PSYCHOLOGICAL DISTRESS ON ONLINE LEARNING DURING THE PANDEMIC COVID-19 AMONG UNDERGRADUATE STUDENTS AT SCHOOL OF HEALTH SCIENCES, UNIVERSITI SAINS MALAYSIA

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By

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LIST OF ABBREVIATIONS

COVID-19	Coronavirus Disease 2019
SPSS	Statistical Package of Social Sciences
SD	Standard Deviation
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus-2
WHO	World Health Organization
SARS	Severe Acute Respiratory Syndrome
MCO	Movement Control Order
T&L	Teaching and Learning
UNESCO	United Nations Educational, Scientific and Cultural Organization
e-Learning	Electronic Learning
USM	Universiti Sains Malaysia
GAD-7	Generalized Anxiety Disorder Scale
PHQ	Patient Health Questionnaire
SAS	Self-rating Anxiety Scale
GHQ-12	General Health Questionnaire
AUC	Area Under the Response Operative Curve
ODL	Online and Distance Learning
HREC	Human Research Ethical Committee
Wi-Fi	Wireless Fidelity
UNIMAS	Universiti Malaysia Sarawak

TEKANAN PSIKOLOGI TERHADAP PEMBELAJARAN ATAS TALIAN SEMASA PANDEMIK COVID-19 DALAM KALANGAN PELAJAR IJAZAH DI PUSAT PENGAJIAN SAINS KESIHATAN, UNIVERSITI SAINS MALAYSIA

ABSTRAK

Tekanan psikologi dalam kalangan pelajar universiti meningkat menjadi penting terutama semasa pembelajaran atas talian menjadi garis pertama dalam pengajian memandangkan krisis COVID-19 sudah mengganggu proses pembelajaran biasa pelajar. Kajian keratan rentas dilakukan terhadap 409 orang peserta. Borang soal selidik diberikan kepada peserta yang memenuhi kriteria kajian melalui atas talian. Objektif umum bagi kajian ini untuk menilai tekanan psikologi terhadap pembelajaran atas talian semasa pandemik COVID-19 dalam kalangan pelajar ijazah di Pusat Pengajian Sains Kesihatan, USM. Data dianalisis dengan statistik deskriptif dan 'Chi-Square', dengan menggunakan 'Statistical Package of Social Sciences' (SPSS) 26.0. Purata tahap tekanan psikologi ialah 1.17 (SD 0.434) dan purata tahap halangan pembelajaran atas talian ialah 2.49 (SD 0.780), 2.25 (SD 0.711), 1.85 (SD 0.827), 2.24 (SD 0.752), 2.00 (SD 0.673), 1.13 (SD 0.423), 1.86 (SD 0.952), 2.32 (SD 0.931), 1.32 (SD 0.659) and 1.10 (SD 0.348). Kebanyakan peserta mempunyai tekanan psikologi yang normal 347 (84.8%), dengan hanya 53 (13.0%) mengalami tahap kegelisahan ringan hingga sederhana dan hanya sembilan (2.2%) mengalami kegelisahan teruk. Ujian 'Chi-Square' menunjukkan kajian ini mempunyai hubungkait antara tahap tekanan psikologi semasa pembelajaran atas talian dengan halangan pembelajaran atas talian pada (ketidakupayaan untuk menyesuaikan gaya pembelajaran, kesukaran kesihatan mental,

komunikasi yang buruk atau kurangnya arahan yang jelas dari pendidik, gangguan atau tidak ada akses internet, ruang fizikal terhad yang kondusif untuk belajar, perlu menunaikan tanggungjawab di rumah, perlu bekerja untuk pendapatan tambahan, kekurangan asas keperluan). Namun begitu, kajian ini tiada hubungkait antara tahap tekanan psikologi semasa pembelajaran atas talian.dengan halangan pembelajaran atas talian pada (kurang kemahiran teknikal dan tiada telefon pintar atau komputer atau kurang akses disebabkan berkongsi alat). Selain itu, tiada hubungkait antara data demografik (jantina, umur, kaum, bidang pengajian, tahun pengajian, penempatan semasa) dengan tahap tekanan psikologi semasa pembelajaran atas talian.

PSYCHOLOGICAL DISTRESS ON ONLINE LEARNING DURING THE PANDEMIC COVID-19 AMONG UNDERGRADUATE STUDENTS AT SCHOOL OF HEALTH SCIENCES, UNIVERSITI SAINS MALAYSIA

ABSTRACT

Psychological distress of university students has become increasingly vital since online learning becomes the first platform for delivering education as the COVID-19 crisis has interrupted the common learning process of students. A cross-sectional study was conducted on 409 participants. Self-administered questionnaire was given to the participants that fit the inclusion criteria via online platform. The general objective of this study is to assess the psychological distress on online learning during the pandemic COVID-19 among undergraduate students at the School of Health Sciences, USM. The data was analyzed by descriptive statistics and Chi-Square test by using Statistical Package of Social Sciences (SPSS) 26.0. The mean level of psychological distress in this study is 1.17 (SD 0.434) and the mean of barriers to online learning are 2.49 (SD 0.780), 2.25 (SD 0.711), 1.85 (SD 0.827), 2.24 (SD 0.752), 2.00 (SD 0.673), 1.13 (SD 0.423), 1.86 (SD 0.952), 2.32 (SD 0.931), 1.32 (SD 0.659) and 1.10 (SD 0.348). Most of the participants have a normal range of psychological distress 347 (84.8%) with only 53 (13.0%) experienced mild to moderate anxiety levels and only nine (2.2%) experienced marked to severe anxiety levels. Chi-Square test revealed there is a statistically significant association between level of psychological distress on online learning and barriers to online learning on (inability to adjust learning style, mental health difficulties, poor communication or lack of clear direction from educators,

unreliable or no internet access, limited physical space conducive to studying, need to fulfill responsibilities at home, need to work for extra incomes, lack of basic needs). However, there is no statistically significant association between level of psychological distress on online learning and barriers to online learning on (lack of technical skills and no smartphone or computer, or limited access due to gadget sharing with others). Besides, there is no statistically significant association between socio-demographic data (gender, age, ethnicity, field of study, year of field, current accommodation) and level of psychological distress on online learning

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) which known as COVID-19 was first identified in late of December in 2019 which origin from Wuhan, China (Temsah et al., 2020). The World Health Organization (WHO) announced the situation as a global pandemic on March 11, 2020 (Kapasia et al., 2020). Since COVID-19 was declared as a global pandemic, therefore, this emergence of a new coronavirus was a public health emergency of international concern and become one of the major threats to global public health since it can impact both physical and mental health. Previously, by the time of severe acute respiratory syndrome (SARS) and the equine influenza outbreak, there is documentation of damaging psychological implications (Sprang & Silman, 2013).

COVID-19 was first detected during January 2020 in Malaysia. There were very scarce cases reported back then and it is primarily restricted to tourists. In March 2020, the local outbreaks started to appear, which contributed to the largest cluster connected to a spiritual gathering known as *Tablighi Jamaat* in late February and early March. This causes a sudden peak and sharp increase in local cases as well as exported to neighboring countries. Malaysia was then becoming the highest increasing number of COVID-19 contagion in Asia. On March 18, 2020, a 'Movement Control Order' (MCO; i.e., lockdown) has been announced which aiming to control this COVID-19 outbreak (Sundarasen et al., 2020).

Implementation of social distancing and quarantining of infected people was applied to reduce virus transmission and interactions with COVID-19 infected individuals.

Malaysian people were confined to social isolation for a long and this causes the lifestyles and social relationships between the people were drastically altered and probably developed anxiety level plus the fear of getting the infection (Sundarasen et al., 2020). Primarily measures taken reduced the outbreak such as lockdowns, social distancing, strict isolation, emergency remote teachings and uncertainty and delays in the opening of schools and universities which significantly contributed to the implications of socio-psychological well-being and anxiety levels of the students (Sundarasen et al., 2020).

The psychological issues accompany this global development of coronavirus disease (COVID-19) outbreak have rapidly gives the public health burden (Torales et al., 2020). A study conducted by evaluating the effects of mental health on COVID-19 has reported a higher prevalence of moderate to severe self-reported of depressive and anxious symptomatology among the population in general (Wang et al., 2020) to uncertainty and health-related fears effects. This COVID-19 outbreak has placed an unexceptional mental health burden especially to the students which requires further investigation and immediate intervention (Grubic et al., 2020).

Implementation of physical distancing measures in response to COVID-19 resulted in the tertiary education institutions that have shifted to another crisis online learning format expected to further worsen academic stressors for university students (Grubic et al., 2020). National governments forced millions of people including researcher, academic, corporate personnel, and students, to stay safe, isolate themselves, or implement a whole or partial lockdown globally as the disease spread faster across the world (Cooper, Mondal & Antonopoulos, 2020). Therefore, physical access to the classroom has been restricted due to this imposing lockdown which took a long time.

The teaching environment and delivery methods have change and this become a massive adjustment burden for the university. Therefore, online learning becomes the first platform for delivering education and training as the COVID-19 crisis has interrupted the common learning process, teaching and learning (T&L) of students, teaching calendar and assessments (Nik-Ahmad-Zuky, Baharuddin & Rahim, 2020). Over 87% of the world's students population, which involves more than 160 countries were affected by the lockdown in a report from UNESCO (Araújo, Lima, Cidade, Nobre & Neto, 2020). This extraordinary crisis needs to be improved so that online education has its opportunity for 1.2 million university students including about 130,000 international students in Malaysia, mostly had affected by closures (Abdullah et al., 2020).

There is a modification for clinical teaching and learning since medical students are not allowed practical in the wards since the MCO and therefore this causes them to be worried and might be less competent clinically in the future (Nik-Ahmad-Zuky et al., 2020). The students in the medical field requires competency and practical learning with real patients and online T&L is not a suitable platform.

COVID-19 pandemic causes the risk of death arise from a viral infection but as well as psychological stress for people across the world (Xiao, 2020). All levels of education facing these similar strict isolation measures, continuous dissemination and online learning problems are expected to affect students' mental health.

1.2 Problem Statement

The psychological distress of university students has become increasingly vital in recent higher education policy (Cvetkovski, Reavley & Jorm, 2012). A study by Arenliu & Berxulli, (2020), reported that there are significant differences among students on their

motivation to attend online lessons and their psychological distress. Besides, in comparison to students who reported being highly motivated to attend classes online, students who reported that they were not at all motivated to participate in online learning also reported high (moderate to severe) levels of psychological distress (Arenliu & Berxulli, 2020). A study was done including college students consists of 7143 participants shown that around 25% of students have suffered severe anxiety because of e-Learning crack up (Cao et al., 2020). Plus, 83% of students were reported to have experience the worst situation and 26% of students could not access to mental health support (Lee, 2020). Due to the negative view of the e-Learning system, this condition creates a situational demand to evaluate psychological distress among college students.

Education technology has limited access to everyone since not every household in Malaysia has a device or a good internet connectivity to access online learning. The students appeared to have unequal learning opportunities due to discrimination against adequate family facilities (Jæger & Blaabæk, 2020). The lower income families affected by this online learning as most educational institutes used this platform in this new norm of higher education during this pandemic. A study emphasized a strong significant relationship between psychological stress and poverty (Jiang, 2020). Therefore, students from low-income families have limited or no access to online learning because of digital inequalities and difficult access to modern technology.

Baticulon et al., (2020) mentioned that 2,916 (79%) owned a postpaid internet subscription and the other 696 (19%) medical students had prepaid mobile data. Due to these current pandemic conditions, only 1,505 (41%) students are considering themselves to be mentally and physically capable of engaging in this online learning. The authors added that

the barriers have been divided into five main categories which consists of individual, technological, domestic, institutional and community barriers.

There was a study conducted on the psychological effects of the COVID-19 epidemic on students in China (Cao et al., 2020). Furthermore, there is also a recent study of the psychological impacts of students on online learning during the pandemic COVID-19 done in Indonesia (Irawan et al., 2020). Yet, there is no detailed research on students' psychological distress conducting online learning during this COVID-19 pandemic among undergraduate students in Kelantan, Malaysia. Therefore, this study aimed to explore the psychological distress on online learning among students during the COVID-19 pandemic particularly in Kelantan.

1.3 Research Question

1. What is the level of psychological distress of undergraduate students at the School of Health Sciences, USM?
2. What is the barriers to online learning among undergraduate students at the School of Health Sciences, USM?
3. Is there any association between psychological distress and barriers to online learning among undergraduate students at the School of Health Sciences, USM?
4. Is there any association between selected socio-demographic characteristics (gender, age, ethnicity, field of study, year of study and current accommodation) with psychological distress of undergraduate students at the School of Health Sciences, USM?

1.4 Research Objectives

1.4.1 General Objective

The aim of this study to assess the psychological distress on online learning during the pandemic COVID-19 among undergraduate students at the School of Health Sciences, USM.

1.4.2 Specific Objectives

1. To determine the level of psychological distress of undergraduate students at the School of Health Sciences, USM
2. To identify the barriers to online learning among undergraduate students at the School of Health Sciences, USM
3. To determine the association between psychological distress and barriers to online learning among undergraduate students at the School of Health Sciences, USM
4. To determine the association between selected socio-demographic characteristics (gender, age, ethnicity, field of study, year of study and current accommodation) with psychological distress of undergraduate students at the School of Health Sciences, USM

1.5 Research Hypothesis

Hypothesis 1:

There is no significant association between psychological distress and barriers to online learning among undergraduate students at the School of Health Sciences, USM (Ho).

There is a significant association between psychological distress and barriers to online learning among undergraduate students at the School of Health Sciences, USM (H_A).

Hypothesis 2:

There is no significant association between selected socio-demographic characteristics (gender, age, ethnicity, field of study, year of study and current accommodation) and psychological distress of undergraduate students at the School of Health Sciences, USM (Ho).

There is a significant association between selected socio-demographic characteristics (gender, age, ethnicity, field of study, year of study and current accommodation) and psychological distress of undergraduate students at the School of Health Sciences, USM (H_A).

1.6 Significance of study

The aim of this study is to evaluate the psychological distress on online learning during this COVID-19 pandemic among undergraduate students at the School of Health Sciences, USM. This study helps in determining the level of anxiety of the students in facing their online learning process. They faced problems and challenges in conducting their online class which affected their anxiety level as well. Therefore, this finding will help determine the level of anxiety and also detect the barriers throughout their online learning education.

Despite the prevalence of psychological distress and its association with the problem with online learning will provide valuable information for the Division of Academic of USM in detecting the numbers of students having anxiety since the face-to-face education had shifted to online learning based education. Afterwards, the Division of Academic of USM will have the initiative to provide better management to reduce the impact of anxiety among the students to improve their performance in the study during this COVD-19 pandemic which we could not predict with any degree of certainty just how long this COVID-19 pandemic will last.

1.7 Conceptual and Operational Definitions

Table 1.1 Definition of terms

Terms	Conceptual definitions	Operational definition
Psychological distress	Psychological distress is an emotional suffering state with the presence of stressors and demands which difficult to be cope in life (Rn & Gp, 2016)	In this study, it is referred to the level of anxiety when confronted with online learning using questionnaire by Sundarasen et al., (2020)
Online learning	Online learning is a number of technologies which provide education, such as the worldwide web , email, talk, new groups and messages, audio and video conferencing distributed over computer networks (Dhull & Arora, 2017)	In this study, it is referred to an education system which shifted from face-to-face learning to online learning and can be accessed everywhere within the Internet
Barriers to online learning	Barriers to online learning is identified as being related to internal and external factors which internal barriers are related to the individual learner such as attitudes and technological competency level. Whereas, external barriers are related to lack of availability and accessibility of technology, support quality and insufficient development of skills for both learners and educators in the use of learning technologies (Becker, Newton & Sawang, 2013)	In this study, it is referred to obstacles that the students faced during online class which comprised of technological, individual, domestic, institutional and community problems in the questionnaire (Baticulon et al., 2020)
Pandemic COVID-19	Pandemic COVID-19 is a new causative agent for coronavirus disease known as SARS-CoV-2 which is the unwelcomed novel agents and the WHO has been declared that COVID-19 become a public health emergency of international concern worldwide on 30 January and a pandemic on 11 March 2020 (Balkhair, 2020)	In this study, it is referred to an outbreak which stops all the two way communication in education and interferes with students' academics performances

Undergraduate students	A university or college students who are currently studying for their first degree (Oxford Learners Dictionary, 2020)	In this study, it is referred to the students of different programs including Nursing, Audiology, Biomedicine, Dietetics, Environmental & Occupational Health, Exercise & Sports Science, Forensic Science, Medical Radiation, Nutrition and Speech Pathology in School of Health Sciences, USM

CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction

This chapter presents a review of the literature related to psychological distress and barriers to online learning during pandemic COVID-19 among undergraduate students at the School of Health Sciences, USM. The resulting literature review is organized into six sections covering topics most relevant to meeting its objectives, answering the study's research questions and supporting or disagreeing with its hypotheses. Finally, this chapter provide a detail description of the conceptual framework chosen for the proposed study.

2.2 Psychological Distress

Psychological distress can be defined as a state of emotional suffering characterized by symptoms of depression such as sadness or hopelessness and anxiety such as feeling tense or restlessness (Drapeau et al., 2012). The prevalence of psychological distress in the university students population is lower than in the non-students population and this prevalence is around 20% in the general college students population but vary between 5% and 45% which depend on the specific population such as medical students (Torre et al., 2019).

The assessment of psychological distress which most widely used instrument in detection and screening of anxiety disorders is the 7-item Generalized Anxiety Disorder Scale (GAD-7) and it is a module of the 'Patient Health Questionnaire' (PHQ) which to aid the diagnostic process of specific disorders (Toussaint et al., 2020). The criterion in GAD-7 which comprises of Criterion A (fear and anxiety to series of events), Criterion B (difficulties

in controlling concerns) and Criterion C (anxiety and worry are accompanied by at least three symptoms like restlessness, mild fatigue, irritability, sleep problems and difficulty concentrating (Toussaint et al., 2020). It then asks how often people have suffered from the seven core symptoms of GAD within the last two weeks with the response options being 'not at all', 'on some days', 'on more than half of the days' and 'almost every day' (scored 0–3, with a total score ranging from 0 to 21) (Spitzer, Kroenke & Williams, 2000;Toussaint et al., 2020).

However, in a Sundarasen et al., (2020) study, the assessment for anxiety level is using Zung's self-rating anxiety scale (SAS). Zung's SAS has demonstrated good psychometric properties with Cronbach's alpha of 0.897 and intraclass correlation of 0.913. In addition, there is a study using the General Health Questionnaire (GHQ-12) which a reliable screening tool to detect poor mental health and it has suitable psychometric properties with an acceptable internal consistency with Cronbach's alpha of 0.75 and an Area Under the Response Operative Curve (AUC) of 0.8 (Sánchez-López & Dresch, 2008; Torre et al., 2019).

2.3 Online Learning

According to Stern (2018), online learning can be defined as an education over the Internet and is often referred to as 'e-learning' in other terms. Besides, online learning is just a type of 'distance learning' which represents the umbrella term for any type of learning that is not in a traditional classroom and takes place across distance. Plus, online learning is an internet-based course which offered synchronously and asynchronously.

In Malaysia, the impact of the global pandemic COVID-19 has hampered the learning institutions' operational activities and caused them to embrace online learning due to the

movement control order (MCO) and campus closure (Kamal et al., 2020). Therefore, learning institutions should alter its course of action from the usual standard norms to an already alternative of embracing online learning without any option left. However, adapting to the new norms is not an easy process and in response to the MCO, higher education institutions must execute online electronic communication platforms to facilitate the teacher-students interaction (Kamal et al., 2020). However, this approach inadequate for certain field like hands-on medical or technical education since mentorship and vigilant apprentice level supervision of patient care activities are necessary (Moadel et al., 2020).

According to Barak & Green, (2020), a conventional content-based online courses are considered as a cost effective teaching ways since it can accommodate more students at the same time and need little intervention from the teaching staff. Since online courses required individual learning and machine-graded tasks, this might lead to isolation, especially among the students. Plus, a recent study by Pinkus, Gloeckner & Fortunato, (2015) show that ethical knowledge and practices are best constructed by applying case-based activities in face to face environments, for instance workshops and seminars.

2.4 Barriers to Online Learning during the COVID-19 Pandemic

The benefits of online learning in education had improved the accessibility of information, ease in updating and standardized content, accountability, cost-effectiveness and enhancement of the learning process which the students will motivated to become an active learner (Chen, Kern, Kearns, Thomas, Hughes & Tackett, 2019; Ruiz, Mintzer & Leipzig, 2016). However, in a study Frehywot et al., (2013), mentioned that in low and middle income countries might have the possibility of faculty shortage, widen the reach of medical educators, and efficiency improvement. Despite these, most medical students had a

negative perception towards online learning as mentioned in a recent study of (Abbasi, Ayoob, Malik & Memon, 2020; Dicken-Kano & Bell, 2006) . Plus, in a study Daroedono et al., (2020), emphasized that students concerned regarding difficulty in concentrating and understand the concepts online and lack of interaction.

A recent study of Baticulon et al., (2020), stated that the most encountered barriers to online learning were poor communication or lack of clear directions from educators, adjusting difficulty in learning styles, lack of physical space for studying and requirement to perform responsibilities at home. Besides, all these barriers were classified into five categories namely technological, individual, domestic, institutional and community barriers. The technological category pertaining to the software and internet connectivity, individual category including the learning styles of students, physical and mental health. The domestic category involves at home or within the family and also financial distress. The institutional category involving the administration, curriculum, school resources and educator skills, and the community barriers category involves lockdown restrictions, infrastructure challenges, and sociopolitical issues.

According to Baticulon et al., (2020), approximately two-thirds of the participants are always or often confronted with these barriers. Furthermore, the availability of reliable and fast internet connection was vital than either technical aptitude or device ownership. Besides, one out of ten students faced lacked basic needs such as food, water and medicine. This study has the internal consistency for these barriers which shown acceptable reliability with Cronbach $\alpha = 0.78$.

According to recent study of Kamal et al., (2020), the largest factor in the absence of online learning by learners was technological challenges and self-attitude. Most of the

students confessed that they failed to complete online activities and evaluations due to technological difficulties such as Internet access. A few students have mentioned compatibility problems with operating systems, browsers or computers as technical problems. Administration and management of online learning material such as vague directions or procedures, no notice of assignment dues and a tight timetable between tasks and assignments. The last of the four variables found from the feedback of the students is environment distraction.

2.5 Association of Psychological Distress with Barriers to Online Learning during the COVID-19 Pandemic

A recent study by Hasan & Bao, (2020), emphasized that there is a significant impact of e-learning crack-up on psychological distress ($\beta = 0.956$; $T = 283.457$) supporting H1. Path coefficient (β), T-statistics and P-values are presented to determine whether the proposed hypotheses have been accepted or rejected (Hasan & Bao, 2020). Students have demonstrated a greater degree of psychological anxiety in this study due to e-learning crack up during COVID-19. This research analysis confirmed the hypothesis that psychological distress was associated with the perception of e-learning crack-up. Specifically, the findings found that online class registration processes, limited performance appraisal systems, one-way instructor assistance and cost for e-learning content which are associated variable for higher psychological distress. This finding confirms that previous work has shown large costs hampering e-learning effectiveness (Wu et al., 2010).

In a recent study, out of the 983 participants in the survey, 201 (20.4%), 65 (6.6%), and 28 (2.8%) experienced minimal to moderate, marked to severe, and most extreme levels of anxiety, respectively based on Zung's Anxiety Index and the internal consistency of the

20 items in the self-rating anxiety scale (SAS) was high (Cronbach's $\alpha = 0.944$) (Sundarasen et al., 2020). According to Sundarasen et al., (2020), explained that the sudden switch to online classes was a significant contributor to anxiety and stress level. In terms of technical infrastructure, the students faced uphill assignments, primarily weak links to the Internet. It is also appalling to notice that some students attend 6-8 hours of online classes every day and use of their cell phones, which further led to insurmountable tension and health problems. Furthermore, the overwhelming expectations of their instructors with many tasks and no flexible deadlines, contributed to the stress of the students.

A study of nursing students demonstrated anxiety among participants about the effects of the COVID-19 virus (Id, Lei, Xu, Liu & Yu, 2020). In online learning, such anxiety results in boredom. Research finding also reflects the appearance of irritability in the individuals around them in research subjects. Most of the participants said they felt upset about the situation as there was a lot of environmental interference and interruption of the internet network (Id et al., 2020). Similarly, a recent study of Baticulon et al., (2020), emphasized that this pandemic caused psychological stress where the students expressed feelings of anxiety, loneliness, burnout, homesickness, hopelessness, and grief. About 86% of the students reported experiencing mental health difficulty (Baticulon et al., 2020).

2.6 Association of Socio-Demographic Characteristics and Psychological Distress

A recent study of Li, Wang, Jiang, & Valdimarsdóttir, (2020), emphasized that students shown higher psychological distress were more in the female, which at higher levels of baseline stress, anxiety and depression compared to those who did not show distress. Similarly, in a study of Wang & Zhao, (2020), female students showed more anxiety than male students. It is proven in a recent study of Sundarasen et al., (2020) which stated that in

general, female express emotions to a greater degree than males do and his condition may have been compounded by the recent pandemic. This study said that the threshold for female uncertainty tolerance is lower than the males and by crossing the threshold, it will trigger undue stress and anxiety. Therefore, female students may be subject to lower coping strategies in times of stressful and uncertainty situations.

In terms of age, the younger students, which specifically for those in 17 to 18 years old, were proven to be more anxious than older ones (Sundarasen et al., 2020). Commonly, the younger generation constantly on social media, and the information obtained and shared from the social media will play a pivotal role in increasing the students' anxiety level (Xiang et al., 2020). In spite of the fact that social media provides easy access to information that is beneficial during the lockdowns, it can be exhausting and may take a toll on the students' mental health. The flow of risk-elevating social media messages delivered in negative ways could trigger anxiety, especially when the media coverage may make it seem like COVID-19 is omnipresent (Sundarasen et al., 2020).

Besides, with regard to the field of study, medical and healthcare students experience a higher level of anxiety during this pandemic (Al-Rabiaah et al., 2020). Medical students were exposed to similar stressors during this pandemic and had contact with patients. The medical students were less stressed than nursing and non-health university students even though the overall estimated stress level was high (Al-Rabiaah et al., 2020). In contrast, in another study of Sundarasen et al., (2020), stated that students in management related studies have higher level of anxiety than healthcare and medical students. There is possibility that the healthcare students were well-informed of expectation as this pandemic still progresses than the students of business or management related studies.

According to Wang & Zhao, (2020), emphasized that the Chinese university students in grade one had lower anxiety level than grade two and three. Whereas, grade two students had higher anxiety than grade three because they had more academic burdens. The students in grade two just started the professional curriculum in their second year. Their scores are vital than grade one since the scores will enable them for postgraduate students without examination in the next year. Apart from that, students in grade three were more stable and more mature in handling emotions and therefore, they had lower anxiety than students in grade two.

In a study of Sundarasen et al., (2020), in terms of current accommodation, students who stayed alone had highest anxiety level than those staying with family and friends. Those whom live alone are generally away from their loved ones. During this pandemic, the sudden threat to the students' safety and security may have led them to feel lonely and facing obstacles from different angles. Mental and social well-being is essential for establishing and sustaining relationships and is one of the students' life hallmarks. This COVID-19 pandemic had created social recession where there must be a continual pattern of social distancing which created lack of emotional support and broader societal effects which therefore increased the anxiety levels of students (Sundarasen et al., 2020).

2.7 Theoretical and Conceptual Framework of the Study

The theoretical framework used for this study is based on the mediator variable which, describes the relation between a predictor variable and a criterion variable by Baron & Kenny, (1986). Mediators explain how something works or why it works. The approach of Baron & Kenny, (1986) is an analysis technique for testing theories regarding mediation. There are two paths to the dependent variable in this mediation process. The independent

variable must predict the dependent variable and the mediator must be predicted by the independent variable. Hence, if all of these conditions hold in the predicted direction, then the independent variable effect on the dependent variable need to be less in the third equation than in the second.

In order to explain a known relationship, mediation studies are built by examining the underlying mechanism in which one variable affects another variable via a mediator variable. If the independent variable has no effect while the mediator is regulated, perfect mediation holds. Since the independent variable is assumed to cause the mediator, there should be a correlation between these two variables.

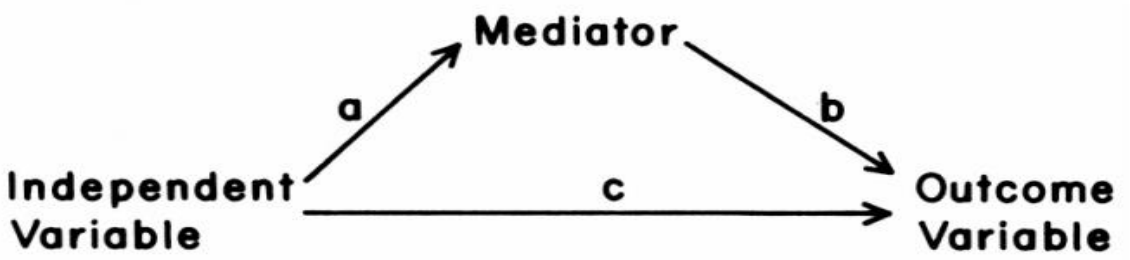

Figure 2.1: Simple mediation model (Baron & Kenny,1986)

The conceptual framework is about paths to dependent variable which are the level of psychological distress during the COVID-19 pandemic. The socio-demographic characteristics include the data from gender, age, field of study, year of study, ethnicity and current accommodation and barriers to online learning should predict the dependent variables. One variable should influence another variable such as the level of psychological distress findings either the students are normal, mild to moderate, marked to severe and extreme anxiety levels when conducting the online learning during this COVID-19

pandemic, should correlate with the factor attributed or barriers occurred during online learning process. The psychological distress acts as a mediator to these variables since that the outcome variable would be able to detect the severity of the level of psychological students.

The adaptation of barriers to online learning which comprised of inability to adjust learning style (include poor time management, lack of discipline), lack of technical skills, mental health difficulties, poor communication or lack of clear direction from educators, unreliable or no internet access (include power interruption), no smartphone or computer, or limited access due to gadget sharing with others, limited physical space conducive to studying, need to fulfill responsibilities at home (include taking care of family members), need to work for extra incomes and lack of basic needs (food, water, medicine, security) are from a study of Baticulon et al., (2020), which become the independent variable in this study where it will either affect the level of psychological distress of the students or not.

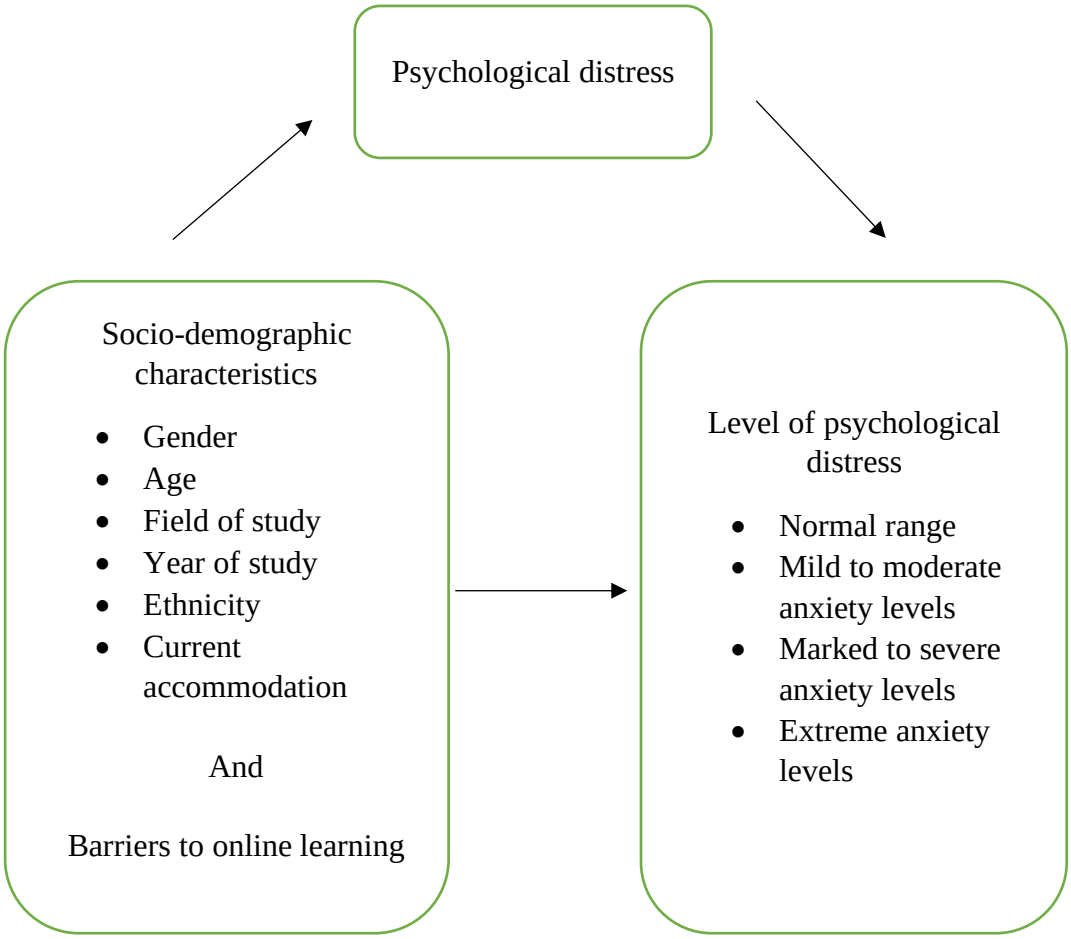

Figure 2.2: The adapted simple mediation model by Baron & Kenny, (1986)

CHAPTER 3

METHODOLOGY

3.1 Introduction

The research methodology which includes the research design, research location, research duration, subject criteria, sampling plan and research instrument explained in this chapter. The variables, data collection plan, data analysis plan and expected outcome of the study also will be described in this chapter.

3.2 Research Design

This study utilized a descriptive cross-sectional study design, to assess the level of psychological distress and barriers to online learning among undergraduate students at the School of Health Sciences, Universiti Sains Malaysia (USM). This study was conducted by using survey method in obtaining data about psychological distress and barriers to online learning from undergraduate students at the School of Health Sciences, USM. The method of descriptive research defines the characteristics of the population or phenomenon that is being studied and more concerned with what rather than how or why something has happened (Nassaji, 2015). Cross-sectional study design is a type of observational study design and the researcher measures the outcome and the exposures in the study participants at the same time (Setia, 2016). The participants in this cross-sectional study was selected based on inclusion and exclusion criteria set for the study and once the participants have been selected, the researcher follows the study to assess the exposure and the outcomes (Setia, 2016).

3.3 Study Setting and Population

The study was conducted on an online and distance learning (ODL) undergraduate students who are enrolled in online courses in the USM. The participants are divided into two categories which are students whom are still at home and students whom already at the campus USM. The target of the population study were undergraduate students at School of Health Sciences, USM and an online questionnaires using Google Form was sent out via WhatsApp messages and email to a total of 409 undergraduate students at the School of Health Sciences. The undergraduate students at the School of Health Sciences consists of ten different academic programs which are Nursing, Audiology, Biomedicine, Dietetics, Environmental & Occupational Health, Exercise & Sports Science, Forensic Science, Medical Radiation, Nutrition and Speech Pathology. This study included year one up to year three undergraduate students at the School of Health Sciences.

Participation in the survey is voluntary and the students' consents was obtained prior to the start of the survey. The participants were assured on the confidentiality of their responses. This study excluded Diploma of Nursing in and year four undergraduate students at School of Health Sciences. This is because the year four students are the final year and they usually involved in a clinical placement which requires them to have less assessment in online learning. Next, the reason Diploma in Nursing is not chosen is that their year of study consists of year one up to year three. Since the researcher do not chose the final students, therefore, the Diploma in Nursing left with the availability of years one and two. This cause a different trend of comparison between the year of study of the population participants.

3.4 Sampling Plan

3.4.1 Sample Criteria - Inclusion and Exclusion Criteria

Inclusion Criteria:

- Undergraduate students at School of Health Sciences of Year 1, 2 and 3
- Able to understand, speak and write in English
- Consented to participate in this study

Exclusion Criteria:

- Diploma in Nursing
- Undergraduate students at School of Health Sciences Year 4

3.4.2 Sample Size Estimation

The sample size was calculated for each objective. In this study, single proportion formula is used to calculate the sample size for the first objective.

n=[Z/Δ]2 p(1−p)

Whereby,

n = sample size

Z = value representing the desired confidence level

Δ = precision (value from 1 – 0; i.e. %)

p = anticipated population proportion

The parameter in this study are as follows:

Z = 1.96

Δ = 0.05

p = 0.066 from Sundarasen et al., (2020)

n=[Z/Δ]2 p(1−p)

n = $\left[\frac{1.96}{0.05}\right]^2 (0.066)(1 - 0.066)$

n = 94.72

n = 95

The minimal sample size was 95 and after considering 10% drop out, the calculation sample size was:

n = 95 + 10% drop out

n = 95 + 9.5

n = 104.5

n = 105 undergraduate students at School of Health Sciences

Sample size for second objective was determined by using single proportion formula. The parameter in this study are as follows:

Z = 1.96

Δ = 0.05

p = 0.59 from Chung, Subramaniam & Dass, (2020)

n=[Z/Δ]2 p(1−p)

n = $\left[\frac{1.96}{0.05}\right]^2$(0.59)(1-0.59)