Mental Health and Parental Factors among Adolescents during the COVID Pandemic in Malaysia

Lena Nanditha Sangaran[1,2], Azidah Abdul Kadir[1,2,*], Lili Husniati Yaacob[1,2], Faridah Mohd Zin[3] and Azizah Othman[4]

[1]*Department of Family Medicine, School of Medical Sciences, Universiti Sains Malaysia, 16150, Kubang Kerian, Kelantan, Malaysia*

[2]*Hospital Universiti Sains Malaysia, Jalan Raja Perempuan Zainab II, 16150, Kubang Kerian, Kelantan, Malaysia*

[3]*MSU Medical Centre, Jalan Boling Padang 13/64, Seksyen 13, 40100, Shah Alam, Selangor, Malaysia*

[4]*Department of Paediatrics, School of Medical Sciences, Universiti Sains Malaysia, 16150, Kubang Kerian, Kelantan, Malaysia*

Abstract: *Purpose*: The study aims to determine the prevalence of mental health problems among early adolescents and their associations with parental relationships.

Methods: A cross-sectional study was conducted on 535 adolescents aged 13 to 14 on the east coast of Peninsular Malaysia using online surveys from February 2021 to April 202. Mental health status was assessed using the Depression, Anxiety and Stress Scale- 21 (DASS-21), and parental or guardian supervision, connectedness, bonding, respect for privacy, physical activity, and risk behaviours were asked using the Malaysian Global School-based Student's Health Survey. Multiple logistic regression analysis was done to examine the associations of the variables.

Results: The prevalence of depression, anxiety and stress were 28.2%, 38.1% and 18.5%, respectively. Adolescent with low parental/guardian connectedness and bonding were associated with depression (AOR = 3.82, 95% CI =1.80 – 8.08), anxiety (AOR 2.17,95% CI = 1.34 – 3.50) and stress (AOR 2.29, 95% CI = 1.13 – 4.65). Low parental supervision (AOR = 2.37, 95% CI = 1.19 – 4.54), low academic performance (AOR = 3.57, 95% CI = 1.10 – 11.62), stress (AOR = 8.56, 95% CI = 4.38 – 16.70) and anxiety AOR = 7.83, 95% CI = 4.48 – 13.70) were predictors for depression. Adolescent who had divorced or separated parents/guardians (AOR = 3.57, 95%CI = 1.10 – 11.62) and married parents/guardian but living apart due to working (AOR = 3.57, 95% CI = 1.10 – 11.62) were higher risk for stress.

Conclusions: Depression and anxiety were prevalent among adolescents in Malaysia. Poor relationship with parents or guardians was a significant factor for mental health problems among adolescents during the COVID pandemic.

Keywords: Word, adolescent, depression, anxiety, COVID 19, pandemic, lockdown, psychological.

INTRODUCTION

Since the first discovery of COVID-19 in Wuhan, China, in 2019, infections due to this novel virus have continued to increase drastically until it was declared an International Public Health Emergency issued by the World Health Organization (WHO) on January 30, 2020, and declared a pandemic on March 11, 2020. This pandemic has impacted various aspects of life, including social development and education, propelling the country towards activating emergency risk management [1].

Malaysia took precautionary measures through the Movement Control Order (MCO) on March 16 2020, to break the chain of infection. Malaysia was one of the first countries to announce MCO in the Southeast Asian region. The implementation strategies include banning all forms of assembly, including all religious, social, sports, cultural and educational activities. In ensuring the continuity of the learning process, school closures and online learning has placed a great challenge on the educational community that involves all educators and students in all institutions and levels of study.

Adolescents are known to be vulnerable groups to develop mental health problems because of stress and life events. Adolescence is a critical developmental period, and mental health problems can compromise adolescents' development and future potential [2]. Emerging studies are beginning to note a higher prevalence of depression and anxiety symptoms among adolescents during the COVID pandemic [3]. A study among 7,202 adolescents in China reported that the prevalence of depressive symptoms based on the Patient Health Questionnaire (PHQ-9) was 44.5% [3]. Another study among 809 adolescents in Canada

*Address correspondence to this author at the Department of Family Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, 16150, Kubang Kerian, Kelantan, Malaysia; Tel: 6097676604/6608; Fax: 6097676611; Mob: 6012-9286006; E-mail: azidahkb@usm.my

reported that the prevalence of depression, anxiety and post-traumatic stress disorders were 51%, 39% and 45%, respectively [4]. A study in Nepal found that the prevalence of depression and anxiety was 43.8% [5]. Prolonged school closure during the pandemic was associated with mental health problems such as depressive symptoms, risk of suicide and suicidal attempt among adolescents in China [6].

The school closure and home quarantines cause disruptions to the education, social interruptions, and physical activity of the adolescents [7]. Adolescents usually prefer to engage with their peers more often compared to their families, and the physical disruptions may lead to emotional stress [8]. Moreover, sharing limited house space with other family members may lead to depression [8].

The literature review has revealed that sociodemographic factors such as gender, living circumstances, personal COVID 19 experiences and levels of social support were associated with a higher risk of depression and anxiety [3]. There is a need to study some potential influences on these mental health problems to develop more effective prevention strategies. The relationship between adolescents and parents remains one of the important factors that need to be investigated. This is because although many studies had investigated the effects of this relationship on adolescent mental health to our knowledge, there is a paucity of studies that assessed this factor during the COVID pandemic [9].

Due to school closure and home quarantines, parents or guardians would be important to look at because they will be in contact more often than others, such as peers or teachers. A study by Oldfield *et al*. 2016 reported that adolescents with more secure attachment to parents and peers and enhanced school connectedness display better mental health outcomes [9]. A study in China reported that parent-child discussions on COVID 19 were positively correlated with life satisfaction and reduced psychopathological symptoms among students [7]. Thus, this study aims to determine the prevalence of mental health problems and their association with the parent-child relationship among adolescents in Malaysia. We hypothesised that poor academic performance, low socioeconomic status, poor parental relationships, low parental supervision and broken family were risk factors for depression, anxiety or stress among adolescents during the COVID-19 pandemic in Malaysia.

METHODS

A cross-sectional survey was conducted among secondary government school students aged 13 to 14 in Kota Bharu, Kelantan, east coast of Peninsular Malaysia, from February 2021 to April 2021. Kota Bharu is the capital city of the state of Kelantan, Malaysia. During this time, the Malaysian government imposed Movement Control Order, and most of the secondary school students were in home quarantines except those who had to sit major examinations known as *Sijil Pelajaran Malaysia*.

Multistage cluster sampling method was used to select five secondary schools in the district of Kota Bharu, Kelantan and two classes were further randomly chosen from each school. The inclusion criteria are students in the first and second forms. There is a total of six forms in the government schools, and most students enter secondary school when there are 13 years old. The students who attended boarding school had a history of past psychiatric illness, and attending special classes for special needs were excluded. The study was ethically approved by Research and Ethical Committee, School of Medical Sciences, Universiti Sains Malaysia (USM/JEPeM/20050258), Malaysia Ministry of Education (KPM.600-3/2/3 – eras(9152)) and Kelantan Department of Education (JPKn/SPS/.1000-1/25.Jld 1(94)).

Data Collection

The research team send the invitation through the teachers to advertise and circulate the survey link to the students. The survey was delivered via Whatsapp or Telegram. The anonymous questionnaire was hosted via Google forms and was exported to Excel spreadsheets for analysis. An online questionnaire containing sections of information about the study and consent from the participants was obtained in the study.

Research Instruments

Subjects' information regarding sociodemographic data, academic performance, and parents' marital relationship were collected. The household income was categorised according to the Malaysian government's classification of the household income groups, such as Bottom 40% (represents the Bottom 40% – low-income earners), Middle 40% ((Represents the Medium 40% – average income earners), and Top 20% (represents the Top 20% – top income earners), respectively. These categories were called B40, M40, and T20.

Mental health problems (depression, anxiety and stress) were assessed with a validated Malay version of the Depression, Anxiety and Stress Scale- 21 (DASS-21) [10, 11]. The 21-item Depression Anxiety Stress Scale (DASS-21) is a widely used instrument to measure depression, anxiety, and stress, with seven items in every domain. This instrument assessed the presence of symptoms in the previous week, and participants rated the item on a 4-point Likert scale ranging from 0 (did not apply to me at all) to 3 (applied to me very much). Higher scores indicate higher severity of the mental problems. In this study, a depression score of 14 or more is considered depressed, an anxiety score of 10 or more is considered anxious, and a stress score of 19 or more is considered stressed. The Malay version of DASS-21 had very good Cronbach's alpha values of 0.84, 0.74 and 0.79, respectively, for depression, anxiety and stress. This tool has been used widely to assess mental health problems in Malaysia, including adolescents [12, 13]. This scale has also been used in studies related to mental health problems during the COVID pandemic in China, the Middle East, and Nepal [5, 14, 15].

The relationship between parents and adolescents and the physical activity level was assessed using the National Health and Morbidity survey instrument conducted by the Malaysia Ministry of Health in 2017 [13]. The physical activity level was assessed by asking the participants the number of days they have physical activity, 60 minutes or more in a week. The participant's relationship with their parents/guardians was assessed by asking the participants about their parents/guardians' supervision, connectedness, bonding, and respect for privacy during the past 30 days before the study. It was measured according to frequency from 1 to 5; never, rarely, sometimes, most of the time, and always. Options (1) to (2) were classified as "low", option (3) as "moderate" and whereas options (4) to (5) as "high".

Statistical Analysis

The collected data was analysed using SPSS software (SPSS Inc, version 26). Initially, descriptive analysis was performed to describe the sociodemographic, academic performance and parent-adolescent relationship. All quantitative variables were expressed as the mean (SD), and categorical variables were expressed as frequency and percentage. Then the secondary school students calculated the prevalence of depression, anxiety and stress. Multiple logistic regression analysis was used to determine the associated factors for depression, anxiety and stress. In the initial process, simple logistic regression was conducted, and variables with a p-value < 0.25 in the simple logistic regression were chosen to be included in the multiple logistic regression analysis. Backward and forward stepwise procedures were performed for all significant variables in order to look for possible 2-way interactions. The final model to determine the independent variables associated with depression, anxiety and stress was performed by adjusting for genders. The associations were expressed as an odds ratio with a 95% confidence interval. P-values were considered to be statistically significant at p < 0.05. The goodness of fit model was analysed using Hosmer and Leme-show, the classification table, and the receiver operator characteristic curve.

RESULTS

A total of 535 students ages 13 to 14 years old completed the survey. 34% were male, and 71.2% were from the B40 income group. The majority of the students were Malays (>98%). 76.6% of the students rate their academic performance as moderate. Table **1** shows the characteristic of the study participants and the distribution of the independent variables with depression, anxiety and stress. The prevalence of depression, anxiety and stress were 28.2%, 38.1% and 18.5%, respectively. The prevalence of depression according to groups severity of mild, moderate and severe depression were 12.1%, 13.8% and 14.4%, respectively.

Table **2** shows the univariate analysis of the independent variables with depression, anxiety, and stress. Low parental supervision, connectedness and bonding were associated with depression, anxiety, and stress. Divorced or separated parents; and married parents but living apart were also associated with a higher risk for depression and stress but not anxiety. However, results from multiple logistic regression analyses revealed that most associated factors lost significance when entered together into the final model. Table **3** shows the multiple logistic regression analysis of independent variables with depression, anxiety, and stress. The students with low parental or guardian supervision were at 2.37 times higher risk of getting depression compared to those with high supervision. Likewise, students with low parental connectedness and bonding were also at higher risk of depression. These factors also were significant for both stress and anxiety. However, the low household income group

Table 1:   Distribution of Independent Variables with Depression, Anxiety and Stress

Risk factors	All	Depression		Anxiety		Stress	
	n (%)	No	Yes	No	Yes	No	Yes
		n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
	n = 535	n = 384	n = 151	n = 331	n = 204	n = 436	n = 99
Sex							
Male	182 (34.0)	132 (34.4)	50 (33.1)	113 (34.1)	69 (33.8)	147 (33.7)	35 (35.4)
Female	353 (66.0)	252 (65.6)	101 (66.9)	218 (65.9)	135 (66.2)	289 (66.3)	64 (64.6)
Age							
13	229 (42.8)	165 (42.9)	64 (42.4)	131 (39.6)	98 (48.0)	188 (43.1)	41 (41.4)
14	306 (57.2)	219 (57.0)	87 (57.6)	200 (60.4)	106 (52.0)	248 (56.9)	58 (58.6)
Academic performance							
Low	44 (8.2)	24 (6.2)	20 (13.3)	26 (7.9)	18 (8.8)	30 (6.9)	14 (14.1)
Moderate	410 (76.6)	297 (77.3)	113 (74.8)	257 (77.6)	153 (75.0)	340 (78.0)	70 (70.7)
Excellent	81 (15.1)	63 (16.4)	18 (11.4)	48 (16.2)	33 (16.2)	66 (15.1)	15 (15.2)
Household income							
B40 (<RM3860)	381 (71.2)	274 (71.4)	107 (70.9)	242 (73.1)	139 (68.1)	318 (72.9)	63 (63.9)
M40 (RM3860 - RM8319)	120 (22.5)	84 (21.9)	36 (23.8)	69 (20.8)	51 (25.0)	93 (21.3)	27 (27.3)
T20 (>RM8319)	34 (6.4)	26 (6.8)	8 (5.3)	20 (6.0)	14 (6.9)	25 (5.7)	9 (9.1)
Parents marital status							
Married and living together	412 (77.0)	310 (80.7)	102 (67.5)	259 (78.2)	153 (75.0)	346 (79.4)	66 (66.7)
Married but living apart (working causes)	25 (4.7)	14 (3.6)	11 (7.3)	11 (3.3)	14 (6.9)	14 (3.2)	11 (11.1)
Divorce/ Separated	51 (9.5)	27 (7.0)	24 (15.9)	30 (9.1)	21 (10.3)	36 (8.3)	15 (15.2)
Widower (Mother/father has died)	47 (8.8)	33 (8.6)	14 (9.3)	31 (9.4)	16 (7.8)	40 (9.2)	7 (7.1)
Parental/ guardian Supervision							
low	201 (37.6)	132 (34.4)	69 (45.7)	108 (32.6)	93 (45.6)	150 (34.4)	51 (51.5)
moderate	171 (32.0)	121 (31.5)	50 (33.1)	106 (32.0)	65 (21.9)	145 (33.3)	26 (26.3)
high	163 (30.5)	131 (34.1)	32 (21.2)	117 (35.3)	46 (22.5)	141 (32.3)	22 (22.2)
Parental/ guardian connectedness							
low	182 (37.6)	96 (25.0)	86 (57.0)	88 (26.6)	94 (46.1)	128 (29.4)	54 (54.5)
moderate	129 (32.0)	93 (24.2)	36 (23.8)	75 (22.7)	54 (26.5)	105 (24.1)	24 (24.2)
high	224 (30.5)	195 (50.8)	29 (19.2)	168 (50.8)	56 (27.5)	203 (26.6)	21 (21.2)
Parental/ guardian respect for privacy							
low	328 (61.3)	224 (58.3)	104 (68.9)	197 (59.5)	131 (64.3)	261 (59.9)	67 (67.7)
moderate	108 (20.2)	83 (21.6)	25 (16.6)	67 (20.2)	41 (21.0)	91 (20.9)	17 (17.2)
high	99 (18.5)	77 (20.1)	22 (14.6)	67 (20.2)	32 (15.7)	84 (19.3)	15 (15.2)
Parental/ guardian bonding							
low	97 (18.1)	44 (11.5)	53 (35.1)	41 (12.4)	56 (27.5)	63 (14.4)	34 (34.3)
moderate	86 (16.1)	50 (13.0)	36 (23.8)	44 (13.3)	42 (20.6)	59 (13.5)	27 (27.3)
high	352 (65.8)	290 (75.5)	62 (41.1)	246 (74.3)	106 (52.0)	314 (72.0)	38 (38.4)

(Table 1). Continued.

Physical activity class							
Inactive	245 (45.8)	172 (44.8)	73 (48.3)	147 (44.4)	98 (48.0)	194 (44.5)	51 (51.5)
Moderate	193 (36.1)	135 (35.2)	58 (38.4)	118 (35.6)	75 (36.8)	162 (35.2)	31 (31.3)
High	97 (18.1)	77 (20.1)	20 (13.2)	66 (19.9)	31 (15.2)	80 (18.3)	17 (17.2)
Risk behaviour							
No	513 (65.9)	372 (96.9)	141 (93.4)	321 (97.0)	192 (94.1)	418 (95.9)	95 (96.0)
Yes	22 (4.1)	12 (3.1)	10 (6.6)	10 (3.0)	12 (5.9)	18 (4.1)	4 (4.0)
Anxiety							
No	331 (61.9)	300 (78.1)	31 (20.5)	NA	NA	NA	NA
Yes	204 (38.1)	84 (21.9)	120 (79.5)	NA	NA	NA	NA
Stressed							
No	436 (81.5)	365 (95.1)	71 (47.0)	318 (96.1)	118 (57.8)	NA	NA
Yes	99 (18.5)	19 (4.9)	80 (53.0)	13 (3.9)	86 (42.2)	NA	NA

Table 2:   Univariate Analysis of Independent Variables with Depression, Anxiety and Stress

	Depression			Anxiety			Stress		
	COR	95% CI	p-value	COR	95% CI	p-value	COR	95% CI	p-value
Sex									
Male	Ref			Ref			Ref		
Female	1.06	0.71 - 1.58	0.780	1.01	0.68 – 1.46	0.940	0.93	0.58 – 1.47	0.756
Academic performance									
Low	2.92	1.32 - 6.44	0.010	1.01	0.47 – 2.13	0.985	2.05	088 – 4.78	0.096
Moderate	1.33	0.76 - 2.35	0.320	0.87	0.53 – 1.40	0.562	0.91	0.48 – 1.69	0.753
Excellent	Ref			Ref			Ref		
Household income									
B40 (<RM3860)	1.27	0.56 – 2.89	0.570	0.82	0.40 - 1.67	0.587	0.55	0.24 - 1.23	0.148
M40 (RM3860 - RM8319)	1.39	0.58 – 3.36	0.460	1.06	0.49 – 2. 28	0.890	0.80	0.33 - 1.93	0.630
T20 (>RM8319)	Ref			Ref			Ref		
Parents marital status									
Married and living together	Ref			Ref			Ref		
Married but living apart (working causes)	2.39	1.05 - 5.43	0.040	2.15	0.95 – 4.86	0.065	4.11	1.79 - 9.46	0.001
Divorce/ Separated	2.70	1.49 – 4.89	0.001	1.18	0.65 – 2.14	0.574	2.18	1.13 – 4.20	0.020
Widower (Mother/father has died)	1.29	0.66 – 2.50	0.450	0.87	0.46 – 1.65	0.677	0.91	0.39 – 2.13	0.842
Parental/ guardian Supervision									
low	2.14	1.32 - 3.47	0.002	2.19	1.41 – 3.39	<0.001	2.17	1.25 – 3.77	0.006
moderate	1.69	1.02 – 2.81	0.042	1.56	0.98 – 2.47	0.058	1.14	0.62 – 2.12	0.657
high	Ref			Ref			Ref		
Parental/ guardian connectedness									
low	6.02	3.70 - 9.80	<0.001	3.20	2.10 – 4.87	<0.000	4.07	2.35 – 7.07	<0.001
moderate	2.60	1.50 – 4.50	0.001	2.16	1.36 – 3.83	0.001	2.21	1.17 – 4.15	0.014
high	Ref			Ref			Ref		

(Table 2). Continued.

Parental/ guardian respect for privacy									
low	1.62	0.95 - 2.75	0.070	1.39	0.86 – 2.24	0.173	1.43	0.78 – 2.65	0.245
moderate	1.05	0.55 – 2.02	0.870	1.28	0.72 – 2.27	0.397	1.04	0.49 -2.22	0.907
high	Ref			Ref					
Parental/ guardian bonding									
low	5.63	3.47 - 9.14	<0.001	3.17	1.99 – 5.03	<0.001	4.45	2.60 – 7.60	<0.001
moderate	3.36	2.02 – 5.60	<0.001	2.21	1.37 – 3.58	0.001	3.78	2.14 – 6.66	<0.001
high	Ref			Ref			Ref		
Physical activity (days with 60 minutes of physical activity)	0.852	0.769 – 0.95	0.02	0.88	0.80 – 0.97	0.01	0.89	0.79 – 1.03	0.570
Risk behaviour									
No	Ref			Ref			ref		
Yes	2.20	0.93- 2.92	0.073	2.01	0.851 – 4.30	0.112	0.97	0.32 – 2.62	0.968
Anxiety									
No	Ref								
Yes	13.82	8.70 – 21.96	<0.001	NA	NA	NA	NA	NA	NA
Stressed									
No	Ref			Ref					
Yes	21.64	12.35 – 37.93	<0.001	17.82	9.58 – 33.15	<0.001	NA	NA	NA

COR – Crude OR, 95% CI- 95% Confidence Interval.

Table 3:   Multiple Logistic Regression Analysis of Independent Variables with Depression, Anxiety and Stress

	Depression			Anxiety			Stress		
	AOR	**95% CI**	**p-value**	**AOR**	**95% CI**	**p-value**	**AOR**	**95% CI**	**p-value**
Academic performance									
Low	3.57	1.10 – 11.62	0.034	-	-	-	-	-	-
Moderate	1.86	0.84 – 4.11	0.122	-	-	-	-	-	-
Excellent	Ref			-			-		
Household income									
B40 (<RM3860)	-	-	-	-	-	-	0.40	0.16 – 0.97	0.049
M40 (RM3860 - RM8319)	-	-	-	-	-	-	0.51	0.19 – 1.65	0.183
T20 (>RM8319)	-			-			Ref		
Parents marital status									
Married and living together	-			-			Ref		
Married but living apart (working causes)	-	-	-	-	-	-	3.43	1.37 -8.56	0.008
Divorce/ Separated	-	-	-	-	-	-	2.08	1.02 – 4.24	0.043
Widower (Mother/father has died)	-	-	-	-	-	-	1.03	0.41 – 2.58	0.938
Parental/ guardian Supervision									
low	2.37	1.19 – 4.54	0.013	-	-	-	-	-	-
moderate	0.92	0.43 – 1.94	0.828	-	-	-	-	-	-
high	Ref			-			-		

(Table 3). Continued.

Parental/ guardian connectedness									
low	3.82	1.80 – 8.08	<0.001	2.17	1.34 – 3.50	0.002	2.29	1.13 – 4.65	0.021
moderate	2.07	0.99 – 4.32	0.051	1.91	1.18 – 3.07	0.008	1.86	0.92 – 3.75	0.080
high	Ref			Ref			Ref		
Parental/ guardian bonding									
low	3.06	1.45 – 6.47	0.003	2.04	1.19 – 3.49	0.009	2.86	1.45 – 5.61	0.002
moderate	1.80	0.85 – 3.48	0.119	1.67	1.01 – 2.77	0.047	3.29	1.73 – 2.66	<0.001
high	Ref			Ref			Ref		
Anxiety									
No	Ref								
Yes	7.83	4.48 – 13.70	<0.001	NA	NA	NA	NA	NA	NA
Stressed									
No	Ref			Ref					
Yes	8.56	4.38 – 16.70	<0.001	15.00	8.30 – 29.11	<0.001	NA	NA	NA

AOR – Adjusted OR, 95% CI- 95% Confidence Interval.

(B40) and parental marital status were only significant for stress.

DISCUSSION

This study examined depression, anxiety, and stress among adolescents in Malaysia during the COVID-19 pandemic in the period between February 2021 to April 2021. Based on the findings, 28.2%, 38.1% and 18.5% of the adolescent experienced depression, anxiety, and stress, respectively. The results in this study showed a lower prevalence compared to other studies [3-5]. In comparison, a study conducted among more than 1,000 Canadian adolescents in April 2020 highlighted that the prevalence of depression and anxiety were 51.0% and 39.0%, respectively. [4] The author used a different scale to screen for depression which was the six-item depression subscale of the Brief Symptom Inventory. Another study conducted among 105 adolescents in Nepal, which utilised a similar scale to our study that was DASS-21, reported that the prevalence of depression and anxiety were both 43.8%. [5] We postulate the reason for lower prevalence in this study was possible due to the timing of the study. This study was done almost one year after the pandemic's start compared to the earlier studies. Therefore, adolescents may have time to adapt to the new norm and establish a better coping mechanism. The COVID pandemic also has a variable impact on different countries, which may contribute to the different levels of depression, anxiety and stress experienced by the population.

However, the prevalence of depression in our study was higher compared to the study conducted before the COVID-19 pandemic. Data obtained from the Malaysia Global School-based Health Survey and Mental Health Survey, conducted as part of the National School-based Health Survey in 2012 involving 28,738 adolescents in Malaysia using a similar screening scale, reported that the prevalence of depression was 17.7%. [16] This result exhibits that the COVID-19 epidemic harms the mental health of adolescents. The mental toll of this impact is greater because they are a vulnerable group, and research among this group should be one of the focus points currently.

Many studies have been conducted to assess the factors that influence adolescents' mental health [3, 4, 14]. These factors, including age, gender, media exposure, family conflict, changes in schooling, adherence to restrictions, and levels of social connection, have all been implicated as potential moderators within the prevailing research. To our knowledge, this study was the first to examine the parents' or guardians' relationship and supervision with mental health in adolescents during the COVID-19 pandemic. This study has shown that the odds of depression, anxiety and stress were higher among adolescents with low parental/guardian connectedness and bonding. There was no other study during the COVID pandemic which investigated the association between parental connectedness and bonding with adolescent mental health. However, this finding was supported by a review by Sanders and McCarthy

(2005), who have reported that family factors, including family cohesiveness, were an important predictor for general child psychology, including depression. An important aspect of adolescent life is the development and maintenance of connections, which is critical for mental and social well-being. It is well known that peers and friends are among the main social support for adolescents [17]. Unfortunately, the COVID-19 epidemic has triggered a "social isolation" as adolescents have less time and opportunity to spend with their friends. Those who did not have a good relationship with their parents may have lost a place to share their problems, creating a social alienation that has resulted in a lack of emotional support, which may lead to depression, anxiety and stress. Additionally, during the pandemic, adolescents must spend most of their time with their family members, including their parents. The excess time spent in the house may expose those who did not have a good relationship with their parents to more conflict which may contribute to the negative outcomes.

Several studies have demonstrated that family conflict predicts the development of depression in children and adolescents [18, 19]. Children in single-parent families typically have poorer outcomes, across a range of measures, than those living with both parents [20]. Furthermore, this study has also shown that adolescents who had parents living separately either through divorce or work circumstances were at higher risk of stress. The negative effect of the broken family may be further enhanced during the pandemic as families face more challenges. Families with a single breadwinner may be particularly affected as the loss of employment during the pandemic will be more keenly felt by these families leading to a stressful environment in the family. In terms of emotional support, adolescents living with a single parent may receive less psychological support than those with intact families.

There are many challenges associated with online learning faced by an adolescent.

In this study, those with low academic performance were more likely to have depression than those without. A focus group study of 120 adolescents revealed that school (keeping excellent grades and passing their classes) was the most frequent stressor [21]. This stressor becomes more apparent during the pandemic with the change in the educational situation. As widely known, teaching and learning were held using the online platform during the pandemic. This new method can be challenging to adolescents with an already low academic performance as many may find the instructions given to be less clear and more difficult to understand, which may contribute to depression.

Research examining sex differences in adolescents' responses to the COVID-19 pandemic was well established [3]. The previous study has demonstrated that females have a higher prevalence of depression and anxiety than males [3]. Our study demonstrated a similar finding; however, this factor was insignificant in the final multiple logistic regression analysis. The study among adolescents in Nepal also found that gender was not a significant factor [5].

CONCLUSION

During the COVID-19 pandemic in Malaysia, about one-third of the adolescents in Malaysia had mental health problems. Our findings supported that a positive adolescent-parental relationship leads to better adolescent mental health status. This study can be used to plan recommendations and intervention programs that involve both the parents and adolescents to improve the mental health status of the adolescents during the COVID-19 pandemic.

LIMITATIONS OF STUDY

This study has a few limitations. This was a cross-sectional study; therefore, causality between the factors cannot be confirmed. Additionally, this study was carried out among the Malay-dominant population, limiting its generalisability to other community sections. Additional factors contributing to depression, anxiety and stress that were not investigated in this study are the necessity to combine domestic responsibilities and care for siblings while taking online classes. Many teachers are unaware that their students are dealing with complex emotions as a result of COVID-19 and lockdowns, as well as the fact that they must adjust to remote learning and being separated from their peers, which causes unwarranted frustration, anger, resentment, and, ultimately, anxiety.

It is recommended that further studies are done on the coping and resilience of adolescents during testing times, such as the COVID-19 pandemic. In the "new normal" arena, research should also be directed toward teaching, learning, and evaluation strategies that can maximise learning results while minimising anxiety and negative psychological effects among students.

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CONFLICT OF INTEREST

The authors declare that there was no conflict of interest.

LIST OF ABBREVIATIONS

DASS-21 =   Depression, Anxiety and Stress Scale- 21

MCO   =   Movement Control Order

PHQ-9   =   Patient Health Questionnaire

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