ORIGINAL ARTICLE

EFFECTS OF MOVEMENT CONTROL ORDER (MCO) ON ANXIETY AND DEPRESSION AMONG MEDICAL STUDENTS OF ROYAL COLLEGE OF MEDICINE PERAK (RCMP) DURING COVID-19 PANDEMIC.

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Abstract

Introduction: COVID-19 cases are increasing globally, and this situation can affect not only physical health but also mental health of human beings. Movement Control Order (MCO) is a measure used in Malaysia to break the chain of transmission and to curb the spread of infection. Anxiety and depression statistics are at a worrisome level because of this crisis. Effects of MCO have been identified as a factor causing anxiety and depression amongst the medical students during this Pandemic. This study was undertaken to determine the effects of MCO during COVID-19 pandemic on the anxiety and depression among the medical students in University Kuala Lumpur (UniKL) Royal College of Medicine Perak (UniKL RCMP) and to find out the association with sociodemographic factors.

Materials and Methods: This was a cross sectional study involving 227 medical students of UniKL RCMP from Year 1 to Year 5. Using systematic sampling method, data was collected through an online survey. The online questionnaire included Patients Health Questionnaire-9 (PHQ-9) for assessing depression, the Generalized Anxiety Disorder-7 (GAD-7) for assessing anxiety and approved self-written questionnaire to assess for the MCO effects.

Results: This study found that 16.7 % (n=38) of the respondents were having anxiety, while 30.4% (n=69) were having depression. MCO effects had an impact on anxiety in 24.4% (n=33) and on depression in 45.2% (n=61). The associations between effects of MCO and anxiety and depression were statistically significant with p-value less than 0.001. Students who were exposed to the effects of MCO were 5.62 times (OR: 5.62, 95% CI: 3.03 – 7.77) and 8.65 times (OR: 8.65, 95% CI: 5.49 – 13.73) more likely to suffer from anxiety and depression respectively, compared to those who were not.

Conclusion: From this study, we can conclude that effects of MCO during COVID-19 Pandemic have a significant influence on anxiety and depression among medical students of UniKL RCMP during COVID-19 pandemic, which needs early identification and intervention.

Introduction

Anxiety and depression are worldwide problems which reflect the mental health of the population.[1] According to World Health Organization, anxiety is an emotion characterized by feelings of tension, worried thoughts, and physical changes like increased blood pressure while depression is a common mental disorder that presents with depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep and appetite and poor concentration.[2]

Growing number of cases of a novel Coronavirus (COVID-19) had been detected in Wuhan, a large city of 11 million people in central China beginning in December 2019.[3] However, the COVID-19 outbreak was not confined to China. Malaysia announced its first occurrence on 25th January 2020. Due to a significant spike, on 16th March 2020, Malaysia announced "Movement Control Order" (i.e. lockdown) as a public health measure to maintain a social distance between individuals by staying at home.[4] MCO could benefit physical health but on the other hand it can predispose to mental disorders too.[5] In addition to the increasing mortality rate, nations across the globe suffered from an increase in psychological problems, i.e., anxiety and depression among individuals of all ages. University students were no exception. When all educational institutions were closed unprecedentedly, they were more distressed as they had to attend long hours of online classes.[5] Some students also experienced poor sleep during lockdown by reduced sleep quality as they were having additional stress due to delayed academic activities because of COVID-19.[6] Loss of social support during pandemic causes people to be more vulnerable towards mental disorders especially if their loved ones are diagnosed positive during a pandemic such as COVID-19. In this time of vulnerability, many irresponsible people spreading fake news leading to misinformation through social media also contribute to public fear in contracting the infection.[7]

Medical education being one of the most academically and emotionally demanding training programs out of all profession,[11] the curriculum may contribute to the high prevalence of psychological ill-health among medical students.[12] Furthermore, if they are unable to cope with the great level of stress of medical education, it may lead to a series of consequences at both personal and professional level.[13] Depression could affect students' ability to work, study, interact with peers, or take care of themselves.[14] and the prevalence of depression and anxiety among the students would likely to be assessed. A Canadian study focusing on the effects of quarantine after the severe acute respiratory syndrome (SARS) epidemic, found an association between longer duration of quarantine with a high prevalence of anxiety and depression among people.[15] Hence, it is worth studying the association between anxiety and depression and MCO during COVID-19 pandemic.

Depression and anxiety are often associated with socio-demographic variables such as age, gender, years of study, religion, and race. For gender variables, many studies showed that female students experience more depression and anxiety compared to male students.[8,9,10]

For age variables, according to a study done among students in Egypt, there was significant and negative correlation between age and score of anxiety (P:0.003).[19] However, according to a study done among medical students at Multan, it was seen that age did not significantly affect the prevalence of anxiety and depression.[16] For ethnicity, according to a study among medical students in Malaysia, it stated that, the prevalence of depression was significantly higher in Malays (42.9%) compared to other races (26.5%).[19] However, in another study, it showed that there was no difference in the level of depression among Malay, Chinese, Indian and other races.[18]

A study among Egyptian medical students found that those who were in the preclinical years tend to be more depressed and anxious as they had higher scores of subscales of DASS 21 compared

to those who were in clinical years.[17] However, another study found that anxiety and depression were more in 5th semester students rather than 2nd semester students.[9]

A study in Malaysia on the psychological impact of COVID-19 on University students found that 20.4%, 6.6%, and 2.8% of the students experienced minimal to moderate, marked to severe, and most extreme anxiety levels, respectively.[5] Higher level of anxiety was found among students in the age group of 17-18 and they believed that those youngsters spent most time on social media and it played a role in increasing the anxiety level. Moreover, students who lived alone and away from their loved ones marked a higher level of anxiety as this pandemic caused them to be afraid from multiple causes such as loss of sense of security. In this study they also found that students in management related studies have higher levels of anxiety than medical and healthcare related students which contradict with another study conducted in Saudi Arabia.[19] Most of the stressors highlighted which increased the level of anxiety in these students predominantly were financial constraints, remote online classes, and uncertainty about the future due to COVID-19 and lockdowns.[5]

A study conducted in Germany found that there was a positive correlation between lockdown during COVID 19 pandemic and anxiety and depression. Increased level of restriction due to public health measures was associated with higher loneliness, higher psychosocial distress, and lower life-satisfaction.[7] Another study in China found that people with chronic disease and work from home had lower life satisfaction in contrast to people who worked in the office and did not suffer from chronic illness.[21] The misinformation about official stay-at-home orders might have a negative impact on mental health.

Based on a Canadian study focusing on the effects of quarantine after the severe acute respiratory syndrome (SARS) epidemic found an association between longer duration of quarantine with a high prevalence of depression[17] but as there were some limitations, they were not able to find the causative factors for the depression during quarantine.

According to a study conducted in Italy, 42.2% of respondents reported having suffered from sleep deprivation during Covid-19[24] Young adults had been reported to be more likely to present with depression and anxiety[23,24,25,26] and reduced sleep quality, additional stress due to the necessity to adapt their university career. Young adults may have higher levels of anxiety because they are likely to reach a greater amount of information through social media, which influences stress.

The main objective of the study was to determine the effects of MCO during COVID-19 pandemic on the anxiety and depression among the medical students studying in University Kuala Lumpur (UniKL) Royal College of Medicine Perak (RCMP). The specific objectives were to assess the prevalence of anxiety and depression among medical students, to find out the association between the anxiety and effects of MCO, and to find out the association between the depression and effects of MCO during COVID-19 pandemic.

Methodology

This was a cross sectional study which included all the medical students in University Kuala Lumpur (UniKL) Royal College of Medicine Perak (RCMP) from Year 1 to Year 5. The total number of MBBS students from Year 1 to Year 5 were 638. It was assumed that 76.2% of the students might have anxiety and depression.[27] Using a confidence level of 95%, with a precision of 5%, 227 was obtained as sample size. The calculations were done using Open Epi. The systematic sampling method was used to obtain the calculated sample size.

The inclusion criterion of the study was all MBBS students of UniKL RCMP (Year 1-Year 5) who agreed to participate in this study while the exclusion criteria were the MBBS students who were reluctant to participate in this study, those who were currently outside the RCMP campus and non-medical students studying in RCMP.

As study variables in the study, the independent variables were age, gender, race, religion, year of study and effects of MCO while the dependent variables were anxiety and depression.

Data collection method

The questionnaire was developed after reviewing literature. It was an online survey questionnaire. The questionnaire consisted of 2 sections. The data was collected when Ipoh was in the Recovery MCO period.

Section A was a social demographic section that carried questions such as age, gender, religion, race, and year of study. Section B was psychological health information. In this section, we also asked some questions to assess whether the students had a quarantine effect.

To assess students' depression level, the Patients Health Questionnaire-9 (PHQ-9) was used and to assess students' anxiety level, the Generalized Anxiety Disorder-7 (GAD-7) was used.

The participants with mild and moderate scores were classified as 'no group', considering not having anxiety and depression, and those with moderately severe and severe scores were classified as 'yes group', considering having anxiety/ depression.

Self-constructed questionnaires were used to assess the anxiety and depression issues. Although proper validity and reliability tests could not be done due to time limitation and logistic barriers, especially under tight movement control order, contents' validity check with respective experts was performed. It was assumed that those who answered half or more of the questions with 'yes' were considered having effects of MCO. This study was conducted within six weeks from 19th October 2020 to 27th November 2020.

Data entry and analysis

All the data collected was tabulated and analyzed using Microsoft Excel and the Statistical Package for Social Sciences (SPSS). The association between variables was measured and tested using Chi Square. A p-value <0.05 was considered to be statistically significant in all cases.

Ethical consideration

Ethical approval (approval number: UniKLRCMP/MREC/2020-2021/SRP-146) was obtained from the Ethics Committee of Faculty of Medicine, University Kuala Lumpur, Royal College of Medicine Perak, before the beginning of data collection. All information collected was kept confidential and each participant was assigned a serial number to ensure privacy. Details of the study were fully disclosed in the informed written consent form that was obtained from each participant before data collection. The participants responded anonymously to the online survey by filling up an informed consent letter in the first section of the e-questionnaire.

Results

Distribution of Socio-Demographic Variables among respondents:

Table 1 showed that the study population was dominated by females which accounted for 68.7% (n=156) while males were only 31.3% (n=71). Among 227 respondents, most were aged between 21-25 years (56.8%), majority of the respondents were Malay (94.3%) and Muslim (93.7%).

Distribution of anxiety, depression status and effects of MCO among respondents:

Table 2 showed the distribution of anxiety and depression status among respondents in which 16.7% (n=38) had anxiety and 30.4% (n=69) had depression. Regarding the distribution of MCO effects among respondents, 59.5% (n=135) of the respondents had MCO effects.

Association between Socio-Demographic Variables with Anxiety and Depression

Table 3 showed the association between the socio-demographic variables and anxiety and depression status. Concerning the gender, the female students had higher frequency of anxiety (18.6%; n=29) compared to male students (12.7%; n=9). Their p values were more than 0.05

meaning that there were no associations between the gender and anxiety and depression status.

Regarding the age groups, the students' age between 21-25 years old had higher frequency of anxiety and depression than the rest students' age groups. There were no significant associations between the age groups and anxiety and depression status, as their p values were more than 0.05.

Concerning the study years, the students in Year 3 had higher frequency of anxiety (27.3%; n=15) and depression (40.0%; n=22), than the students studying in other years. The p values were more than 0.05, meaning that there were no statistically significant associations between the year of study and anxiety and depression status.

Effects of MCO on Depression and Anxiety

Table 4 showed that the number of students presenting with depressive symptoms were much higher in the group with positive effects of MCO (45.2%; n=61) compared to those with depressive symptoms with absence of effects of MCO (8.7%; n=8). The p value was less than 0.05 which showed the association between the effect of MCO and depression was statistically significant. Students who are exposed to the effects of MCO are 8.65 times more likely to suffer from depression compared to those who are not exposed to the effects of MCO.

The table also showed that the number of students with anxiety symptoms were much higher in the group with positive effects of MCO (24.4%; n=33) compared to those with anxiety symptoms with absence of effects of MCO (5.4%; n=5). The p value was less than 0.05 which showed the association between the effect of MCO and anxiety was statistically significant. Students who are exposed to the effects of MCO are 5.62 times more likely to suffer from anxiety compared to those who are not exposed to the effects of MCO.

DISCUSSION

Based on the findings, female students had higher frequency of anxiety compared to males. The finding was further supported by studies done among medical students in Egypt and India in which the female students had a higher anxiety rate compared to male.[9,17]

For the association between gender and depression, this study's finding (see Table 3) was the same as a study done among medical students in University Putra Malaysia, where females (41.4%) had a higher depression rate compared to males (27.0%).[19] Another study in Brazil also had the similar findings.[8] However, the study's findings had different results compared to some other studies. For example, a study done among medical students in University Technology Malaysia showed that the level of depression was the same for both sexes.[18] Another study done among undergraduate students showed that males had a higher depression rate than females.[28]

Overall, females had a higher prevalence of anxiety and depression than males. However, there was no statistically significant relationship between gender and anxiety and depression.

For the association of age and depression, we found that this finding (see Table 3) was supported by a study done among medical students at public university in the Klang Valley, Malaysia in which depression score was significantly higher among older students (20 and above).[12] However, the results were different from the study done in medical students at Nishtar Medical College, Multan where it was seen that age did not significantly affect the prevalence of depression.[16]

For the association of age and anxiety, the result (see Table 3) was supported by a study done among medical students at public university in the Klang Valley, Malaysia in which anxiety score was significantly higher among older students (20 and above).[10]

Similarly, there was no statistically significant relationship between year of study and anxiety and depression (p value more than 0.05). In one of the studies performed in UPM Malaysia, there was no association between year of study and anxiety and depression.[29]

Concerning the effects of MCO on depression and anxiety, the findings (see Table 4) were consistent with previous studies around the world.[7,22]

Although the level of restriction due to lockdown/MCO was not associated with an immediate increase in psychopathological symptoms or fear of contracting COVID-19 infection, it might be a relevant factor that facilitates or moderates potential negative consequences for mental health.[9] Those who have too much fear are actually putting the pressure on themselves. As long as all people stay safe and obey the government measures, they shall be convinced of their physical health level. Those who have their loved ones at risk or infected by COVID-19, are found to be continuously worried which may lead to mixed feelings and risk for mental illness.

Moreover, during the movement control order period, the students were having difficulties with online learning, poor internet connection, need to complete household chores in between classes and long hours of online classes which caused stress. For medical students online learning could fulfil the theory part but they still needed hands on clinical skills practice with patients at the hospital. In this regard students are suffering from sleep deprivation as they need to catch up with their assignments and assessments which further creates complicated emotions such as anger, frustration and ultimately anxiety and depression. Our study was limited to only general results from the effects of MCO and we grouped people as those with effects of MCO present and those with effects of MCO absent. Thus, we could not know in depth detail for individual factors. Relevant interventions are needed to combat the mental health problems in medical students specifically during a pandemic.

Amongst our medical students, 16.7% were anxious and 30.4% medical students were depressed. The anxiety finding seemed slightly higher in percentage, compared to a Malaysian study on anxiety[4] and the depression finding was similar to another study conducted in a public University in Malaysia where 36.4% of the respondents were depressed.[30] A meta-analysis reported during earlier COVID-19 lockdown that 33.7% people were depressed.[31]

Hence by comparing several studies, the prevalence of anxiety and depression in our study was found to be higher and it was affected by the effects of MCO during COVID-19 Pandemic.

Limitations

There were a few concerns and limitations that might influence the accuracy of study plan and results. As this study was conducted during COVID-19 crisis, there might be others confounding factors which had impact on anxiety and depression issues. The sample size was also limited to only medical students in UniKL RCMP and this might not reflect the true population.

Recommendations

The researchers would like to recommend to include more than one institution to avoid bias and confounding factors. Based on the finding, it was also recommended that a proper and suitable comprehensive approach should be used to get the effective collaboration between stakeholders in the government and medical universities to improve medical students' psychological health.

Conclusion

This study showed that medical students who were exposed to the effects of MCO during COVID-19 Pandemic had a higher chance to suffer from anxiety and depression, compared with normal condition. It could be concluded that the prevalence of anxiety and depression was high among female medical students, who were aged 21-25 years and Year 3 medical students' groups, which may need necessary measures for early identification and intervention.

Table 1. Distribution of Socio-Demographic Variables among respondents

Variables		Frequency (n=227)	Percentage (%)
Gender	Male	71	31.3
	Female	156	68.7
Age	Below 20	94	41.4
	21-25	129	56.8
	Above 25	4	1.8
Year of study	Year 1	53	23.3
	Year 2	56	24.7
	Year 3	55	24.2
	Year 4	28	12.3
	Year 5	35	15.4
Race	Malay	214	94.3
	Indian	5	2.2
	Others	8	3.5
Religion	Islam	215	94.7
	Buddha	1	0.4
	Christian	5	2.2
	Hindu	5	2.2
	Others	1	0.4

Table 2. Distribution of anxiety and depression status among respondents

Variables		Frequency(n=227)	Percentage (%)
Anxiety status	Yes	38	16.7
	No	189	83.3
Depression status	Yes	69	30.4
	No	158	69.6
MCO effects	Yes	135	59.5
	No	92	40.5

Table 3. Association between Socio-Demographic Variables with Anxiety and Depression

Variables	Present (%)	Absent (%)	Chi-square value	p-value
Gender		**Anxiety**		
Male	9 (12.7%)	62 (87.3%)	1.224	0.269
Female	29 (18.6%)	127 (81.4%)		
		Depression		
Male	20 (28.2%)	51 (71.8%)	0.242	0.623
Female	49 (31.4%)	107 (68.6%)		
Age		**Anxiety**		
Below 20	12 (12.8%)	82 (87.2%)	2.949	0.229
21-25	26 (20.8%)	103 (79.8%)		
Above 25	0 (0.0%)	4 (100.0%)		
		Depression		
Below 20	28 (29.8%)	66 (70.2%)	1.881	0.391
21-25	41 (31.8%)	88 (68.2%)		
Above 25	0 (0.0%)	4 (100.0%)		
Year of Study		**Anxiety**		
Year 1	6 (11.3%)	47 (88.7%)	6.342	0.175
Year 2	7 (12.5%)	49 (87.5%)		
Year 3	15 (27.3%)	40 (72.7%)		
Year 4	4 (14.3%)	24 (85.7%)		
Year 5	6 (17.1%)	29 (82.9%)		
		Depression		
Year 1	15 (28.3%)	38 (71.7%)	3.833	0.429
Year 2	17 (30.4%)	39 (69.6%)		
Year 3	22 (40.0%)	33 (60.0%)		
Year 4	7 (25.0%)	21 (75.0%)		
Year 5	8 (22.9%)	27 (77.1%)		

Chi-square test was performed, level of significant at $p<0.05$
POR = Prevalence Odds Ratio, df = degree of freedom

Table 4. Effects of MCO on Depression and Anxiety

Effects of MCO	Depression and Anxiety					
	Present (%)	**Absent (%)**	**Chi-square value**	**df**	**POR (95% CI)**	**p-value**
	Depression					
Yes	61 (45.2%)	74 (54.8%)	34.433	1	8.65 (5.49 – 13.73)	<0.001
No	8 (8.7%)	84 (91.3%)				
	Anxiety					
Yes	33 (24.4%)	102 (75.6%)	14.186	1	5.62 (3.03 – 7.77)	<0.001
No	5 (5.4%)	87 (94.6%)				

Chi-square test was performed, level of significant at p<0.05
POR = Prevalence Odds Ratio, df = degree of freedom, 95% Confidence Interval

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