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Predictors of Severe Anxiety Among Bumiputera Students

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Abstract: Despite widespread vaccination efforts, the ongoing Covid-19 pandemic continues to affect the population globally. In mitigating and exerting control over the spread of the virus, a variety of measures have been carried out by countries worldwide. As a result, this has detrimental effects on citizens' mental health. University students are particularly among those significantly affected where they face challenges stemming from the pandemic and academic pressures. The purpose of this study was to explore anxiety along with the contributing factors of anxiety itself specifically among the students of Bumiputera at public university. The survey, conducted through a Google Docs Form, was distributed online from 13 August to 12 September 2021. Descriptive analysis was employed in assessing the anxiety levels of the Bumiputera students. Initially, in identifying the academic features, psychosocial attributes, Covid-19-related factors, socio-demographic characteristics, challenges in open and distance learning (ODL), previously achieved academic performance, current academic performance, and overall satisfaction with ODL that exhibit significant associations with anxiety, an independent-samples t-test or a one-way analysis of variance (one-way ANOVA) was performed. Finally, in identifying protective and risk factors related to anxiety among significant socio-demographic characteristics, ODL challenges, academic characteristics, psychosocial characteristics, COVID-19-related factors, and overall satisfaction towards ODL, multinomial logistic regression was conducted. Gender, sharing laptops/computers, difficulties in catching up with tough online courses, depressive thoughts, and experience of being quarantined because of close contact with positive COVID-19 individuals were identified as protective factors against anxiety symptoms while the field of study and overall satisfaction towards ODL were risk factors of developing severe anxiety.

Keywords: *Covid-19 pandemic, anxiety level, Bumiputera students, public university, open and distance learning.*

1. Introduction

The World Health Organization (WHO) made an official declaration of the COVID-19 pandemic as a global outbreak on January 12, 2020. In the year 2020, on 25th January, the first case of COVID-19 in Malaysia was identified, which originated from a number of three Chinese citizens who were in close contact with an infected individual in Singapore (BERNAMA, 2020). The initial case in Malaysia involved a male individual of age 41 returning from Singapore, which was verified in February 2020 as displaying symptoms such as fever and cough and subsequently underwent a quarantine at Sungai Buloh Hospital in Selangor ("[Breaking] 3 Coronavirus Cases Confirmed in Johor Baru," 2020). Various measures have been carried out by countries worldwide in striving to combat the virus from spreading. On 18th March in the year 2020, the first Movement Control Order (MCO) was initiated by the government of Malaysia, and this extended to the 3rd of May in the same year of 2020. With the implementation of MCO, stay-at-home orders were executed, outdoor activities and interstate travel were banned, and the closing of non-essential businesses was commanded (Lim, 2020).

The pandemic also posted significant challenges to the global education sector, compelling a switch of learning mode from physical classroom to online mode. Due to the limitations posed by the pandemic, online learning and teaching had to be fully embraced by a large number of institutions (Dhawan, 2020). A survey by the Ministry of Education revealed that 37 percent of students did not own the proper device (Lim, 2020). Although there were households with personal computers, they still faced challenges as devices were often shared among family members for work or study. The problems of an unconducive environment for learning, insufficient equipment, and being less familiar with digital technology further added to the complexity of the process of teaching and learning in the time of the pandemic (Abdul Hamid & Khalidi, 2020). The shift to online learning was particularly challenging in the East of Malaysia as a result of internet connection problems which are poor in the area (Sia & Adamu, 2020).

The COVID-19 pandemic heightened community anxiety, with increased deaths, media reporting, and new cases every day (Rubin & Wessely, 2020). The hurdles to e-learning resulted in increased anxiety for both students and educators. Institutions of higher education (IHEs) must address the effects of the COVID-19 pandemic psychologically and socially, requiring resilience-building measures (Centers for Disease Control and Prevention (CDC), 2020). In Grubic et. al.'s (2020) study, the emphasis was placed on the need for investigations on Covid-19's effects on students' mental health and the immediate interventions that are required. Given the ongoing infectious nature of COVID-19, studying anxiety severity among Bumiputera University students remains relevant. Bumiputera is defined as 'sons of the soil,' encompassing the indigenous inhabitants of the nation, comprising Malays, aborigines, and the natives of Sabah and Sarawak. The purpose of this study was to determine the levels of anxiety of Bumiputera University students in Malaysia during the period of pandemic. Additionally, the research investigated the impact of anxiety on previous and current academic performance, while identifying risk and protective factors influencing severe anxiety among Bumiputera students during this challenging period.

Scope of Study: This study focused on full-time Bumiputera students pursuing diplomas and bachelor's degrees in various fields at a public university from March to August 2021 academic session. These students were actively engaged in Open and Distance Learning (ODL), either on campus or from home, with a majority choosing to participate in ODL from their parents' residences.

Significance of Study: Due to the global pandemic of COVID-19, a mental health crisis has arisen, with prevalent anxiety disorders. This crisis is not an exception in Malaysia, emphasizing the significance of investigating factors contributing to the anxiety of Bumiputera students at public universities. Moreover, the study sought to explore the impact that anxiety has on these students in terms of their academic achievement academically.

Research Questions

The following research questions were formulated for the study:

- How does anxiety differ for overall previously attained academic performance and current academic performance respectively?
- How does overall students' satisfaction towards ODL differ for non-minimal, mild, moderate, and severe anxiety levels?
- What predictors contributed most to the likelihood of severe anxiety levels among Bumiputera students?

2. Literature Review

The higher education sector in Malaysia has undergone significant impacts due to the COVID-19 pandemic, leading to numerous hurdles for educators and students, particularly in teaching and learning (Sia & Adamu, 2020). In China, college students have been affected mentally by the pandemic which has been spreading continuously, along with the isolation measures that are strictly put into action and the impediment to reopening educational institutions (Cao et al., 2020). Lockdown, social distancing, strict isolation, emergency remote teaching, and uncertainties surrounding school and university openings have had substantial effects in terms of socio-psychological and student anxiety, despite contributing to the containment of COVID-19 in Malaysia particularly (Sundarasen et al., 2020). Moreover, it was determined by Cao et al. (2020) that severe anxiety was represented by 0.9% out of 7,143 college students in China, 2.7% with moderate anxiety and 21.3% was reported having mild anxiety.

While protective factors found against anxiety were urban areas as the place of living, stability of family income, and residing with parents, the state of having infected relatives or acquaintances is the risk factor related to increased anxiety. Additionally, Sundarasen et al. (2020) used Zung's self-rating anxiety scale (SAS) and discovered that 20.4% of 983 university students in Malaysia had minimal to moderate anxiety, severe anxiety represented by 6.6%, and the most extreme levels of anxiety with 2.8%. Additionally, it was observed by Odriozola-González et al. (2020) that higher anxiety levels were apparent in students in comparison to the population generally, with 21.34% of university students in Spain exhibiting symptoms of extremely severe

anxiety in the time of the pandemic. While, during the pandemic, self-reported symptoms of anxiety surpassed those reported before the pandemic (Burkova et al., 2021).

A cross-national study involving 23 countries revealed that women experienced higher levels of anxiety than men amid the COVID-19 upsurge (Burkova et al., 2021). It was discovered by Sundarasen et al. (2020), that factors linked to elevated anxiety levels included being female, of age below 18 years, age ranging from 19 to 25, studying at pre-university, studying in management and living alone. The study also highlighted that the contributing factors to anxiety in Malaysian university students were financial constraints, remote online teaching, along uncertainties about academic and future careers as primary stressors. From Cao et al. (2020), there was a positive association between economic repercussions, disruptions in daily life and academic delays and symptoms of anxiety while social support exhibited a negative correlation with anxiety levels. Other additional stressors identified included the impact Covid-19 has on education and potential employment (G. Wang et al., 2020), sensationalized broadcasts and unreliable news reports (Ayittey et al., 2020), students' residency, stability of family income (Peng et al., 2012), and diminished social interactions (Xiao et al., 2020). Beyond the uncertainties of academic and professional, the upsurge of depression and anxiety in university students is also contributed by the factor of insecurity in finance (Islam et al., 2020). A negative association was found between anxiety and satisfaction in online learning (Heckel & Ringeisen, 2019). According to Saadé et al. (2017), some anxiety forms were experienced by 30% of students in online courses. Meanwhile, Son et al. (2020) highlighted the difficulties that college students in the United States had to face during the transition to online classes.

Including concerns about sudden syllabus changes, class quality, technical issues, and the difficulty of learning online. Moreover, anxiety in online learning was deemed as the fear of information technology misuse, compromising the performance of the course (Saadé et al., 2015). The fear of COVID-19 infection, changes in daily lives, social isolation, loss of job, financial challenges, grief over the death of loved ones, and lonesomeness are among the key factors that lead to increased anxiety (Pietrabissa & Simpson, 2020). While predictors for COVID-19 fear identified included health anxiety, regular media use, social media use, and concerns for loved ones (Mertens et al., 2020). While lockdowns or quarantines were deemed essential for health physically (Wang et al., 2020), they could possibly be harmful in prolonged impositions (Germani et al., 2020). According to Shanmugam et al. (2020), the achievement of better mental health can be made by being compliant with medication, having strengthened support from family, and reducing substance-related psychiatric disorders. While, healthy lifestyle maintenance, social contacts nurture, acceptance of anxiety and negative emotions, promotion of self-efficacy, and provision of information on medical treatment access appeared as beneficial strategies in protecting against anxiety, depression and psychological distress (Petzold et al., 2020). Those included in vulnerable groups such as Covid-19 patients, those facing financial impacts, and those fearing infection, had more tendency to experience more psychological distress and are supposed to receive mental well-being support (Bahar Moni et al., 2021).

3. Research Methodology

Study population and Sample**:** In exploring anxiety levels of Bumiputera students at a Malaysian public university amid the COVID-19 and the Movement Control Order (MCO) phase, cross-sectional research was undertaken. The study encompassed students having full-time diplomas and bachelor's degrees across 7 diverse faculties within a Malaysian public university. A number of 3 separate university campuses were involved in the study in which the students were enrolled in. The sample consisted of participants who were enrolled in semester two and beyond from the March to August 2021 academic session, with a total sample size of 809 students.

Sampling Technique: Quota sampling, a type of non-probabilistic stratified sampling was used to select the samples (Quota sampling 2021). The selection of the participants was made from each of the university's seven faculties ranging from diploma and bachelor's degree study levels enrolling in semester 2 and higher, from March to August 2021 academic sessions.

Study Instrument: The study used an online questionnaire to gather information on socio-demographic and academic characteristics, COVID-19-related factors, challenges in open and distance learning (ODL), and Generalized Anxiety Disorder-7 (GAD-7) (Spitzer et al., 2006).

Data Collection: The collection of data was made through the online survey conducted via Google Docs Form from August 13 to September 12, 2021. Students who were the participants of the study received the online survey through messages in the WhatsApp application. During this period, most students were continuing their ODL at their parents' homes.

Data Analysis: Statistical Package for Social Sciences (SPSS) Version 26.0 was used in analyzing the data. To illustrate the anxiety level among Bumiputera students, descriptive statistics were analyzed. In determining the presence of any significant disparities between socio-demographic, academic and psychosocial characteristics, ODL challenges, and COVID-19-related factors and anxiety levels during the COVID-19 pandemic, the study utilized an independent-sample t-test and one-way analysis of variance (ANOVA). Then, to evaluate the most contributing risk and protective factors against anxiety among Bumiputera students, statistically significant variables were included in multinomial logistic regression analysis. The strengths of association estimates were shown by the odds ratio (OR) with a 95% confidence interval (CI). The odds ratio is the change in odds of being in one of the categories of outcome when the value of a predictor increases by one unit (Tabachnick & Fidell, 2014). The value of OR can be either equal to 1, less than 1, or more than 1. If OR = 1, the predictor does not affect the odds of outcome, if OR > 1 predictor is associated with higher odds of outcome, and if OR < 1 predictor is associated with lower odds of outcome (Szumilas, 2010). The study reported significant results where the p-value was less than 0.10.

4. Results

Participants' Demographic Analysis: 811 responses were received in this study altogether. Following the data cleaning, it was determined that 809 responses could be used in the study. Table 1 depicts the participants' socio-demographic and academic characteristics.

Table 1: Socio-Demographic and Academic Characteristics of the Participants

Socio-demographic and Academic Characteristics	Categories	Frequency	Percent
Gender	Male	191	23.6
	Female	618	76.4
Age	Below 20 years	251	31.0
	20 years and above	558	69.0
Staying with	**Alone/With friends**	16	2.0
	Family	793	98.0
Family residence	**Rural**	292	36.1
	Urban	517	63.9
Family monthly income	Less or equal to RM4,850 (B40)	490	60.6
	RM4,851 or equal to RM10,970 (M40)	228	28.2
	RM10,971 or above (T20)	91	11.2
Family residence state region	**Northern**	101	12.8
	Central	412	52.4
	Southern	200	25.4
	East Coast	55	7.0
	East Malaysia	18	2.3
Field of study	Language studies	76	9.4
	Communication and media studies	160	19.8
	Hotel management	69	8.5
	Business and management studies	195	24.1
	Accounting	102	12.6
	Computer sciences	86	10.6
	Art and design	121	15.0

Level of study	**Diploma**	596	73.7
	Bachelor degree	213	26.3
Current semester status	**Non-graduating**	731	90.4
	Graduating	78	9.6
Previous education qualification	**Sijil Pelajaran Malaysia (SPM)**	576	71.2
	Sijil Tinggi Pelajaran Malaysia (STPM)	53	6.6
	Matriculation/Foundation	47	5.8
	Diploma	133	16.4

Anxiety Levels of Bumiputera Students at Public University: The anxiety levels of students were measured through the Generalized Anxiety Disorder-7 (GAD-7) scale (Spitzer et al., 2006). This GAD-7 comprises a number of 7 items, each rated on a 4-point ordinal scale: 0 (not at all), 1 (several days), 2 (more than half the days), and 3 (nearly every day). The score range of the responses given to the sum of the items was from 0 to 21, categorizing anxiety levels as follows: 0-4 (none to minimal anxiety), 5-9 (mild anxiety), 10-14 (moderate anxiety), and 15-21 (severe anxiety) (Spitzer et al., 2006). The seven items' internal consistency was reported as high, with 0.916 as the Cronbach's alpha value, indicating excellent reliability within the sample. Table 2 illustrates the distribution of anxiety levels among Bumiputera students at the university. According to the total of GAD-7 anxiety, 24.4% had none to minimal anxiety, 31% had mild anxiety, 23.7% faced moderate anxiety, and 20.9% reported experiencing severe anxiety. With 8 or higher as the score as a cutoff for identifying probable cases of generalized anxiety disorder, it was found that 55.6% of students experienced such anxiety during the period of the pandemic. The sum of average anxiety was 9.28, which indicated a mild anxiety of the 0 to 21 range of level.

Table 2: Descriptive Statistics of Students' Anxiety Levels

Anxiety Score Sum	Anxiety Level	Frequency	Percent	Anxiety Score Mean	Std. Deviation (SD)
0 – 4	None to minimal	197	24.4	2.23	1.506
5 – 9	Mild	251	31.0	7.01	1.342
10 – 14	Moderate	192	23.7	11.87	1.410
15 – 21	Severe	169	20.9	17.95	2.191
Total		809	100.0	9.28	5.797

Difference between Academic Performance and Anxiety: Students were also required to give a response to the question; "What do you notice about your overall previous attained academic performance after going through open and distance learning (ODL) for two to three semesters during the Covid-19 pandemic?" From 809 students, the majority (46.7%) responded there were both improvements and drops, 25.2% responded there were improvements, 14.8% responded there were drops in their grades, and 13.2% responded there were no changes in their overall previous attained academic performance. Table 3 reveals that of 120 students who responded there were drops in their overall previously attained academic performance, 25.8% reported experiencing severe anxiety, 24.2% with moderate anxiety, and 50% experienced minimal to mild anxiety.

Table 3: Difference in Students' Anxiety with Respect to Overall previously attained Academic Performance

Overall Previous Attained Academic Performance	N	%	Anxiety Level								Anxiety Score		F	Sig
			Minimal		Mild		Moderate		Severe					
			n	%	n	%	n	%	n	%	Mean	SD		
No changes	107	13.2	30	28.0	37	34.6	20	18.7	20	18.7	8.42	5.628	3.717*	0.011
Increase	204	25.2	68	33.3	57	27.9	41	20.1	38	18.6	8.51	6.123		
Both increase and decrease	378	46.7	79	20.9	117	31.0	102	27.0	80	21.2	9.61	5.607		
Decrease	120	14.8	20	16.7	40	33.3	29	24.2	31	25.8	10.33	5.769		

*Significant at 0.05 level

In answering Research Question 1, the study conducted a One-way analysis of variance (ANOVA). A statistically significant difference in anxiety scores was found in overall previous attained academic performance ($F(3, 805) = 3.717$, $p < 0.05$). Based on post-hoc comparisons using Turkey HSD test, the decrease group's mean score (mean = 10.33, SD = 5.769) was indicated as significantly different in comparison to the increase group (mean = 8.51, SD = 6.123) and no changes group (mean = 8.42, SD 5.628) but insignificant difference from both increase and decrease group (mean = 9.61, SD = 5.607) as shown in Table 3. The result indicated that the drop in previously attained academic performance during the COVID-19 pandemic had significantly developed higher anxiety among students. The result revealed that students with a pass to average current CGPA 2.00 – 2.99 experienced the highest proportion of anxiety at moderate (27.9%) and severe (21.3%) levels in comparison to good (CGPA 3.00 – 3.74) and excellent (CGPA 3.75 – 4.00) performers. However, the result found that there was no significant difference in anxiety across current academic performance ($F(2, 806) = 0.399$, $p > 0.05$). This result indicated that students from different CGPA groups experienced approximately equal anxiety levels following the spread of COVID-19.

Difference Between Open and Distance (ODL) Learning Satisfaction and Anxiety: In answering Research Question 2, the study conducted an Independent-samples t-test. Overall online learning satisfaction was measured using 1 – dissatisfied and 2 – satisfied. The majority (85.2%) of the students showed that they were satisfied with open and distance learning (ODL) implemented by the university while 14.8% showed dissatisfaction towards ODL From 120 students who were dissatisfied with ODL, 27.5% experienced moderate anxiety and 36.7% experienced severe anxiety. Results showed that students who were dissatisfied (mean = 12.00, SD = 5.952) towards ODL had significantly ($t = 5.669$, $p < 0.001$) higher levels of anxiety compared to students who were satisfied (mean = 8.81, SD = 5.642) towards ODL as shown in Table 4. The result suggested that students who were dissatisfied with ODL had higher chances to develop moderate to severe anxiety. Pearson's correlation coefficient also showed a significant negative correlation between ODL satisfaction and anxiety ($r = -0.275$, $p < 0.001$) which concurred with the study by (Heckel & Ringeisen, 2019).

Table 4: Difference of Students' Anxiety Regarding ODL Satisfaction

ODL satisfaction	N	%	Anxiety level								Anxiety score		t	Sig
			Minimal		Mild		Moderate		Severe		Mean	SD		
			n	%	n	%	n	%	N	%				
Dissatisfied	120	14.8	14	11.7	29	24.2	33	27.5	44	36.7	12.00	5.952	5.669***	0.000
Satisfied	689	85.2	183	26.6	222	32.2	159	23.1	125	18.1	8.81	5.642		

Major Stressors of Anxiety of Bumiputera Students During the COVID-19 Pandemic: In identifying the determinants that contributed most towards the probability of anxiety among Bumiputera students, multivariate logistic regression analysis was carried out. The study only reported significant results where the p-value was less than 0.10. Of 24 significant determinants in bivariate analysis, only seven determinants contributed most to anxiety among Bumiputera students. Results found that the odds of being at a higher level of anxiety decreased (OR = 0.343 95% CI = 0.185 to 0.663) if the students were male. In other words, female students had more tendency to have anxiety levels that are higher as opposed to male students. This also means female students were more vulnerable to Covid-19 situations than male students. Furthermore, the odds of being at a higher level of anxiety increased by 6.2 times (95% CI = 2.089 to 18.534), increased by 5.2 times (95% CI = 2.050 to 13.021), and increased by 3.4 times (95% CI = 1.233 to 9.325) if the students pursued studies in language, communication and media, as well as hotel management in comparison to students pursuing other field of studies. Results also revealed that students who did not share laptops with family members (OR = 0.541 95% CI = 0.313 to 0.935), students who did not have problems to catch up with ODL courses (OR = 0.395 95% CI = 0.174 to 0.901), students who did not experience quarantine because of close contacts with positive Covid-19 individual (OR = 0.502 95% CI = 0.264 to 0.956), and students who did not experience depressive thoughts (OR = 0.469 95% CI = 0.208 to 1.056) were less likely to develop severe anxiety level as opposed to the students having experiences of such situation.

While it was 2.7 times (95% CI = 1.317 to 5.718) of the likeliness more likely for respondents who were dissatisfied with ODL to develop severe anxiety as opposed to those satisfied with ODL. Results indicated that

the studies of language, communication and media, as well as hotel management, and dissatisfaction towards ODL were considered risk factors for anxiety among Bumiputera students. While protective factors against anxiety identified were having a male as agender, having no laptop sharing with families, having no problems in catching up with online courses, no depressive thoughts experience, and no experience of having quarantine because of close contacts with positive COVID-19 individuals. A review study on quarantine by (Brooks et al., 2020) identified quarantine duration, fear of infection, frustration and boredom, and having insufficient basic supplies like food, water, clothes, or accommodation as stressors during the quarantine period, while stressors of post-quarantine were finances, and stigma from other people. All these stressors, if uncontrollable, might lead to severe anxiety levels. Table 5 shows the outcomes of multinomial logistic regression of factors that most influence students' severe anxiety levels.

Table 5: Multinomial Logistic Regression of Most Influential Factors of Students' Severe Anxiety Levels

Variables	Categories	B	Std. Error	Sig.	Exp(B)	95% Confidence Interval (CI) for Exp(B)	
						Lower Bound	Upper Bound
Gender	Male	-1.071	0.313	0.001	0.343***	0.185	0.633
	Female	0[b]	.	.	.	.	.
Region of living residence	Northern	-1.010	0.862	0.241	0.364	0.067	1.972
	Central	-0.538	0.814	0.509	0.584	0.118	2.880
	Southern	-0.772	0.841	0.359	0.462	0.089	2.403
	East Coast	-0.966	0.947	0.308	0.381	0.060	2.436
	East Malaysia	0[b]	.	.	.	.	.
Field of study	Language	1.828	0.557	0.001	6.222***	2.089	18.534
	Communication and media studies	1.642	0.472	0.000	5.167***	2.050	13.021
	Business management studies	0.392	0.432	0.365	1.480	0.634	3.455
	Hotel management	1.221	0.516	0.018	3.390*	1.233	9.325
	Accounting	0.625	0.489	0.201	1.869	0.717	4.874
	Computer science	0.893	0.543	0.100	2.443	0.842	7.087
	Art and design	0[b]	.	.	.	.	.
Current semester	Non-graduating	-0.198	0.437	0.651	0.821	0.348	1.933
	Graduating	0[b]	.	.	.	.	.
Unstable internet	No	-0.145	0.344	0.673	0.865	0.441	1.696
	Yes	0[b]	.	.	.	.	.
Overload of assignments	No	-1.209	0.851	0.155	0.298	0.056	1.581
	Yes	0[b]	.	.	.	.	.
Delay of assignment submission due to Internet access	No	0.858	0.505	0.090	2.357	0.876	6.347
	Yes	0[b]					
Laptop sharing with other family member	No	-0.614	0.279	0.028	0.541*	0.313	0.935
	Yes	0[b]	.	.	.	.	.
Computer crash	No	-0.471	0.354	0.183	0.625	0.312	1.249
	Yes	0[b]	.	.	.	.	.
Computer competency	No	-0.183	0.350	0.601	0.833	0.419	1.654
	Yes	0[b]	.	.	.	.	.
Insufficient preparation for ODL	No	0.038	0.434	0.930	1.039	0.443	2.433
	Yes	0[b]	.	.	.	.	.
Problems catching up with online courses	No	-0.928	0.420	0.027	0.395*	0.174	0.901
	Yes	0[b]	.	.	.	.	.

Variables	Categories	B	Std. Error	Sig.	Exp(B)	95% Confidence Interval (CI) for Exp(B) Lower Bound	Upper Bound
Difficult covering difficult online courses	No	-0.424	0.743	0.568	0.654	0.152	2.808
	Yes	0[b]	.	.	.	.	.
Non-conducive environment for ODL	No	0.201	0.309	0.515	1.223	0.668	2.239
	Yes	0[b]	.	.	.	.	.
Financial difficulties	No	-0.344	0.273	0.208	0.709	0.416	1.210
	Yes	0[b]	.	.	.	.	.
Family commitment	No	0.136	0.339	0.688	1.146	0.589	2.229
	Yes	0[b]	.	.	.	.	.
Worried about academic progress and future career	No	0.062	1.197	0.958	1.064	0.102	11.120
	Yes	0[b]	.	.	.	.	.
The barrier to interaction with lecturers	No	-0.774	0.505	0.126	0.461	0.171	1.243
	Yes	0[b]	.	.	.	.	.
Decreased social interaction	No	-0.385	0.453	0.395	0.680	0.280	1.654
	Yes	0[b]	.	.	.	.	.
Depressive thoughts	No	-0.757	0.414	0.068	0.469[+]	0.208	1.056
	Yes	0[b]	.	.	.	.	.
Being quarantined due to close contact with a positive Covid-19 individual	No	-0.688	0.328	0.036	0.502*	0.264	0.956
	Yes	0[b]	.	.	.	.	.
Parents/family members/relatives infected with COVID-19	No	-0.109	0.259	0.672	0.896	0.540	1.488
	Yes	0[b]	.	.	.	.	.
Having sleep problem	No	-0.830	0.587	0.157	0.436	0.138	1.378
	Yes	0[b]	.	.	.	.	.
Overall ODL satisfaction	Dissatisfied	1.010	0.374	0.007	2.745**	1.317	5.718
	Satisfied	0[b]	.	.	.	.	.

*[+] Significant at 0.1 level *Significant at 0.05 level **Significant at 0.01 level ***Significant at 0.001 level 0[b] – reference*

Discussion

The study identified some protective and risk factors for severe anxiety among Bumiputera students during the COVID-19 pandemic in Malaysia. The mental well-being of vulnerable groups of individuals such as students who were infected with COVID-19 should be supported as they are the group that is more likely to develop severe anxiety levels that may affect their learning experiences and hence their academic performance. From analysis using the Chi-square test, it was shown that 78.8% of students staying in rural areas and 71.2% staying in urban areas experienced internet instability in their places of stay and the two variables showed a significant association (Chi-square = 5.572, $p < 0.05$). Moreover, during the MCO periods, students were taking online classes, therefore, a stable internet connection would help students to focus on their learning without thinking much about COVID-19 and hence would lessen their anxiety levels. With a stable internet connection, students can also release the stress during COVID-19 pandemic by watching YouTube or Netflix and this could reduce or control their anxiety levels. From this present study, most students (93.9%) who had to share laptops experienced computer crashes during unexpected moments. Students who shared laptops would not focus on their online learning compared to those owning laptops.

The present study found that 94.9% of students who shared laptops also had difficulty concentrating on what they were doing. Also, a significant connection between sharing laptops and difficulty in concentration was discovered (Chi-square = 28.989, $p < 0.001$). Moreover, those owning laptops were free to do what they wanted with their laptops and how long they wanted to use the laptops. However, if students were sharing laptops, their computer usage time was limited and hindered them from doing what they were supposed to, and this would ultimately increase their anxiety level. Both laptop sharing and computer crashes would develop anxiety and stress among students especially when they had a piling of assignments to be completed and submitted. Sufficient computer/internet competency and preparation were needed for ODL especially when some technical problems cropped up before or during ODL sessions. Students could not concentrate on what they were learning, which caused them to become annoyed or irritable with the situation which could end up in increased anxiety levels. Problems in catching up with tough online courses and struggling to cover difficult online courses were prevalent among less performed students which would cause increased anxiety levels among them. These situations would lead to becoming nervous, anxious, and uncontrollable of worry which ended in an increased level of anxiety.

From (Ismail et al., 2020), restlessness in a non-conducive environment was reported to prevent students from engaging in online learning sessions. The present study found that most (74.3%) students with non-conducive learning environments came from B40 income family backgrounds which agrees with (Ismail et al., 2020). In the current study, 95% of students experiencing non-conducive environments for their ODL also had difficulty in concentration. Further analysis showed that there was a significant association (Chi-square = 121.896, $p < 0.001$) between the non-conducive environment for ODL and difficulty in concentration. Almost 95% of students expressed that they were stressed with overwhelming assignments. These piling assignments with no flexible deadlines might make them fail to stop or control from feeling worried which leads to more anxiety. Approximately, 88% of students expressed that due to piling assignments, they had difficulty in concentrating on what they were doing, which ultimately increased their anxiety levels. In investigating the most contributing determinants to severe anxiety levels, multinomial logistic regression was utilized. Severe anxiety was prominent among female students. Females were generally more emotional and sensitive than males, and the situation might have worsened during the COVID-19 pandemic. Of 618 female students, only 3.2% sought help from mental health services provided by the university and 27.7% of females did not seek help.

Further analysis found a significant link between gender and coping strategy by seeking help from mental health services (Chi-square = 7.659, $p < 0.05$). Moreover, female students were subjected to having fewer coping strategies in uncertainties and tough situations (Sundarasen et al., 2020). In this study, older students (20 years and above) were found to possess higher levels of anxiety as opposed to younger students (18 to 19 years). However, the study found the anxiety levels for the younger and older students did not differ significantly which is similar to studies by (Chaudhary et al., 2021). For academic characteristics, only the study fields showed some significance in severe anxiety levels. It was demonstrated that students who pursued studies in language, communication and media, as well as hotel management appeared to have higher anxiety levels. The result approximately aligns with (Sundarasen et al., 2020), which concludes that students from management-related studies experience greater anxiety in times of pandemics. In terms of ODL challenges, the most contributing stressors to higher anxiety levels were laptop sharing with other family members and problems in catching up with tough online courses. There were still Bumiputera students in the university who did not own laptops. This would hinder them from doing important matters such as completing their assignments on time. Unable to complete the assignments on time would create some kind of pressure on some students which could increase anxiety.

Problems in catching up with online courses were very common among students during online classes, especially with difficult courses. Lecturers should have effective strategies to overcome this problem. In addition, dissatisfaction with ODL could also develop anxiety among students. Regarding psychosocial characteristics, the only potential stressor for higher levels of anxiety was depressive thoughts. From the study, almost 84% of students experienced depressive thoughts such as loneliness, feeling powerlessness or hopelessness, and feeling uncertain or insecure about the future. Those having depressive thoughts had more tendency to develop severe anxiety in comparison to students with no such thoughts. The result revealed that a higher proportion of students experienced mild to severe anxieties if they had interaction barriers with lecturers, lessened social interaction, along depressive thoughts. Many students had been going through these

difficult times; unprecedented happenings due to Covid-19 and lockdowns and adjustment to ODL. Lecturers have to realize and understand the difficult situations faced by their students by giving them support, motivation, and advice which would make them happy and could lessen their worry and ultimately lessen their anxiety levels. Support, motivation, and advice from lecturers would also act as social support to cope with students' anxieties.

During the continuous Covid-19 pandemic and MCO periods, social interaction had to be reduced. From the study, approximately 88% of students responded that they experienced reduced social interaction. With reduced social interaction, students felt isolated from their friends which created a feeling of restless at home, unhappy, frustrated, and undue resentment which ultimately increased their anxiety level. In this study, the study fields of language, communication and media, as well as hotel management and dissatisfaction towards ODL were identified as major risk factors for anxiety while having a male gender, no laptop sharing with family members, no problems in catching up with tough online courses, no depressive thoughts experience, no quarantine experience were viewed as protective factors against anxiety. The investigation uncovered that merely 30.5% of the students were aware of the mental health support services available that the university offers. Nonetheless, 14% actively looked for the service's assistance. It was demonstrated from the current study that those who were informed and looked for help had lower anxiety levels compared to those who were aware.

But did not seek assistance and those who were unaware or uncertain about the university's mental health support services. Treatment for anxiety may involve medication, counseling, therapy, or a combination of these interventions. Based on these findings, there is a critical need for the university to ensure the awareness of students in knowing about mental health support services, and encourage students to seek treatment, therapy, or counseling from these services. Taking proactive measures by the university is essential to prevent the deterioration of students' mental health, which could adversely impact their learning experiences and ultimately disrupt their academic performance. The university must provide comprehensive support for mental health, encompassing psychiatric and psychology-based services. Additionally, financial assistance from the government is essential so there will be effective mental health support services while consistently monitoring students' mental health. The study also revealed that students who experienced a decline for one to two semesters academically during the COVID-19 pandemic period exhibited greater anxiety in comparison to students who had inclining or stable academic performance.

5. Conclusion, Recommendations and Future Research

A significant 76% of Bumiputera students at a public university reported experiencing anxiety during the period of the COVID-19 pandemic and Movement Control Order (MCO), exacerbated by such challenges of online distance learning (ODL). Various stressors such as being female, sharing laptops with family members, struggling with tough online courses, experience in quarantine, and depressive thoughts were identified as factors contributing to severe anxiety among Bumiputera students. Enrollment in the studies of language, communication and media, as well as hotel management, along with dissatisfaction with ODL, were recognized as risk factors associated with anxiety. Furthermore, a noteworthy association was found between decreased academic performance and anxiety symptom levels of Bumiputera students. These findings underscore the significant impact that the pandemic crisis has on university students' mental health, emphasizing the need for support from communities, families, and universities during this emergency period. To address these challenges, efficient and effective pedagogical strategies for online courses are essential, as highlighted by Saadé et al. (2017). The recommendation for a laptop loan scheme, particularly for students from B40 families without personal laptops, is strongly endorsed. Collaboration between the Higher Education Ministry and universities is crucial in strengthening mental health support services and equipping university clinics with public health facilities.

Improvements in the Learning Management System, tailored to be more user-friendly, are essential for students, lecturers as well as non-academic staff. It is suggested for lecturers to enhance strategies for online teaching, especially with regard to students facing difficulties with challenging course topics and facilitate interactive and collaborative online learning activities to improve interaction. Chandrasiri & Weerakoon (2021) in their study emphasize the need for the delivery of interactive online learning sessions via

smartphone. In online education, there should be a shift in terms of the delivery of content, assessments, and communication as noted by Junus et al. (2021). Students should be offered long-term intervention and supportive programs in which enhancement of self-esteem and self-efficacy is the focus, extending past the ongoing pandemic, following the insights of Germani et al. (2020). Training sessions for lecturers and students in the application and accessibility of technology are critical to maximizing the benefits of online education by improving computer and internet competency. Future research endeavors should encompass a broader spectrum of students from diverse ethnic backgrounds in both public and private universities, exploring additional stressors related to anxiety and addressing a more comprehensive array of mental health issues in the post-COVID-19 period.

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