching and learning methods from face-to-face to virtual learning.[7]The sudden change of methods can be challenging for the students with possible adverse psychological outcomes.[8] Multiple studies showed psychological disturbances among university students during the COVID-19 pandemic. [9,10] A study among Bangladesh university students showed 15% and 18% of respondents suffered moderate to severe depression and severe anxiety respectively.[11]Meanwhile, in Malaysia, the prevalence of depression, anxiety and stress were 36.4%, 36.7% and 42.4% respectively during the COVID-19 pandemic. [12] This psychological distress may be contributed by multiple factors such as education, gender, ethnics and social background.

During stressful situations, human beingsare known to practise various coping mechanism strategies. These coping mechanism depends on multiple factors such as personality, environmental and education background. Coping mechanisms can be divided into two main strategies: problem-focused (task orientation) or emotion-focused. [13]

Although there are published study that assessed depression, stress and anxiety level among university students in Malaysia during the COVID-19 pandemic[10,14]but currently there is paucity of data with regards to the psychological effects and coping style among university students in Malaysia during the COVID-19 pandemic, particularly in a unique university such as National Defence University of Malaysia (NDUM) which comprised of both cadets and civilian students.

Hence, the objectives of this study are

1) to determine the prevalence of depression, anxiety and stress among students of NDUM during COVID-19 pandemic,

2) to measure the different coping style of NDUM students during COVID-19 pandemic, and

3) to study the relation of the demographic data and its association to depression, anxiety and stress of the students of NDUM during COVID-19 pandemic.

Materials and methods

Study Design

This cross-sectional study was conducted among undergraduate students of NDUM over a period of two weeks from 2nd of May to 15th May 2020. National Defence University of Malaysia is a unique public university in Malaysia that has two main groups of students; cadets and non-cadets (civilian students). In addition to attending classes and extra-curricular activities in the university, cadet students are required to attend regular military training. The cadets are fully sponsored by the Ministry of Defence for their studies and the ministry provides basic necessities including uniforms and daily meals in the university.

Study Sampling

Sampling was performed using snowball sampling methods. Based on a 95% confidence interval and a 5% margin of error of the 3790-total population, a minimum sample size of 349 was required. Questionnaires generated via Google Form was distributed via the student's council representatives to students in their respective faculty and centre. The study summary and objectives were included in the questionnaire. Respondents' consent was obtained using an informed consent form. Respondents who consented was directed to complete the questionnaire. Inclusion criteria included respondents who are currently an undergraduate student of NDUM, and have access to a reliable Internet data. Those who have self-reported diagnosis of mental illness, postgraduate students and alumni students were

excluded from the study.

Study Instrument

Section A of the questionnaire is on the demographic information of participants that includes gender, age, race and religion. Additional information includes: current year of study, faculty, student's status (cadets or non-cadets), scholarship status and current living status.

Section B and C focus on assessing the psychological status and coping style of the students.Psychological impact was measured using the Depression, Anxiety, and Stress Scale (DASS-21), designed by Lovibond.[15]It consists of 21 items self-reported, simple questionnaire that has been validated to screen for depression, anxiety and stress in the community setting.[16] DASS-21 rated each items on a 4-point Likert scale ranging from 0 (never describes my situation) to 3 (often describes my situation). Ramli et al validated the translated Malay version of DASS-21 for the Malaysian population. [17] In a study by Amir et al, DASS-21 was used to measure the psychological distress in Iran during the COVID-19 pandemic and showed a good reliability.[18]With regards to coping style, BRIEF COPE was used for this study. It is a 28 items self-reported Likert scale questionnaire designed by Carver (1997) and divided into 14 coping styles (religion, positive reinterpretation, acceptance, active coping, planning, self-distraction, use of instrument support, use of emotional support, self-blame, venting on emotion, humour, denial, behaviour disengagement, and substance abuse) used in response to a particular stressor[19]. The translated Malay version of BRIEF COPE questionnaire had been validated.[20]Long Huang et al used BRIEF COPE for their study of coping strategies for nurses and nursing students during COVID-19.[21]

Ethics Approval

Ethics approval was obtained from National Defence University of Malaysia (NDUM) Research Ethics Committee (SF0101-UPNM/2020/SF/SKK/1) prior to collection of data.

Statistical Analysis

The data was analysed using the IBM Statistical Package for Social Sciences (SPSS) Statistics version 26 (New York, USA). Descriptive statistics (frequency, percentage, mean and standard deviation) were used for analysis of the demographic data, DASS and BRIEFCOPE score. Independent sample T-test and One-way ANOVA were used to compare the means between the variables. Tukey's post-hoc test was used to check for intra-variable significance whenever the ANOVA test was significant. P value <0.05 is considered statistically significant and confidence interval was 95%.

Results

A total of 603 responses wereincluded in the study. The summary of the demographic characteristics of the study respondents is shown in **Table I**. Majority of the respondents are male (52.6%), Malays (86.9%) and non-cadets (76.9%). Most of them described their monthly household income as less than RM4849 (62.9%) and 63% of respondents did not receive sponsorship for their study.During the MCO, majority of the students stayed with their family (92.5%), while only 7.5% stayed in the hostel provided by the NDUM. Most of them reported that the number of occupants of their residency ranged between 5-10 people (71.5%).

Table I: *Demographic Characteristics of the Study Respondents*

Variables	n (%)
Age (years)	Mean 21.06 (SD 1.75)
Gender	
Male	317 (52.6)
Female	286 (47.4)
Ethnicity	
Malay	524 (86.9)
Chinese	21 (3.5)
Indian	42 (7.0)
Bumiputera	12 (2.0)
Others	4 (0.7)
Student's status	
Cadet	139 (23.1)
Non-cadet	464 (76.9)
*Household monthly income	
RM <4849	379 (62.9)
RM 4850 – 10,959	148 (24.5)
RM 11,000 - above	73 (12.1)
Unknown	3 (0.5)
Sponsorship status	
Sponsored	223 (37.0)
Non-sponsored	380 (63.0)
Faculty	
Academy of Defence Fitness	45 (7.5)

Variables	n (%)
Center for Defence Foundation Studies	89 (14.8)
Faculty of Defence Science and Technology	81 (13.4)
Faculty of Defence Studies and Management	105 (17.4)
Faculty of Engineering	110 (18.2)
Faculty of Medicine and Health Defence	142 (23.7)
Language Centre	31 (5.1)
Current education program	
Foundation Year	89 (14.8)
Diploma	54 (9.0)
Bachelor degree	460 (76.3)
Residency during CMCO	
NDUM Hostel	45 (7.5)
With family or others	558 (92.5)
Number of occupants per residency during CMCO	
1-4 people	158 (26.2)
5-10 people	431 (71.5)
More than 10 people	14 (2.3)

* Household income based on Department of Statistics Malaysia (DOSM), 2020

Figure I illustrated the level of depression, anxiety and stress according to severity. The mean score of depression, anxiety and stress based on the demographic variables are depicted in **Table II**. Analysis using independent T-test demonstrated that female students had a significant higher mean score of depression, anxiety and stress as compared to male students. Non-cadet students showed a significant higher mean score of depression, anxiety and stress than the cadet students. Students who did not receive any sponsorship for their study were found to be more anxious than those who were sponsored ($p = .025$).

Analysis using one-way ANOVA showed that a statistically significant higher mean score for depression, anxiety and stress were found among the Language Centre students as compared to other faculties with $p = .019$, $p = .001$ and $p = <.001$. Further

analysis by Tukey's post-hoc test (**Table III**) showed that Language Centre have statistically significant higher depression mean score compare to Academy of Defence Fitness and Center for Defence Foundation Studies. There is also statistically significant higher mean anxiety score in Language Centre compared to all other Faculties and Centers. Language Centre also shows a higher statistically significant mean stress score compared to the Academy of Defence Fitness, Center for Defence Foundation Studies, Faculty of Medicine and Defence Health, and Faculty of Science, Defence and Management.

Our study demonstrated students who are in their Bachelor degree level have a significant higher mean level of stress. Post-hoc analysis shows a significant higher stress level in Bachelor degree students compared to the Foundation students but no significant difference for Bachelor degree and Diploma students.

Ethnicity, household income, type of residency and number of occupants per residency showed no significant differences in depression, anxiety and stress levels.

The rank of coping strategies based on the mean score as rated by the NDUM students is shown in **Table IV**. Religion was rated as the most utilised coping method, followed by positive reinterpretation and acceptance. Meanwhile, substance abuse is the least reported coping method used by the students.
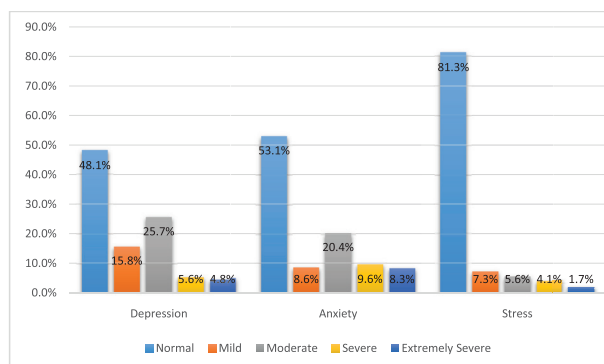
Figure I: Level of DASS-21 score according to severity (%)

Table II: Association of Depression, anxiety and stress scores with demographic variables of the students

	n	Depression Mean [22]	p-value	Anxiety Mean [22]	p-value	Stress Mean [22]	p-value
Gender							
Male	317	9.14(8.04)	< .001**	6.92 (6.55)	<.001**	7.90 (7.96)	.001*
Female	286	12.4 (8.13)		9.52 (7.55)		10.08(8.39)	
Ethnicity							
Malay	524	10.76 (8.20)		8.32 (7.19)		8.98 (8.37)	
Chinese	21	8.00 (8.81)		5.52 (5.83)		6.00 (6.48)	
Indian	42	10.33 (8.35)	.481	6.95 (6.72)	.069	9.24 (7.00)	.442
Bumiputera	12	13.00 (7.50)		7.33 (6.05)		9.33 (7.45)	
Others	4	12.5 (12.37)		15.5 (11.48)		13.0 (11.61)	
Student's status							
Cadet	139	9.01 (7.97)	.006*	6.88 (6.61)	.016*	7.32 (7.74)	.009*
Non-cadet	464	11.19 (8.26)		8.53 (7.27)		9.41 (8.32)	
Sponsorship status							
Sponsored	223	9.94 (8.37)		7.30 (6.91)		8.26 (8.07)	
Non-sponsored	380	11.13 (8.14)	0.87	8.65 (7.25)	0.025*	9.33 (8.30)	0.125
Faculty							
Academy of Defence Fitness	45	8.40 (6.76)		6.49 (6.09)		6.40 (6.39)	
Center for Defence Foundation Studies	89	9.17 (6.84)		7.03 (5.92)		6.25 (5.69)	
Faculty of Defence Science and Technology	81	11.11 (9.03)		8.15 (7.47)		9.53 (9.38)	
Faculty of Defence Studies and Management	105	11.28 (8.54)	.019*	8.30 (7.39)	.001*	9.30 (8.27)	< .001**
Faculty of Engineering	110	10.80 (7.94)		8.62 (7.10)		9.56 (8.15)	
Faculty of Medicine and Defence Health	142	10.69 (8.47)		7.79 (7.00)		9.13 (8.33)	
Language Centre	31	14.84 (8.24)		13.29 (8.98)		14.39 (10.06)	
Current education program							
Foundation Year	89	9.17 (6.84)	.053	7.03 (5.93)	.139	6.25 (5.69)	.001*
Diploma	54	9.33 (6.73)		7.27 (6.81)		7.33 (6.48)	
Bachelor Degree	460	11.14 (8.60)		8.47 (7.39)		9.64 (8.70)	

*. The mean difference is significant at the 0.05 level.

Table III: Post Hoc Test, Tukey HSD

		Mean Difference (I-J)	Std Error	Sig	95% Confidence Interval	
					Lower Bound	Upper Bound
Depression						
Language Centre	Academy of Defence Fitness	6.439*	1.908	0.014	0.79	12.08
	Center for Defence Foundation Studies	5.670*	1.705	0.016	0.63	10.71
	Faculty of Defence Science and Technology	3.728	1.727	0.320	-1.38	8.84
	Faculty of Defence Studies and Management	3.563	1.671	0.335	-1.38	8.51
	Faculty of Engineering	4.039	1.662	0.188	-0.88	8.96
	Faculty of Medicine and Defence Health	4.149	1.621	0.140	-0.65	8.94
Anxiety						
Language Centre	Academy of Defence Fitness	6.801*	1.648	0.001	1.93	11.68
	Center for Defence Foundation Studies	6.257*	1.472	0.000	1.90	10.61
	Faculty of Defence Science and Technology	5.142*	1.491	0.011	0.73	9.55
	Faculty of Defence Studies and Management	4.986*	1.443	0.011	0.72	9.26
	Faculty of Engineering	4.672*	1.436	0.020	0.42	8.92
	Faculty of Medicine and Defence Health	5.502*	1.400	0.002	1.36	9.64
Stress						
Language Centre	Academy of Defence Fitness	7.987*	1.884	0.001	2.41	13.56
	Center for Defence Foundation Studies	8.140*	1.684	0.000	3.16	13.12
	Faculty of Defence Science and Technology	4.856	1.705	0.068	-0.19	9.90
	Faculty of Defence Studies and Management	5.092*	1.650	0.034	0.21	9.97
	Faculty of Engineering	4.823	1.642	0.053	-0.03	9.68
	Faculty of Medicine and Defence Health	5.260*	1.601	0.018	0.53	10.00

*. The mean difference is significant at the 0.05 level.

Table IV: *Rank of the mean coping methods that are most commonly practiced by the students*

Coping methods	Mean (SD)
Religion	6.16 (1.70)
Positive reinterpretation	5.46 (1.62)
Acceptance	5.44 (1.67)
Active coping	5.30 (1.53)
Planning	5.29 (1.66)
Self-distraction	5.12 (1.48)
Use of instrument support	4.75 (1.66)
Use of emotional support	4.44 (1.63)
Self-blame	4.24 (1.68)
Venting on emotion	3.78 (1.43)
Humour	3.70 (1.56)
Denial	3.16 (1.35)
Behaviour disengagement	3.02 (1.28)
Substance abuse	2.10 (0.56)

Discussion

The outbreak of COVID- 19 has caused a significant impact on social, psychological and economical aspect onto the world and its population. To date, since the outbreak of COVID-19 in Malaysia, the government had imposed different levels of MCO with its initial phase on March 2020 and due to this, the Ministry of Higher Education (MoHE) had enforced public universities to change their teaching and assessment to online from face-to-face during the peak of outbreaks.[23] The sudden changes in learning and teaching from face-to-face to online teaching, as well as the needs to adapt immediately to technology can be a source of stress to the students. Furthermore, studying isolated from their study peers and lack of social interaction among students have their consequences and these may affect the mental health of the students.

This study showed 51.9%, 46.9% and 18.7% of the respondents' experience symptoms of depression, anxiety and stress respectively during the two weeks period. The prevalence of anxiety and stress is lower in our study compare to the study by Foong et al among the public and private university students in Malaysia.[14] But our study showed a higher prevalence of depression. This discrepancy is due to the difference in demographic data as well as their study is inclusive of the postgraduate and private university students whom are mainly self-sponsored and has education loan.

Female students significantly have a higher mean of depression, anxiety, and stress compared to the male students. This study strengthens the findings of the other studies for COVID-19 among university students. [24,25] This can be due to the nature of females that express more emotions, while males show a greater integration of reward motivation and emotional stress system.[26]

In addition, this study showed cadet students have a lower mean score of depression, anxiety and stress compared to the non-cadet (civilian) students during this stressful period of COVID-19. Cadets are exposed to stressful military training, therefore they possibly have a higher stress resistance.[27] Moreover, the cadets in NDUM have a good peer support system within their battalion during this difficult times.

Students who are from the Language Centre showed a statistically higher mean score of anxiety compared to all other faculties. In contrary, a study by Sundarasan et al. showed management students score higher level of anxiety than other faculties.[10]The difference in the findings may be contributed by the differences in demographic of the sample population. In addition, Language Centre shows a consistent statistically significant higher mean score of depression, anxiety and stress score compared to the Academy of Defence Fitness. It is assumable that the students from Academy of Defence Fitness are physically active. This result is supported by another study which regards physically fit person to have better psychological adjustment.[28]

Students who are currently in the Bachelor Degree Programme display a statistically significantly higher stress level compared to the Foundation. Students who are under the Bachelor Degree Programme have a higher burden of study and practical workload compared to the Foundation students. Moreover, as the students from the Foundation programme are still early in their education phase, they are not yet burdened to think about job insecurities compared to the students of Bachelor Degree Programme.

Those who are non-sponsored (education loan and self-funded) students obtained a higher mean score of anxiety compared to those who are under

scholarship during this COVID-19 pandemic. Previous research reported that financial constrains is one of the main stressors among university students during COVID-19.[11,29]. Moreover, the MCO would contribute to loss of extra income for the students to help fund their studies due to the restrictions in movement as well as closure of most unessential sectors.

Many studies have discussed the relationship between adverse psychological impact and coping style.[30-32] A meta-analysis by Penley et al concluded that problem-focused coping correlated with positive overall health outcome, whereby confrontive coping, correlates with negative outcome.[33]The BRIEF COPE used in this study, can be classified into adaptive and maladaptive coping style.[19] In this study, most used coping styles are religion, positive reinterpretation and acceptance compared to seeking support (instrumental and emotional support). While, the three least coping styles that are adapted by the students are denial, behavioural disengagement and substance abuse. The result of our study is consistent with the study done among university students in Pakistan during COVID 19.[34] A study by Gurvich et al shows that positive reinterpretation and acceptance contributes to a better mental health during COVID 19.[35]

Study Strength, Limitation and Recommendation

The result of our study has been able fill the gap in terms of the psychological impact and identifying different coping skills among student in NDUM during the COVID-19 pandemic. Firstly, as this is a cross sectional study using convenient sampling, the result will not be generalisable to students from other universities in Malaysia making it a limitation of this study. For an equal representation of subgroup within the population, a stratified random sampling could be used in the future. Secondly the data was obtained through a self-administered questionnaire, self-reported and online feedback, hence there is a possibility of a response bias.

Moving forward, a longitudinal follow-up study can be conducted to assess the long-term mental health impact of the COVID-19 pandemic on university students. Although, it has been two years since the emergence of COVID-19, but the teaching and learning experiences in the tertiary academic institutions have not been the same with the emergence of cluster cases of COVID-19 in university requiring students and academic staff to be quarantined and be prepared for cancellation of class and exams. [36]

Conclusions

Our study showed that female, non-cadet students, students of Language Centre, non-sponsored students and Bachelor degree students have a significant higher level of psychological impact during COVID-19 pandemic.Adaptive coping strategy are the most adopted coping strategies by the students at NDUM during this critical time. We recommend that the higher authorities take focused and aggressive steps to provide a well–structured mental health support for the university students during the pandemic.

Acknowledgements

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