STRESS, ANXIETY AND DEPRESSION STATUS OF MALAYSIAN PUBLIC IN RELATION TO THE COVID-19 PANDEMIC AND MOVEMENT CONTROL ORDER

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ABSTRACT

Mental health conditions (MHC) have been found to have a negative effect on the outcome of respiratory diseases. MHC may increase readmissions and prolonged hospital stay for non-psychiatric hospitalisations. The study aimed to look at the depression, anxiety, and stress (DAS) levels of the Malaysian public in response to the pandemic and movement control order (MCO), using the Depression, Anxiety and Stress Scale 21 (DASS-21) questionnaire at different MCO stages. A cross-sectional survey was conducted using a non-probability and snowballing sampling method involving 317 respondents above 18 years of age in Malaysia. Descriptive statistics and t-tests were used to analyse the data to identify the DAS levels during the early phase MCO compared to the recovery phase MCO. Results demonstrate the stress level to be higher during the early phase in comparison to the recovery phase; however, for anxiety and depression, these levels are identical in both phases. Additionally, t-test results exhibit similar findings, where significant differences (at 5%) are found for stress levels between the early and recovery phases. Meanwhile, for anxiety levels, a significant difference is only found at the 10% level of significance. Interestingly, for depression, no significant difference is found between the two phases. The decrease in stress levels can be explained by the adaptation of the public response to the COVID-19 pandemic. Nevertheless, to a certain extent, anxiety was still present and postulated due to apprehension and uncertainties about the COVID-19 pandemic progression with time. Future research should further assess the public response toward the latest COVID-19 pandemic dynamics, and reasons for the anxiety component can be established.

Keywords: COVID-19 pandemic, stress, anxiety, depression, movement control order

INTRODUCTION

Across centuries, pandemics have left their traces in history. The successive Bubonic Plague was reported to be the most impactful, causing up to a higher estimate of 200 million deaths around the globe (Jack & Vasso, 2020). In the early 20th century, the Spanish Flu (caused by the H1N1 influenza A) was estimated to cause up to about 100 million deaths. Meanwhile, in the 21st century, the H1N1 pandemic in 2009-2010 caused almost 290,000 deaths, followed by the COVID-19 pandemic. The first COVID-19 case was identified in Malaysia in January 2020. Until 8th October 2021, it has claimed 4,831,486 lives globally (World Health Organisation) and 27,265 deaths locally until 9th October 2021 (Ministry of Health, Malaysia). Worldwide, the COVID-19 pandemic has affected almost every aspect of human life and posed negative impacts on coping, mental health status,

and sleep quality (Cao et al., 2020; Guo et al., 2020; El-Zoghby, S. M. et al., 2020; Mazza et al., 2020; Roy et al., 2020; Stanton et al., 2020).

Malaysia has undergone a few stages of movement control orders (MCOs) since its first implementation in March 2021. Recovery MCO was the term coined for the period between June to December 2020. The COVID-19 pandemic has received more tension due to social media influences and information overloading (Liu et al., 2021). It has caused impacts on not only health but wealth, as well as emotional and social well-being. Relationships may also have been jeopardised in accordance with lower preparation in facing a serious pandemic (Mohamad S.N. et al., 2021). Many papers have reported an increase in negative psychological impacts either internationally or locally (Wang et al., 2021; Shah et al., 2021; Faez et al., 2020; Zhou et al., 2020), but not many assessed these in relation to the different phases of the MCO. A recent large-scale study has also found that MHC, especially anxiety, could lead to severe COVID-19 infection outcomes, increased readmissions, and prolonged hospital stays (Koyama et al., 2022). Thus, this paper aims to determine the mental health status of the Malaysian public using the Depression, Anxiety and Stress (DAS) level scales, in relation to the different MCO stages during the COVID-19 pandemic, at its first wave in Malaysia.

MATERIALS AND METHODS

Using the Epi Info Version 5.5.5. (CDC, Atlanta, USA), 270 respondents were calculated to be sufficient for the study. This was based on a population survey calculation, assuming a 50% expected frequency, 90% confidence interval and 5% margin of error.

A cross-sectional survey was carried out over a six-month period between June and November 2020. A non-probability and snowballing sampling method were applied, involving 317 respondents above 18 years of age in Malaysia and able to understand either the Malay or English language. To minimise the risk of infection, an online survey was distributed using a link containing a brief explanation about the study, including a request for consent and their email address. The 'Google Form' link was distributed and re-distributed through social media platforms like Facebook, WhatsApp, Instagram, and Telegram. In addition, the respondents' email addresses were collected to identify any moderate to severe psychological impacts among participants and advice for further assessment. Note that those with existing psychiatric illnesses were excluded.

The distributed questionnaire is a self-administered survey and contains questions on respondents' sociodemographic profile (age, gender, ethnicity, occupation, education level, marital status, location, number of households, and income) and their mental health status. It was measured using the validated 21-item Depression, Anxiety, Stress Scale (DASS-21). Another question incorporated at the end of the sociodemographic questions was whether the respondents had any family members, friends, or colleagues who died of or were diagnosed with COVID-19. Respondents had to answer the questions involving depression, anxiety and stress (DAS) where they rate each question with either 0, 1, 2 or 3 (0 – did not apply to me at all, 1 – applied to me to some degree, or some of the time, 2 – applied to me to a considerable degree, or a good part of the time, and 3 – applied to me very much, or most of the time). As the study was done during the recovery movement control order (MCO) period, the respondents were required to answer the DASS-21 items based on a recall experience during the early MCO period as well as their recovery MCO DASS-21 status. The DASS-21 questionnaire is available in the public domain and has been translated and validated into a few languages, including Malay (Musa et al., 2007). It is also available in other languages, such as Chinese (Chan et al., 2012), Italian (Severino & Haynes, 2010), and Spanish (Arturo et al., 2005). The Malay DASS-21 has been reported to have good internal consistency reliability scores of more than 0.7 for all subscales (0.84 for depression, 0.74 for anxiety, and 0.79 for stress) (Musa et al., 2007). Each subscale is allocated 7 items, which can be summed up and multiplied by two to determine its severity level, in which its accuracy is similar to the original DASS-42. Table 1 guides the subscales scores (Lovibond and Lovibond 1995).

Table 1. Interpretation of Scores in the DASS

	Depression	Anxiety	Stress
Normal	0 - 9	0 - 7	0 - 14
Mild	10 - 13	8 - 9	15 - 18
Moderate	14 - 20	10 - 14	19 - 25
Severe	21 - 27	15 - 19	26 - 33
Extremely Severe	28 +	20 +	34 +

For example, when a respondent answers the questions involving depression, the scores will be summed up and referred to as the subscale scores. If the respondent scores 20 on the depression component, it means their level of depression is moderate.

ETHICAL ISSUES

This research was approved by the Research Ethics Committee of Universiti Sains Islam Malaysia (USIM/JKEP/2020-93). Respondents' participation was voluntary, and consent was implied once they completed the questionnaire. The survey results are also confidential unless the respondents were considered at high risk for psychological distress; thus, they were informed that they would be contacted via email.

DATA ANALYSIS

The Statistical Package for Social Sciences (SPSS™) version 26.0 (IBM Corp., Armonk, NY, USA) was used for data entry and statistical analysis. Data analysis incorporated various steps to match the objective of the study. Descriptive statistics were

described and demonstrated in frequency and percentage tables involving the sociodemographic components and mental health status during the early and recovery phase. The levels for mental health status follow the guide in Table 1 categories: normal, mild, moderate, severe, and extremely severe. Subsequently, paired t-test was used to compare the means of early movement control order (MCO) vs recovery MCO and its relation to depression, anxiety, and stress (DAS) subscales, to see whether there are any differences in DAS levels in the early phase of MCO vs the recovery phase of MCO. Additionally, multiple regression analysis was performed to determine the predictors of the mental health status, where each component of the Depression, Anxiety and Stress Scale (DASS) was set as the dependent variable. In contrast, sociodemographic variables were set to be independent variables. In each of the dependent variables, both phases of MCO are analysed. Note that statistical significance is reported at a p-value of less than 0.05. The regression is represented by equation 1 below.

$$y_i = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_7 + b_8x_8 + \varepsilon_i, \qquad \text{(Eq. 1)}$$

where y represents either stress, anxiety or depression, while each of the x's represents the sociodemographic variables age, education, gender, ethnicity, income, occupation, number of households, and state. Also, ε_i represents the error term.

RESULTS AND DISCUSSIONS

The study included 317 respondents. The sociodemographic profile of the study respondents is demonstrated in Table 2. More than two-thirds of the respondents were females (79.8%), about 73.82% were from the 18-30 years old category, and about half had a bachelor's degree education level and were largely students (57.1%). This is similar to previous studies where the respondents too were largely the younger age groups (Zhou et al., 2020; Wang et al., 2021). Apart from that, coverage of respondents was considered acceptable, with each state in Malaysia having a representative respondent. Only 14% had an acquaintance tested positive for COVID-19, whereas 2 respondents declared knowing people who died of COVID-19.

Table 2. Sociodemographic profile of respondents

Characteristics		Frequency (%) (N=317)
Age	18 to 30 years old	234 (73.82)
	31 to 40 years old	46 (14.51)
	41 to 50 years old	24 (7.57)
	Above 50 years old	13 (4.10)
Gender	Male	64 (20.19)
	Female	253 (79.81)
Ethnicity	Malay	284 (89.59)
	Chinese	27 (8.52)
	Indian	0 (0.00)
	Others	6 (1.89)
Occupation	Professional	41 (12.93)
	Academician	29 (9.15)
	Executive	22 (6.94)
	Merchant / Businessman	3 (0.95)
	Small business	5 (1.58)
	Student	181 (57.10)
	Retired	3 (0.95)
	Unemployed	21 (6.62)
	Others	12 (3.79)
Marital status	Single	235 (74.13)
	Married	78 (24.61)
	Others	4 (1.26)
Education level	Primary School	1 (0.32)
	Secondary School	15 (4.73)
	Diploma / A-levels / STPM / Foundation	72 (22.71)
	Bachelor's Degree	163 (51.42)
	Master's Degree	46 (14.51)
	PhD	12 (3.79)
	Others	8 (2.52)
Location	Perlis	3 (0.95)
	Kedah	23 (7.26)
	Pulau Pinang	16 (5.05)

	Perak	12 (3.79)
	Selangor	98 (30.91)
	W.P. Kuala Lumpur	30 (9.46)
	Melaka	14 (4.42)
	Negeri Sembilan	17 (5.36)
	Johor	34 (10.73)
	Kelantan	32 (10.09)
	Terengganu	16 (5.05)
	Pahang	13 (4.10)
	Sabah	5 (1.58)
	Sarawak	4 (1.2)
Number of household	2 - 3	69 (21.77)
	4 - 5	114 (35.96)
	6 – 7	110 (34.70)
	More Than 8	24 (7.57)
Income	Below RM2000	104 (32.81)
	RM2001 - RM4000	64 (20.19)
	RM4001 - RM6000	51 (16.09)
	RM6001 - RM8000	32 (10.09)
	RM8001 - RM10,000	22 (6.94)
	More than RM10,001	44 (13.88)
Family members/colleagues/friends tested positive or died of COVID-19	Tested positive	44 (13.88)
	Died	2 (0.63)
	No	271 (85.49)

Table 3. Comparison of respondents' mental health status during the early phase and recovery phase MCO (N=317)

MCO Period	Level	Depression *n (%)*	Anxiety *n (%)*	Stress *n (%)*
Early Phase	Normal	205 (64.67)	239 (75.39)	204 (64.35)
	Mild	51 (16.09)	43 (13.56)	67 (21.14)
	Moderate	31 (9.78)	21 (6.62)	29 (9.15)
	Severe	16 (5.05)	7 (2.21)	9 (2.84)
	Extremely Severe	14 (4.42)	7 (2.21)	8 (2.52)
Recovery Phase	Normal	210 (66.25)	241 (76.03)	223 (70.35)
	Mild	45 (14.20)	43 (13.56)	59 (18.61)
	Moderate	27 (8.52)	23 (7.26)	24 (7.57)
	Severe	19 (5.99)	5 (1.58)	6 (1.89)
	Extremely Severe	16 (5.05)	5 (1.58)	5 (1.58)

Table 3 summarises the comparison of respondents' mental health status during the early phase and recovery phase of the movement control order (MCO). During the early phase of MCO, 35.33% of the respondents had a minimum of mild to extremely severe depression levels. For anxiety, about 24.61% had a minimum of mild to extremely severe anxiety levels, whilst 35.65% were reported to have mild to extremely severe stress levels.

The overall depression status increased from early phase MCO (35.33%) to the recovery MCO (33.75%). Paired t-test analysis showed an increase in the mean depression scale comparing the early and recovery phases of MCO (10.08 and 10.24), respectively. However, the difference was not statistically significant (p=0.327). The increase in mean depression level (although not significant) was probably due to many struggles that the public had to endure throughout the COVID-19 pandemic. Another study in Malaysia reported the depression status to be 59.2% (Wong et al., 2021), but this study had a larger sample size, and their survey was based on 2-months post initial stage of COVID-19. A study in China reported that the moderate to extremely severe depression status during the initial stage was 16.5% (Wang et al., 2020). Note that moderate to extremely severe depression status in this study is shown to be 19.25%, which is slightly higher than in China. Many Malaysians were affected in terms of job security (Che Omar et al., 2020; Rahman et al., 2020), the education system was jeopardised by a lack of internet coverage in rural areas (Faez et al., 2020), and increased domestic violence reported in the media (Mohammed et al., 2021). Thus, it is not surprising that the prevalence of moderate to extremely severe depression is considered high in this study.

Total anxiety status decreased between early and recovery MCOs (24.61% to 23.97%). Table 4 shows that for the mean anxiety score, the significant difference is only noted at 10% when comparing the early and recovery MCO. However, this score is noted to be between normal to mild anxiety levels (7.46 and 7.09, respectively, where normal is 0-7 and mild is 8-9). Although normal to mild anxiety level is considered not too serious, there is a risk of anxiety being left undiagnosed or masked by other symptoms. The fact that at recovery MCO, the prevalence of anxiety is still present among almost a quarter of the respondents is quite alarming. It could be postulated due to apprehension and uncertainties about the COVID-19 pandemic progression with time. Wong et al. (2021) reported the total anxiety status as 55.1%, while Wang et al. (2021) reported 28.8%, which is higher

than what was reported in this study. Other than that, both studies had larger sample sizes, which could have contributed to the larger prevalence of anxiety detected.

Overall stress status decreased comparing the early and recovery MCO (35.65% to 29.65%) and is supported by the mean stress level difference, which is statistically significant (p=0.0001) as shown in Table 4. Again, compared to previous studies, Wong et al. (2021) reported that the stress status among Malaysians was 30.6% two months after the pandemic onset, while Wang et al. (2021) reported 8.1% of stress status in the Chinese population, which is a startling difference. Assumingly for this study, the Malaysian public could be less stressed as they could have developed better coping strategies toward recovery MCO.

Table 4. Paired t-test results for Stress, Anxiety, and Depression

Variables (Score)	Overall (N=317)	Before (Early Phase MCO)	After (Recovery phase MCO)	t-stat	P-value*
Stress [Mean, (SD)]	8.73 (8.92)	9.37 (9.48)	8.09 (8.30)	3.72	0.0001*
Anxiety [Mean, (SD)]	7.27 (8.78)	7.46 (8.91)	7.09 (8.67)	1.406	0.08
Depression [Mean, (SD)]	10.16 (11.14)	10.08 (11.08)	10.24 (11.24)	-0.447	0.327

*P-value significant at < 0.05

Surprisingly, in assessing the association of the variables with each Depression, Anxiety and Stress Scale 21 (DASS-21) subscale, only age and/or education level showed a significant result in this study. Both age (younger age group) and education were significantly associated with depression during both MCO phases (Table 5). In addition, education was significantly associated with anxiety during the recovery phase (Table 6), with it being a significant predictor of stress during both MCO phases (Table 7). However, the R^2 was not too reliable for all subscales. Other sociodemographic data such as gender, ethnicity, income, occupation, number of households, and state they are from do not demonstrate any significant association. Alternatively, recent studies have shown that variables such as younger age- particularly students, higher education level, being single, females, and less fortunate financially- were susceptible to mental health problems (Kassim et al., 2021; Wong et al., 2021; Wang et al., 2021).

Table 5. The depression level of Malaysians during the early phase and recovery phase MCO.

MCO Period	Model	Unstandardised Coefficients		Standardised Coefficients		
		B	Std. Error	Beta	t	Sig.
Early phase	(Constant)	12.800	2.434		5.259	.000
	Age	-1.531	.556	-.216	-2.755	.006
	Education	-.908	.419	-.130	-2.166	.031
Recovery phase	(Constant)	13.643	2.457		5.552	.000
	Age	-1.332	.561	-.186	-2.374	.018
	Education	-1.118	.424	-.158	-2.640	.009

a. Dependent variable: depression level
b. R^2 early phase MCO: 0.079
c. R^2 recovery phase MCO: 0.081

Table 6. The anxiety level of Malaysians during the early phase and recovery phase MCO.

MCO Period	Model	Unstandardised Coefficients		Standardised Coefficients		
		B	Std. Error	Beta	t	Sig.
Early phase	(Constant)	9.142	2.004		4.562	.000
	Age	-.751	.457	-.131	-1.641	.102
	Education	-.539	.345	-.095	-1.560	.120
Recovery phase	(Constant)	9.127	1.944		4.695	.000
	Age	-.720	.444	-.129	-1.623	.106
	Education	-.733	.335	-.133	-2.189	.029

a. Dependent variable: anxiety level
b. R^2 early phase MCO: 0.044
c. R^2 recovery phase MCO: 0.051

Table 7. The stress level of Malaysians during the early phase and recovery phase MCO.

MCO Period	Model	Unstandardised Coefficients		Standardised Coefficients		
		B	Std. Error	Beta	t	Sig.
Early phase	(Constant)	10.972	2.095		5.236	.000
	Age	-.835	.478	-.138	-1.745	.082
	Education	-.794	.361	-.133	-2.197	.029
Recovery phase	(Constant)	10.269	1.819		5.646	.000
	Age	-.676	.415	-.128	-1.627	.105
	Education	-.935	.313	-.180	-2.983	.003

a. Dependent variable: stress level

b. R^2 early phase MCO: 0.066
c. R^2 recovery phase MCO: 0.73

CONCLUSIONS

Since this study applied a non-probability sampling, the results would not represent the true Malaysian population and cannot be generalised. Furthermore, recall bias could not be neglected despite the global COVID-19 pandemic being a significant change and occurrence. Also, the Depression, Anxiety and Stress Scale 21 (DASS-21) questionnaire is only an objective assessment mainly for research purposes and does not replace a clinical assessment and diagnosis for psychiatric conditions. However, the strength of this study is that it assessed the respondents' psychological status at early and recovery movement control orders (MCOs) during the first wave.

This study found a significant reduction of stress comparing early and recovery MCOs. Both depression and anxiety levels were not affected by the COVID-19 pandemic or MCO, despite the increase in mean depression status. In both MCO phases, age and education were significant predictors of depression, while only education was a significant predictor of stress. Note that education was a significant predictor of anxiety only during the recovery MCO.

Though not significant, a small number of the respondents fell into the severe to extremely severe depression categories during the recovery MCO. Thus, it is important to subject them to further professional assessment and reinforce the use of DASS-21 as a screening tool for depression, anxiety, and stress (DAS), but not for diagnosis. Although anxiety was found to be reduced at the p-value of 10% at recovery MCO, there are questions about how many are left underdiagnosed or masked by other symptoms. Furthermore, because age and education are important predictors of depression, education level predicts stress for both MCO phases. Hence, special attention must be given to the youngsters of Malaysia, especially those in the age group of 18-30 years old.

Future research should address the different stages of COVID-19 pandemic dynamics. It would be worth exploring whether the current vaccination status in Malaysia has any improvement on the psychological status of the Malaysian public and how it affects their preparedness to face future waves if there are more to come.

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CONFLICT OF INTEREST

The authors declare there was no conflict of interest involved in this study.

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