



UNIVERSITI PUTRA MALAYSIA

***ASSOCIATIONS BETWEEN PSYCHOLOGICAL FLEXIBILITY,
RESILIENCE AND PSYCHOLOGICAL DISTRESS AMONG MEDICAL
STUDENTS IN UNIVERSITI PUTRA MALAYSIA DURING COVID-19
PANDEMIC***

GROUP 33

**ABDUL MUKMIN BIN HUSAIN
NUR ALIA BINTI BAHARUDDIN
ANGEETHA BALACHANDER**

**Ip
FPSK1 2020 30**

ABSTRACT

This research is conducted during coronavirus disease 2019 (COVID-19) period. The pandemic has brought many adverse effects, including psychological impact to the people around the world. The effort to curb spread of virus in Malaysia has led to implementation of Movement Control Order (MCO). This study is focused on medical students as they are one of the groups of people greatly affected by the pandemic. **Objectives:** This study aimed to determine medical students' psychological state which include psychological flexibility, resilience and psychological distress during the pandemic. In addition, associations between psychological flexibility, resilience and psychological distress are also determined. **Methods:** A total of 269 Universiti Putra Malaysia (UPM) medical students from year 1 until year 5 has answered a set of questionnaires through google form, which consisted of sociodemographic questions, Acceptance and Commitment Questionnaire II (AAQ-II), Mindfulness Attention Awareness Scale (MAAS), Brief Resilience Scale (BRS), and Kessler 10 (K10). AAQ-II and MAAS are used to measure psychological flexibility, BRS for resilience and K10 for psychological distress. Sociodemographic factors and scores for each of the questionnaires are analysed using SPSS statistics. **Results:** The mean score for AAQ-II, MAAS, BRS and K10 are 21.93, 4.20, 3.25, and 21.63 respectively. It is found that 22.3% of the students have low resilience and severe psychological distress. Pearson's correlations showed statistically significant associations between all the variables ($p < 0.001$). Thus, all hypotheses are not rejected. **Conclusions:** Increase in psychological flexibility, increases resilience. In contrast, increase in psychological flexibility, decreases psychological distress.

Table of Contents

Chapter 1: Introduction

| | |
|---------------------------|---|
| 1.1 Background | 1 |
| 1.2 Problem Statement | 3 |
| 1.3 Significance of Study | 4 |
| 1.4 Research Questions | 5 |
| 1.5 Research Hypothesis | 5 |
| 1.6 Study Objectives | 5 |
| 1.7 Conceptual Framework | 6 |

Chapter 2: Literature Review

| | |
|---|----|
| 2.0 Introduction | 7 |
| 2.1 Psychological flexibility | 7 |
| 2.2.1 Resilience | 10 |
| 2.2.2 Resilience data on specific group | 11 |
| 2.3.1 Psychological distress | 12 |
| 2.3.2 Psychological distress during COVID-19 | 13 |
| 2.4 Association between psychological flexibility, resilience and psychological distress in different groups | 17 |

Chapter 3: Methodology

| | |
|---------------------|----|
| 3.1 Study Location | 20 |
| 3.2 Study Duration | 20 |
| 3.3 Study Design | 20 |
| 3.4 Sampling | 20 |
| 3.5 Data collection | 23 |

| | |
|---|-----------|
| 3.6 Data Analysis | 25 |
| 3.7 Study Ethics | 26 |
| 3.8 Variables | 26 |
| 3.9 Operational Definition | 27 |
| 3.10 Ethical Consequences | 28 |
| 3.11 Expected Outcomes | 28 |
| 3.12 Work Plan | 29 |
| Chapter 4: Results | |
| 4.1 Response Rate | 30 |
| 4.2 Normality Testing | 30 |
| 4.3 Descriptive Statistics | 32 |
| 4.4 Analytical Statistics | 34 |
| Chapter 5: Discussion | |
| 5.1 Study Design | 36 |
| 5.2 Sociodemographic Factors, Psychological Flexibility, Resilience and Psychological Distress | 36 |
| 5.3 Association between Psychological Flexibility and Resilience | 37 |
| 5.4 Association between Psychological Flexibility and Psychological Distress | 38 |
| 5.5 Association between Resilience and Psychological Distress | 39 |
| Chapter 6: Conclusions | |
| 6.1 Conclusions | 40 |
| 6.2 Recommendations | 40 |
| 6.3 Limitations | 41 |
| 6.4 Strengths of studies | 41 |
| Reference List | 42 |
| Appendix A: Budget | 48 |

Appendix B: Information and Consent Form

49

Appendix C: Questionnaire

52



CHAPTER 1

INTRODUCTION

1.1 Background

COVID-19 has been declared a pandemic by the World Health Organisation (WHO) Director General Dr Tedros Adhanom Ghebreyesus on 11 March 2020. After the initial description in Wuhan and China, Italy was hit first in Europe and the impact has been great. The virus spread very rapidly such that 2 weeks from the first cases diagnosed 1000 patients tested positive. One week later the number of positive cases exceeded 4600, reaching over 30 000 patients and 2500 deaths on the 18 March 2020. Since then, various precautionary guidelines have been released by WHO for countries to implement based on their cases rate. While many countries go into lockdown, the Malaysian government implements the Movement Control Order (MCO). The effort to curb the spread of the virus unfortunately brings adverse effects towards many Malaysians including psychological impact. Hence, we are interested in studying the association between psychological flexibility, resilience and psychological distress amongst medical students in Universiti Putra Malaysia (UPM) during COVID-19.

Psychological flexibility as defined by Kashdan and Rottenberg (2010) states that it covers many human abilities such as to be aware and strategized regardingly towards situational demands; change mindsets or behavioural repertoires due to compromised personal and social functioning when these strategies fail; able to maintain the balance among important life domains; being committed to deeply held values through behaving congruously. Furthermore, psychological flexibility can be interpreted as to act alternatively to a situation and more often act according to their values and goals (Bond, Joda, and Guenole 2013; Asikainen, Hailikari, & Mattsson, 2017). Also, psychological flexibility can be explained as a mixture of context-specific abilities, and trait-like qualities with content-

sensitivity as the core aspect (Bonanno & Burton, 2013; Meyer, et al., 2019). Past studies have related the role psychological flexibility plays in mental aspects and many have conclude, higher flexibility brings a higher chance of resilience, and lower chance of psychological distress (Kashdan and Rottenberg, 2010).

Resilience is defined as the ability to bounce back when facing stressful and major life events and capacity to cope and adapt with the change while maintaining normal psychological and physical function. It is important to understand how a person can achieve resilience as it helps to overcome stress, alleviate maladaptive coping mechanisms and ensure a proper response to environmental challenges. This mental fortitude serves as protection for individuals to withstand the stressful life events and adversity that can result in psychiatric problems. Being resilient is not about going through bad experiences in life without being affected but it is an ability that can be developed and help people to interact with the environment that encourages their well being also preserves them from menace (Zautra, 2009; Ahmad et al., 2018). Furthermore, resilience is especially important for students because it helps them to stay connected and have control of their emotions when facing stress and demanding life situations. It also aids them to experience more positive emotions and have better control of negative ones. During this pandemic where all people are pushed to accept changes, it really proves how important resilience is because unexpected things in life can happen when we did not anticipate it the most.

The term 'distress' is frequently used in nursing literature to describe patient's discomfort which is related to signs and symptoms of acute or chronic illness, pre- or post-treatment anxiety, compromised status of fetuses or the respiratory system. 'Psychological distress' may more accurately describe the patient's condition to which nurses respond than does the term 'distress'. Psychological distress is seldom defined as a distinct concept and is often embedded in the context of strain, stress and distress. This creates

confusion for nurses attempting to manage the care of people experiencing psychological distress.

Medical students who will soon embark on their journey as a medical doctor are in desperate need to ensure their mental well-being are top-notch. It is to be believed that psychological flexibility plays an important role in resilience and psychological distress of the general population and medical students likewise. Thus, this research focuses on the measurement of psychological flexibility, resilience and psychological distress among medical students in Universiti Putra Malaysia and how the variables influence each other during this period of pandemic where we are all pushed to live with a new norm and lifestyle.

1.2 Problem Statement

The COVID-19 pandemic has pushed people to adapt to a new normal, as our government implemented the Movement Control Order (MCO) starting from 18 March 2020. During this time, the higher institutions in Malaysia are instructed to close their premises. Due to this, some students were stuck in the university premises and were unable to go home and meet their family. In addition, the change from in-class learning to online learning has been adding stress to these students because the situations have raised many problems such as no access to stable internet connection and unable to commit to their studies as they have other commitments at home. Furthermore, this mode of study is not really relevant to the medical students that are in their clinical years as they cannot go to the hospital and receive their clinical training. As for the medical students that are in their pre-clinical years, their examinations are put on hold until further notice.

Furthermore, due to COVID-19, psychological distress is experienced by all. Evidence has implied that poor coping mechanisms may be related to subsequent mental illness. Thus, an investigation on medical students'

psychological distress and coping styles during COVID-19 crisis was held (Wang et al., 2020). The mental health of college students is significantly affected when faced with public health emergencies, and they require attention, help, and support from society, families, and colleagues. It is suggested that the government and schools should collaborate to resolve this problem in order to provide high-quality, timely crisis-oriented psychological services to college students.

Since medical students are also one of the groups of people that are greatly affected, we want to study how they will adapt, overcome and handle the situation. In addition, although it is crucial to know the mental state of medical students during Covid 19 Pandemic, there is far less research on this. However, there is some investigation done in other countries but not in Malaysia. It is definitely a gap that could be covered in this research. Thus, we want to study how medical students achieve resilience with psychological flexibility as the variable in the face of psychological distress and how these components associate with each other.

1.3 Significance of Study

This research provide information about the association between resilience, psychological flexibility and psychological distress among medical students in Universiti Putra Malaysia during COVID-19. The findings of this research allow future studies and interventions to be conducted among medical students to target their psychological flexibility, resilience and psychological distress. This research increase awareness of the psychological state of medical students and how well they are adapting during COVID-19. This research could recognize the state of medical students' anxiety. Thus, the students could identify and understand their mental health instability. In addition, proper prevention methods could be taken such as the faculty may organize programs and implement new policies that will benefit the psychological state of medical students. If it is

found that some of the students have a high psychological distress level, the faculty will be advised to design interventions that can prevent the problem from developing further and as researchers we could help to guide those who seek psychological support.

1.4 Research Questions

- 1) What are the levels of psychological flexibility, resilience and psychological distress of UPM medical students during COVID-19 pandemic?
- 2) What is the relationship between psychological flexibility, resilience and psychological distress ?

1.5 Hypothe

- 1) When psychological flexibility in medical students increases, the resilience increases.
- 2) When psychological flexibility in medical students increases, the psychological distress decreases.

1.6 Study Objectives

1.6.1 General Objective

To determine the association between psychological flexibility and resilience, and between psychological flexibility and psychological distress among medical students in University Putra Malaysia during the pandemic.

1.6.2 Specific Objective

- 1) To identify the sociodemographic characteristics amongst medical students.
- 2) To determine the level of psychological flexibility, resilience, and psychological distress amongst medical students.
- 3) To determine the association of psychological flexibility and resilience
- 4) To determine the association of psychological flexibility and psychological distress.

1.7 Conceptual Framework

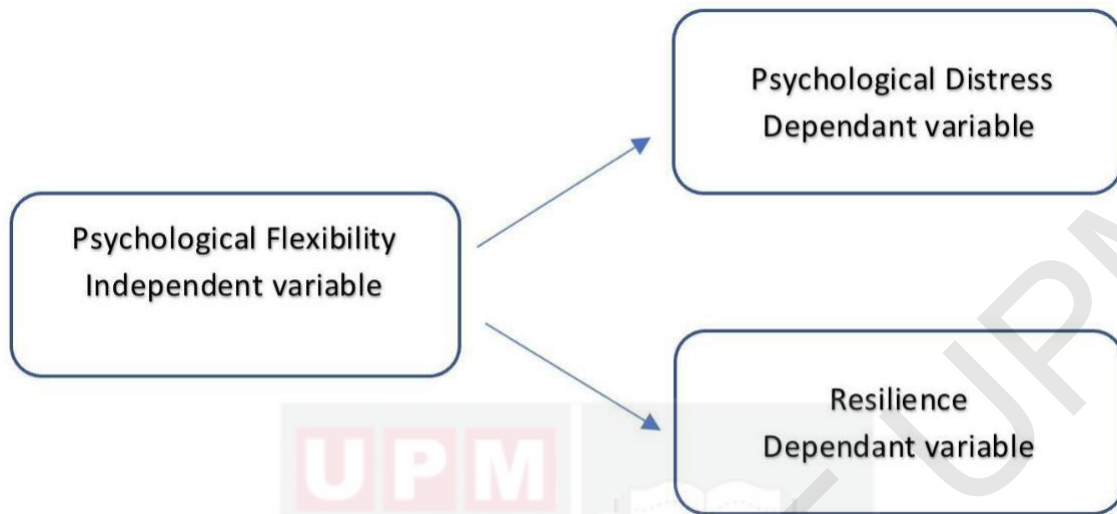


Figure 1.1: Conceptual framework of the associations between psychological flexibility and resilience & psychological flexibility and psychological distress.

CHAPTER 2

LITERATURE REVIEW

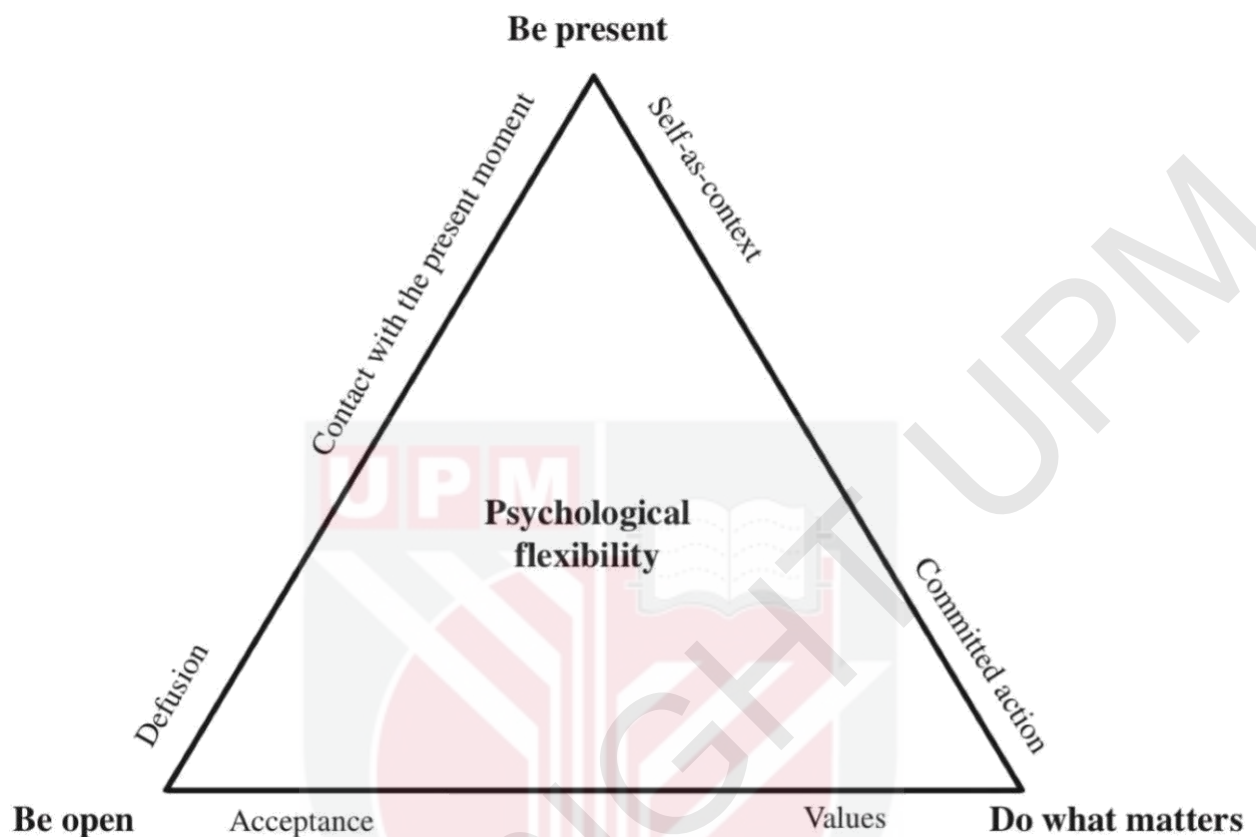
2.0 INTRODUCTION

In the time of COVID-19 crisis, all lives are affected. Frontliners are combating day by day to fight the virus, people are instructed to stay at home, have social distance and isolate themselves if symptoms arise. In addition, schools and universities are closed and the students need to adapt with a new way of learning, which has many challenges. Thus, we can say that everyone feels the impact this crisis brings us, either bad or good. For some people, having to adapt to this new normal is well manageable or in other word, these people have resilience. However, resilience is hard to achieve for others. Resilience involves various factors and we believe psychological flexibility is greatly associated with how people achieve it. The level of psychological flexibility seems to be an important variable to the way people behave in crisis, trauma and stress. In many events, the variability of psychological flexibility and resilience lead to psychological distress. This review will attempt to explore the concepts of resilience, psychological flexibility, and psychological distress; its association and the scales we used to measure the level of each component.

2.1 Psychological Flexibility

Through the Acceptance and Commitment Therapy model (ACT), psychological flexibility can be explained by six core processes which are defined separately and can be further unified in three pillars (Hoffmann, Rask, & Frosthalm, 2019).

These processes is associated through the three pillars of the triflex, as shown below



The six core processes unified in three pillars of the triflex (Harris, 2009).

The first core process, acceptance, delivers the meaning of action with a choice and willingness instead of generally taking or receiving what is offered. Next, defusion is defined as merely taking the content of one's thought to be just that and not acknowledging it as a truth, an example would be "I have thought that I am sick". Context in the present moment is defined as to be nonjudgmentally aware of the inner and outer experiences that are happening in the now with no resistance. Self-as-context refers to identifying oneself as the one who is experiencing the content of their thought, it indicates the person is able to contain the flux of thoughts, feelings, and bodily sensations. Values elucidate what is the most vital for a person and make it as a compass to direct one's life, lacking the ability to shed light on one's values brings about more rule-governed and avoidance behaviours. Lastly, committed action describes the concrete step or action toward a goal with guidance from one's values. It

accentuates the willingness to move further despite negative experiences such as bodily sensations, thought, feeling and anxiety (Hoffmann, Rask, & Frostholm, 2019).

ACT is designed particularly to enhance psychological flexibility, this generates variables of positive improvements for people with psychological distress (Hayes et al., 2012; Walser et al., 2015; Walser & Westrup, 2007; Meyer, et al., 2019).

As conceptualised by ACT, psychological flexibility is recognised as a vital aspect to psychological health and wellbeing. As mentioned by Kashdan & Rottenberg (2010), in case of extreme low level or absence of psychological flexibility, psychopathology present. Although it is undeniable that other factors such as positive emotions, thoughts, and strengths also contribute greatly to psychological health, most of them fail to include the variables present in people's behaviour as they navigate through the environment and social world. In this case, psychological flexibility allows people to alternate their focus between one perspective to another and ensure the important elements of a person's identity are being satisfied in a harmonious manner. Psychological flexibility explicitly takes advantage of negative and unpleasant emotions to make progress towards accessible, valued goals (Tamir, 2009; Tamir, Mitchell, & Gross, 2008; Kashdan & Rottenberg, 2010).

It is also shown that when anxiety disorder is present in a person, the autonomic response exhibits reduced flexibility (Thayer, Friedman, & Borkovec, 1996; Kashdan & Rottenberg, 2010). Also, the disorder is precipitated by lack of psychological flexibility which is described as dominance in verbal judgments and adjustable feelings and coping strategies (eg. avoidance and suppression) which are the cores of human suffering (Masuda et al., 2011; Azadeh, Kazemi-Zahrani, & Besharat, 2015). In addition, lack of psychological flexibility can be observed in disorders such as depression (Bond & Bunce, 2006; Bohlmeijer, Fledderus, Rokx, & Pieterse, 2011; Forman et al., 2012) and the continuum or spectrum of anxiety disorders (Kashdan, Barrios, Forsyth & Steger, 2006; Dalrymple & Herbert, 2007; Azadeh,

Kazemi-Zahrani, & Besharat, 2015). These findings particularly indicate psychological flexibility is vital in maintaining psychological health.

2.2.1 Resilience

At some point of our life, we will face stressful life events that can affect our mental health and lead to serious psychiatric problems. These events include loss of family members, financial problems, war or the current situation that we are facing is the outbreak of COVID-19. Although some individuals do not develop any condition as they go through these major adversities in life these individuals are said to be resilient. Resilience is defined as the capacity to respond to stress and hardship with success. Efficient adaptation depends on successful responses to environmental challenges and resistance to stress's undesirable impacts, therefore learning how resilience can be built and improved will facilitate the coping mechanism and reduce maladaptive coping and stress response in psychiatric diseases(Wu et al., 2013).

Some define resilience as a factor that supports adaptation to and reducing the negative effects of stress (Jacelon 1997;Dergisi et al., n.d.) . Resilience is an essential attribute for people to go through tough situations in life. This is because it involves the ability to bounce back from hard experiences. There are two parts of resilience. The first part is the recovery ability where a person's ability to tackle stress and recuperating any negative outcomes. The second part defines resilience as the ability to persevere. It means that a person has to have the sense of continuity to attain his or her goals towards a successful future despite the struggles later in life (Ahmad et al., 2018).

There are several factors that can affect resilience and they are divided into 2 parts which are internal and external factors. For the internal factor, the first one is control of emotion

which is a person's capability to adapt with a new environment. Many people struggle with new changes and many remain positive with the daily pressure. Emotional control can help people to enhance their resilience to face daily struggles. Second is control of motivation which involves self-confidence or self-esteem in an individual to accomplish desirable outcomes. When this set of skills is absent, individuals usually resort to acting rashly and easily to despair. Third one is optimistic, which is a perception that you can be better even though you do not know what the future holds. Optimism is said to be a learned attribute that assists individuals to elucidate their situation as being the best (Vaughan, 2000; Subhan et al., 2015).

As for the external factors it includes the social support, spiritual or religiosity and surroundings. The first factor is social support, this factor has been linked to contribute toward higher resilience in an individual. Social support is known as strong connection or relationship that provide psychological resources to aid individuals to cope with stress. Next, spiritual or religiosity factor that refers to adherence or reliance to a particular religious belief. This factor will help individuals to subdue stress and adversity and achieve resilience. Lastly, the factor that affects resilience is surroundings, some individuals have problems adapting to a new environment where it is foreign to them. For example, students that live abroad usually struggle with their new surroundings, the culture, language and so on. This will affect individuals that have low resilience levels (Subhan et al., 2015).

2.2.2 Resilience Data On Specific Group

According to a study made by University Sains Malaysia, among 2604 first year undergraduate from different faculty, the result shows that undergraduates from School of Health Sciences show the highest score while School of Electrical Engineering demonstrated

the lowest score for resilience. This data highlights that there is a significant difference in resilience among students from different faculty. The researchers claim that the results are forecasted, this is probably due to the life as medical students are tough because of its demanding curriculum like the clinical training environment. In order to survive, medical students have to adapt with the challenges and become more competent and resilient (Ahmad et al., 2018).

2.3.1 Psychological Distress

World Health Organisation (2016) stated health is not just the absence of sickness but also implies an in-depth understanding of a person that includes many integrated social, psychological and physical factors. "The promotion of mental health and the prevention of mental disorders can help to maintain or improve health, have a positive effect on quality of life and can be economically beneficial" stated the World Health Organisation. To conduct research and studies on psychological promotion and prevention in college students, and higher education institution; mental health records and information systems are needed. (World Health Organisation, 2016)

Psychological distress has been widely used as an indicator of mental state and has been also considered a brief emotional response to stress, which if untreated impairs mental health. Besides, it was argued that psychological distress is a relatively stable condition which impacts on social functioning and everyday living. There is a general concept in the literature that psychological distress is an emotional state exhibiting symptoms of sorrow and concern. The authors accepted Horowitz's view saying that psychological distress should be treated for mental health and wellbeing. (Wax & Christian, 2020)

For health promotion or illness prevention perspective psychological distress studies are important as its association with risky behaviours and physical illness among university

students and its tendency to elevate to more serious mental health instability .It is also important for education providers because of its negative impact on student's learning. (Peng et al., 2020)

Psychological distress has been recognized over thousands of years. As an example, a typical case of psychological distress, where one loses interest in things they previously liked doing, becomes hopeless, self-deprecation, withdrawn, self-blaming, and has insomnia. Egyptian manuscript which is over 3,900 years old provides an exact depiction of a distressed person as a pessimist, his loss of faith in others, unable to do daily tasks in life and his serious deliberation to self harm. These historical descriptions are similar to some of the present psychological incompetence. (Maunder et al., 2003)

Psychological distress is often confused with strain and stress . Stress itself is a non-specific biological response to a demand or stressor which is not usually harmful to the individual. Distress however is a non-specific but harmful, biological or emotional response to a demand or stressor. As for biological distress is potentially harmful physiological changes that occur in the human body as a response to a stressor. For psychological distress, it is a unique discomforting, emotional state experienced by an individual in response to a specific stressor or demand that results in harm, either temporary or permanent, to the person.

2.3.2 Psychological Distress During COVID-19

In March 2020, the World Health Organization (WHO) declared Coronavirus disease 2019 (COVID-19) a pandemic, spreading over 110 countries. Infectious disease outbreaks like COVID-19, as well as other public health events, can cause psychological distress for people from different backgrounds. People and medical staff suffer traumatization which affects the

non-front-line medical staff more seriously than that of front-line medical staff. In South, Southeast Asia countries and Italy, there are similar problems in medical staff due to escalating workload and intermittent lack of protective devices. Besides that, discriminations are faced by health care professionals who have a higher risk of being infected. There were doctors and nurses infected and many of them died due to COVID-19 infection. These factors itself have contributed to the deteriorating mental health of medical professionals. Previous research has stated an extreme and wide spectrum of psychological impact that outbreaks can inflict on people. New psychiatric symptoms among those without a history of mental illness can occur or worsen the condition of those with a history and cause distress to the caregivers of affected individuals. In addition, most health professionals working in isolation units and hospitals lack training for providing mental health care. Suicidal cases were reported in India and Italy, where infected nurses committed suicide suspected due to fear of spreading COVID-19 to patients and co workers. It is possible that anxiety and fear of falling sick, dying and helplessness causes an increase in the 2020 suicide rates. A dedicated Lifeline (the National Suicide Prevention Lifeline) for emotional distress related to COVID-19 is established by the United States to prevent suicide as a prevention mechanism.

Health care providers would have been overwhelmed by insufficient testing, lack of treatment options, scarce personal protective equipment (PPE) and other medical supplies, extended labour, and other new concerns. To decrease the burden, monitoring reactions and performance, altering assignments and schedules, modifying expectations, and creating mechanisms to offer psychosocial support are needed. As most COVID-19 cases will be identified and treated in health care settings by workers with little to no mental health training, it is imperative that assessment and intervention for psychosocial concerns be administered in those settings. Preferably, the integration of mental health considerations during COVID-19 care will be calculated by state and local planning; mechanisms for identifying, referring, and

treating severe psychosocial consequences and ensuring the capacity for consulting with psychological specialists. Health system leaders, first responders, and health care professionals should be provided with education and training in psychosocial issues.

Health, safety, and well-being of the public for example, stigma, confusion, emotional isolation, and insecurity; communities face economic loss, work and school closures, inadequate resources for medical response, and deficient distribution of necessities are affected by public health emergencies. These lead to emotional reactions like distress or psychiatric conditions, unhealthy behaviors for example excessive substance use, and noncompliance with public health directives such as home confinement among people who are infected with the disease. Some groups are more vulnerable than others to the psychosocial effects of pandemics. In particular, people who contract the covid 19, those at high risk categories including the elderly, immunodeficient patients, and those living or receiving care in populated sectors, and people with preexisting substance, psychiatric, or medical use problems are at increased risk for adverse psychosocial outcomes due to this pandemic. Prevention efforts such as screening for mental health problems, psychosocial, and psychoeducation support should focus on groups at higher risk for adverse psychosocial problems.

As an example, beyond stresses caused by the illness itself, mass home-confinement including stay-at-home orders, quarantine, and isolation are new to Americans and raise concern about how people's reaction. A recent review on measure of psychological state in samples of quarantined people and of health care workers may has revealed numerous emotional outcomes which are fear, depression, irritability, frustration, stress, confusion, anger, insomnia, weariness, and stigma associated with quarantine, some of which continued to be felt even when home confinement order was lifted. Duration of confinement, having insufficient supplies, trouble in obtaining medical care and medications, and financial crisis are the more specific stressors. In the current pandemic, the home confinement of large

populations for indefinite periods, most likely to intensify distress. The escalating number of patients and suspected cases, as well as the expansion of provinces and countries affected by the outbreak, surges the public worry of being a victim to the virus, which leads to worry and concern (Bao et al., 2020). Moreover to add more into fear and anxiety, there are significant shortages of masks and disinfectants, staggering and startling news headlines, fake news reports . (Ayithey et al., 2020).

Mental health of college students have been influenced by the continuous spread of the pandemic, strict isolation measures and delays in educational sectors across the country. There have been reports on the psychological impact of the pandemic on the general public, medical staff, patients, children, and elderly. However, there has been no detailed study done on the mental health status of college students facing the pandemic. (Cao et al., 2020).

Studies have suggested that public health emergencies in facing pandemic have psychological effects on students in higher education settings, which can be expressed as worry, fear, and anxiety (Mei et al., 2011; Cao et al., 2020). The main aim of this study was to evaluate the mental condition of college students during pandemic and explore factors influencing it. This survey indicated that 24.9% of college students were afflicted with experienced anxiety because of the COVID-19 outbreak. Of these students, 0.9% experienced severe anxiety, and mild anxiety was faced by 21.3% experienced. College students' apprehension about COVID-19 could be due to the effect of the virus on their studies (Cornine et al., 2020) and future employment (Cao et al., 2020). Students' anxiety may have been also caused by the gradually increasing distances between people because there are possibilities for anxiety disorders to occur and worsen in the absence of interpersonal communication (Xiao, 2020; Kmietowicz et al., 2020). College students' anxiety regarding the pandemic was associated with their place of residence, whether living with parents, source of parental finance and whether a family member or an associate was infected with the virus. However, no significant difference in region or gender was indicated (Moreno et al., 2019). Living in

urban areas, in contrast to rural areas, causes anxiety of college students to decline. This might be explained by the imbalance of economic, cultural, and educational resources between the areas. The urban economy is able to provide the citizens with better material security because it is relatively progressing (Shigemura et al., 2020; Cao et al., 2020). Same goes to, the sanitary conditions in cities are better than in towns and villages, which declines the likelihood of surviving and spreading the virus. Cities also have better educational instruments that might be utilized to transfer knowledge on how to prevent the pandemic, which unfortunately is not provided nor understood in rural areas (Tang et al., 2020). Besides that, living with parents was another favor. Previous studies have stated that the risk factors associated with emotional and anxiety disorders include the death of parents in childhood, not living with parents, and parents' psychological problems and mental illnesses (Woodgate et al., al.,2020; Gentili et al., 2020), which are kept consistent. Apart from that, students' anxiety is also dependent on relatives being infected with COVID-19, which might be related to the high contagiousness of this current coronavirus pneumonia (World Health Organization, 2020; Song et al., 2019).

2.4 Association Between Psychological Flexibility, Resilience, and Psychological Distress in Different Groups

In a research by Azadeh, Kazemi-Zahrani, & Besharat (2015) on a group of female high school students with social anxiety, the pretest score for psychological flexibility is higher compared to posttest score which is after ACT intervention. This indicates psychological flexibility is enhanced in students after going through ACT sessions. The improvement in psychological flexibility in particular defusion and acceptance techniques proved to help the students overcome their social anxiety.

In another study by Swash, Bramwell, & Hulbert-Williams (2017) on the moderating role of psychological flexibility in unmet psychosocial supportive care needs and psychological distress in haematological cancer survivors, it is discussed that when the levels of psychological flexibility is high, people will be more aware of their own self; in this case, cancer patients who have higher psychological flexibility are reported to have some kind of psychological distress and in turn seek for psychological support. In addition, patients with high levels of psychological flexibility view the situation in a wider context and have self-as-context; identifying themselves as the person experiencing the distress. Whilst, patients with lower psychological flexibility are unable to report their psychological distress and thus are unable to express their need for psychological support.

Janssen (2018) conducted a study in the general population on body awareness and psychological flexibility as resilience factors against somatic symptoms and poor physical and mental health. The result of the study shows that association exists between psychological flexibility and mental well-being; presence of flexibility associated with higher mental well-being. This finding is in line with Kashdan and Rottenberg (2010) hypothesis and findings, which stated that psychopathology is present in the absence of psychological flexibility. Furthermore, Fledderus, Bohlmeijer, Smit & Westerhof (2010) suggested that psychological flexibility interventions deems effective to improve mental well-being as it stimulates skills of acceptance and value-based action. In addition, Gloster, Meyer and Lieb (2017) also mentioned psychological distress and mental health in the general population is continually moderated by psychological flexibility.

A study among trauma-exposed war veterans by Meyer, et al. (2019) has found psychological flexibility may contribute to resilience. This result is in line with previous findings from a study on participants exposed to a mass shooting, which indicates that the vital factor to influence post-trauma adaptation is the pre-trauma level of psychological

flexibility (Kumpula, Orcutt, Bardeen, & Varkovitzky, 2011; Orcutt, Bonanno, Hanna, & Miron, 2014; Meyer, et al., 2019). The findings brought by Meyer, et al., (2019) explicitly highlight the benefits of enhancing psychological flexibility to bolster resilience in trauma survivors. Furthermore, it is supported with the theory that psychological flexibility plays a crucial role to impart resilience (Bonanno & Burton, 2013; Meyer, et al., 2019)



CHAPTER 3

METHODOLOGY

3.1 Study Location

This study took place at Faculty of Medicine and Health Sciences, Universiti Putra Malaysia in Serdang. This faculty is one of the 16 faculties in Universiti Putra Malaysia which houses almost 2000 health sciences and medical students.

3.2 Study Duration

The study was conducted from 17 August 2020 to 5 October 2020.

3.3 Study Design

The study design used is cross-sectional study.

3.4 Sampling

3.4.1 Study Population

The study population are medical undergraduates who are registered in the academic year 2019/2020.

3.4.2 Sampling Population

Medical undergraduates at University Putra Malaysia consisting of both clinical and preclinical students.

3.4.3 Sampling Criteria

3.4.3.1 Inclusion Criteria

1. Medical students of Universiti Putra Malaysia.
2. Medical students who are registered under the academic year 2019/2020.

3.4.3.2 Exclusion Criteria

1. Medical students who dropped out but were not updated on the list.

3.4.4 Sampling Frame

List of names of all medical undergraduates which were obtained from the Academic Unit, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia.

3.4.5 Sampling Unit

A medical undergraduate of Faculty of Medicine and Health Sciences, Universiti Putra Malaysia that fulfilled all inclusion and exclusion criteria.

3.4.6 Sample Size Estimation

Formula to estimate a proportion (Charan & Biswas, 2013):

$$n = \frac{Z_{1-\alpha/2}^2 p(1-p)}{d^2}$$

Where,

n = sample size

$Z_{1-\alpha/2}$ = level of significance

P = expected proportion in population based on previous Studies or pilot studies

d = precision

$$Z_{1-\alpha/2} = 1.96$$

P = 0.84, prevalence of students with psychological distress (Stallman, 2010)

$$d = 0.05$$

$$n = 207 + 10\% \text{ non-response rate}$$

$$= 230$$

Thus, the sample size estimated is 230 with expected response rate of 90%.

3.4.6 Sampling Technique

For this study, stratified sampling was used. A list of current medical students in University Putra Malaysia is gained. Then they are divided according to the year of study which are Year 1, 2, 3, 4, and 5. Next, the sample number is divided equally to 5 strata according to year of study. 46 respondents from each strata were needed to fulfill the sample size requirement. The google form link that contain the questionnaires were distributed to all medical students of UPM. The link is open until minimum sample number for each strata was fulfilled.

3.5 Data Collection

3.5.1 Study Instrument

Online questionnaires will be used. There are 5 sections in this questionnaire which are sociodemographic, Action and Acceptance questionnaire II (AAQ-II), Mindfulness Attention Awareness Scale (MAAS), Brief Resilience Scale and psychological distress scale (K10).

Section A consists of 4 questions on socio-demographic aspects of the respondents such as gender, ethnicity, year of study and location.

Next, section B which is the AAQ-II (Hayes et al., 2006; Bond et al., 2011) measures a part of psychopathology which emphasises on psychological inflexibility. The 7-item version was used in this study. Each item is rated on a 7-point Likert scale ranging from 1 (never true) to 7 (always true), with higher total scores indicating greater levels of psychological inflexibility. An example item is, “worries get in the way of my success”. The AAQ-II Cronbach’s alpha coefficient is 0.84 (0.78–0.88), and the 3- and 12-month test–retest reliability is 0.81 and 0.79, respectively. Results indicate that AAQ-II scores concurrently, longitudinally, and incrementally predict a range of outcomes, from mental health to work absence rates, that are consistent with its underlying theory (Bond et al., 2011).

Section C will feature MAAS (Brown and Ryan, 2003), a 15-item scale which will assess a core characteristic of psychological flexibility, mindfulness, a receptive state of mind in which attention, informed by a sensitive awareness of what is occurring in the present, simply observes what is taking place. Respondents are asked to rate how frequently they experience what is described in each statement using a 6-point Likert scale from 1 (almost always) to 6 (almost never), where higher mean scores reflect a more mindful presence. An example of an item includes “I snack without being aware that I’m eating” (Ramaci et al., 2019). Based on studies conducted by Brown & Ryan (2003), the Cronbach’s alpha for a student sample is 0.82.

Section D will assess the level of resilience in the respondents using the Brief Resilience Scale questionnaire. The Brief Resilience Scale has been developed to establish a scale that assesses resilience by its original meaning which is to bounce back or recover from stress. The questionnaire is used because it assesses the capacity to rebound or cope with adversity. This questionnaire will have 6 items and higher scores will show higher resilience levels. The Brief Resilience Scale includes 6 items and items 1, 3, 5 are positively worded and items 2, 4, 6 are negatively worded. The following instructions are given before the scale is administered “1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.” (Smith et al., 2008). Brief Resilience Scale is widely used and received the best psychometric ratings (Windle et al., 2011). The internal consistency was good and the Cronbach’s α for the full scale ranges from 0.80 to 0.91 (Smith et al., 2008).

Section E is psychological distress (K10) developed by (Kessler et al., 3-5). The 10-item (or K10) scale is. The items were relevant to special populations and covered 16 domains from depression, anxiety and worry to the physical symptoms of arousal, fatigue and thoughts of death. In the past 30 days how often, did you feel tired out for no good reason, did you feel nervous, did you feel so nervous that nothing could calm you down, did you feel hopeless, did you feel restless or fidgety, did you feel so restless that you could not sit still, did you feel depressed, did you feel that everything was an effort, did you feel so sad that nothing could cheer you up, did you feel worthless. The scale used a five-value response option for each question – all of the time-5, most of the time-4, some of the time-3, a little of the time-2, and none of the time-1. The maximum score is therefore 50, indicating severe distress, and the minimum score is 10, indicating no distress. Items 3 and 6 are not asked if the response to the preceding question was ‘none of the time’. The internal consistency of the scales (Cronbach's α), respectively, were 0.64, 0.69 and 0.47. Confirmatory factor analysis of the items also indicated coherent factor structures equivalent to the initial

conceptual factors, further reaffirming overall homogeneity of the subscales. (Phongsavan et al., 2006)

3.5.2 Data Collection Technique

Data was collected by distributing google form link that contain the questionnaires to Universiti Putra Malaysia medical undergraduates during the data collection period which is from 17 August 2020 to 24 August 2020. The link is distributed through social networking applications. Students were approached three times before being clarified as non-response.

3.5.3 Validity and Reliability

Cronbach's alpha was computed in order to evaluate the internal consistency. Cronbach's alpha for AAQ-II (0.919), MAAS (0.918), BRS (0.411) and K10 (0.944) were found. Thus all the questionnaires is reliable in this study except BRS.

3.6 Data Analysis

Calculation on statistics has been conducted using SPSS version 23. The data obtained was tested for normality. The socio demographic factors have been analysed by descriptive statistics using frequency, percentage, mean, median and interquartile range. The mean scores have been calculated for all scales. Inferential statistical tests such as correlation tests have been used to evaluate the association between psychological flexibility, resilience, and psychological distress among medical students. A correlation coefficient is calculated to determine the relationship between psychological flexibility, resilience, and psychological distress among medical students. Correlation coefficient (r) of 0-0.5/-0.5 indicate weak association and r of -0.5-(-1)/0.5-1 indicate strong association between psychological flexibility, resilience and psychological distress. The positivity of r will indicate either positive correlation or negative correlation.

3.7 Study Ethics

1. The ethical clearance from Ethics Committee for Study involving Human subjects of Universiti Putra Malaysia (JKEUPM) is obtained.

The reference number is JKEUPM-2020-241.

2. The approval from the Dean of Faculty of Medicine and Health Sciences is obtained.
3. Every respondent was asked for consent to participate in this study.
4. The questionnaire was distributed through google form and students need to log in by email to access it.
5. The information obtained through the questionnaire is stored in a secure online storage to ensure its confidentiality.
6. Students who want further help in seeking psychological support may contact us as the details of the researchers are provided in the questionnaire.
7. Upon request for psychological support, the researcher will refer the student to a psychiatrist for further assessment and support.

3.8 Variables

3.8.1 Independent Variables

The level of psychological flexibility

3.8.2 Dependent Variables

The dependent variable is the level of resilience and psychological distress among medical students of Universiti Putra Malaysia.

3.9 Operational Definition

| No | Terms | Definition |
|----|---------------------------|--|
| 1 | Psychological flexibility | Indicated by the scores of AAQ-II and MAAS, higher total score means inflexibility and higher mean score means more mindful respectively |
| 2 | Resilience | The possible mean score range on the Brief Resilience Scale is from 1.00 until 2.99 showing low resilience and 4.31 until 5.00 showing high resilience |
| 3 | Psychological distress | The maximum score in K10 scale is 50, indicating severe distress, and the minimum score is 10, indicating no distress |
| 4 | Gender | It is defined as being born male or female |
| 5 | Ethnicity | It is defined as being an ethnic of Malay, Indian, Chinese and Others |
| 6 | Year of study | Respondent's year in medical programme when the data collection is being executed |
| 7 | Location | It is defined as rural or urban |

3.10 Ethical Consequences

- 1) Students with high psychological distress will be guided to seek help if requested.
- 2) All data of respondents is confidential and is not identified.
- 3) The respondents was given the rights to pull out their data during the data collection period.
- 4) Students have the right to refuse their participation in this study.
- 5) Information collected is only accessible by the researchers.

3.11 Expected Outcome

This study will demonstrate the association between psychological flexibility, resilience and psychological distress among medical students at Faculty of Medicine and Health Science, University Putra Malaysia.

The results of this study were expected to show the psychological impact of the pandemic towards medical students. Furthermore, the influence of psychological flexibility towards resilience and psychological distress will be assessed. From here, interventions programs to enhance psychological flexibility, increase resilience and reduce psychological distress can be conducted to ensure the mental well-being of medical students.

3.12 Work Plan

| | June | August | September | October |
|--|------|--------|-----------|---------|
| Proposal preparation | | | | |
| Submission of proposal | | | | |
| Proposal presentation | | | | |
| Preparation of ethical approval/letters to respective organization | | | | |
| Data collection and data analysis | | | | |
| Submission of data analysis report | | | | |
| Data Analysis Presentation | | | | |
| Report writing and poster preparation | | | | |
| Submission of final report and scientific articles | | | | |
| Poster competition | | | | |
| Preparation for final presentation | | | | |
| Final presentation | | | | |
| Submission log book | | | | |

Table 3.1: Gantt Chart

CHAPTER 4

RESULTS

4.1 Response Rate

Out of the anticipated targeted 490 respondents, a total of 269 respondents participated in this study. The response rate of our study was calculated using the formula below:

$$\text{Response rate} = \text{Total response} / \text{Targeted response} \times 100$$

$$\text{Response rate} = 269/490 \times 100$$

$$= 54.9 \%$$

The response rate for this study is 54.9%.

4.2 Normality testing

The continuous data which were collected in our study are AAQ-II score, MAAS score, BRS score and K10 score. The variables were checked for normality using skewness and kurtosis.

The AAQ-II score for medical students of Universiti Putra Malaysia shows skewness of 0.450 and kurtosis of -0.251. The z-value for skewness (skewness \div standard error of skewness (0.149)) or kurtosis (kurtosis \div standard error of kurtosis (0.296)) is between ± 3.29 . This indicate the data is normally distributed.

The MAAS score for medical students of Universiti Putra Malaysia shows skewness of -0.078 and kurtosis of -0.250. The z-value for skewness (skewness \div standard error of skewness (0.149)) or kurtosis (kurtosis \div standard error of kurtosis (0.296)) is between ± 3.29 . This indicate the data is normally distributed.

The BRS score for medical students of Universiti Putra Malaysia shows skewness of 0.251 and kurtosis of 0.943. The z-value for skewness (skewness \div standard error of skewness (0.149)) or kurtosis (kurtosis \div standard error of kurtosis (0.296)) is between ± 3.29 . This indicates the data is normally distributed.

The K10 score for medical students of Universiti Putra Malaysia shows skewness of 0.654 and kurtosis of -0.185. The z-value for skewness (skewness \div standard error of skewness (0.149)) or kurtosis (kurtosis \div standard error of kurtosis (0.296)) is between ± 3.29 . This indicates the data is normally distributed.



4.3 Descriptive Statistics

4.3.1 To determine the sociodemographic factors (gender, ethnicity, year of study, location)

Table 4.1: Distribution of sociodemographic factors of medical students in Universiti Putra Malaysia (N=269).

| Variables | Frequency | Percentage (%) |
|----------------------|------------------|-----------------------|
| Gender | | |
| Male | 82 | 30.5 |
| Female | 187 | 69.5 |
| Ethnicity | | |
| Malay | 155 | 57.6 |
| Chinese | 40 | 14.9 |
| Indian | 67 | 24.9 |
| Others | 7 | 2.6 |
| Year of Study | | |
| Year 1 | 56 | 20.8 |
| Year 2 | 59 | 21.9 |
| Year 3 | 51 | 19.0 |
| Year 4 | 58 | 21.6 |
| Year 5 | 45 | 16.7 |
| Location | | |
| Rural | 53 | 19.7 |
| Urban | 216 | 80.3 |

The response rate for the questionnaire is 54.9% (269/490). The study population are medical undergraduates who are registered in the academic year 2019/2020 in Universiti Putra Malaysia. Table 4.1 shows the distribution of the respondents by the sociodemographic variables. The majority of the respondents are female (69.5 %), Malay ethnicity (57.6 %), were from second year (21.9 %) and also stayed in urban locations during the pandemic (80.3%).

4.3.2 To determine the level of psychological flexibility, resilience and psychological distress in medical students of Universiti Putra Malaysia

Table 4.2: Descriptive statistics for AAQ-II, MAAS, BRS and K10 scores.

| | Mean | standard deviation | skewness | kurtosis | distribution |
|--------------|-------|--------------------|----------|----------|---|
| AAQ-II score | 21.93 | 8.93 | 0.45 | -0.25 | - |
| MAAS score | 4.20 | 0.88 | -0.08 | -0.25 | - |
| BRS score | 3.25 | 0.65 | 0.25 | 0.94 | Low 60 (22.3%) Normal 192 (71.4%) High 17 (6.3%) |
| K10 score | 21.63 | 8.82 | 0.65 | -0.19 | Well 116 (43.1%) Mild 66 (24.5%) Moderate 27 (10%) Severe 60 (22.3%) |

4.4 Analytical Statistics

4.4.1 Sociodemographic factors with psychological flexibility, resilience and psychological distress.

Based on Chi Square test, there are no significant association between sociodemographic factors and psychological flexibility, resilience and psychological distress.

4.4.2 Associations between psychological flexibility, resilience and psychological distress.

Table 4.3: Pearson's correlation analysis (r).

| | AAQII score | K10 score | MAAS score | BRS score |
|-------------|-------------|-----------|------------|-----------|
| AAQII score | 1 | | | |
| K10 score | 0.608** | 1 | | |
| MAAS score | -0.662** | -0.602** | 1 | |
| BRS score | -0.509** | -0.457** | 0.435** | 1 |

** . Correlation is significant at the 0.01 level (2-tailed).

Table 4.3 shows the Pearson's correlation of psychological flexibility (AAQ-II score) and psychological distress (K10 score) among UPM medical students to be strongly positive and statistically significant ($r = 0.608$, $p\text{-value} < 0.001$). Thus, the research hypothesis is not rejected. This reports that student with higher psychological inflexibility have higher psychological distress.

Table 4.3 shows the Pearson's correlation of psychological flexibility (MAAS score) and psychological distress (K10 score) among UPM medical students to be strongly negative and statistically significant ($r = -0.602$, $p\text{-value} < 0.001$). Thus, the research hypothesis is not rejected. This reports that student with higher psychological flexibility have lower psychological distress.

Table 4.3 shows the Pearson's correlation of psychological flexibility (AAQ-II score) and resilience (BRS score) among UPM medical students to be strongly negative and

statistically significant ($r = -0.509$, $p\text{-value} < 0.001$). Thus, the research hypothesis is not rejected. This reports that student with higher psychological inflexibility have lower resilience.

Table 4.3 shows the Pearson's correlation of psychological flexibility (MAAS score) and resilience (BRS score) among UPM medical students to be moderately positive and statistically significant ($r = 0.435$, $p\text{-value} < 0.001$). Thus, the research hypothesis is not rejected. This reports that student with higher psychological flexibility have higher resilience.

Table 4.3 shows the Pearson's correlation of resilience (BRS score) and psychological distress (K10 score) among UPM medical students to be moderately positive and statistically significant ($r = -0.457$, $p\text{-value} < 0.001$). This reports that student with higher resilience have lower psychological distress.

Table 4.3 shows the Pearson's correlation of psychological flexibility (AAQ-II score) and psychological flexibility (MAAS score) among UPM medical students to be strongly negative and statistically significant ($r = -0.662$, $p\text{-value} < 0.001$). This reports that student with higher psychological inflexibility have lower mindfulness level.

CHAPTER 5

DISCUSSION

5.1 Study design

The study design used for this research is a cross sectional study which is a type of observational study that analyses a population subset at a specific point in time. This study design was used to determine association between psychological flexibility, resilience and psychological distress amongst medical students in University Putra Malaysia. The total number of responses received are 269 responses. The questionnaire used to obtain the responses was divided into five sections which consist of the socio-demographic questions, Action and Acceptance Questionnaire (AAQ-II), Mindfulness Attention Awareness Scale (MAAS), Brief Resilience Scale(BRS) and Kessler 10. AAQ-II was used to screen for inflexibility while MAAS was used to measure mindfulness. BRS and Kessler 10 were used to measure resilience and psychological distress respectively.

5.2 Sociodemographic factors, psychological flexibility, resilience and psychological distress

Based on the findings in this study, the variables are not influenced by socio demographic factors. Hence, gender, ethnicity, year of study and location of stay during the pandemic are not considered to be confounding variables. This could be further supported by previous studies. For example, Moreno et al., 2019 has stated that there is no significant difference in region or gender .

5.3 Association between psychological flexibility and resilience

Our study revealed that there was a statistically significant association between psychological flexibility and resilience (p -value <0.001). In this study, the result has shown that there is an association between psychological flexibility and resilience. These findings have been portrayed through the AAQ-II, MAAS and BRS. These scales measure psychological flexibility and resilience respectively. From the result, we can report that psychological flexibility influences resilience. For example, students with higher psychological flexibility have higher resilience.

Psychological flexibility can be defined as the ability to navigate through any circumstances while staying aware towards one's own thoughts, feelings, bodily sensation & surroundings despite its unpleasantness (Hoffmann, Rask, & Frostholm, 2019). Meanwhile, resilience is interpreted as the ability to respond to stress and difficulty in life without neglecting the normal psychological and physical well being (Russo et al., 2012; Rutter, 2012b; Southwick and Charney, 2012; Wu et al., 2013). Meyer, et al. (2019) has found psychological flexibility does contribute to resilience based on his study on trauma-exposed war veterans. This finding is also supported from his previous work on participants exposed to a mass shooting, where they recognized the vital factor to achieve resilience is pre-trauma level of psychological flexibility (Kumpula, Orcutt, Bardeen, & Varkovitzky, 2011; Orcutt, Bonanno, Hanna, & Miron, 2014; Meyer, et al., 2019).

Ahmad et al (2018) has mentioned that resilience is an important feature for people to strive through difficult major life events and struggles because of the ability to bounce back from hard experiences. Ahmad et al (2018) also has found that the person has to have the ability to handle and deal with troubles and affliction and also be able to recover from any negative or bad outcomes. This finding is essential to the medical students as they are experiencing high psychological distress especially during this pandemic COVID-19 period. Significant association between psychological flexibility and resilience found in this study may suggest

programs that can enhance psychological flexibility will be able to help increase chances for medical students to achieve resilience after COVID-19 pandemic. The faculty and institution can be advised to reach out to students who have a hard time adapting post-pandemic and offer programs that targets to increase psychological flexibility. As highlighted by Meyer, et al., (2019), one of the benefits of enhancing psychological flexibility is to bolster resilience. In addition, resilience is a skill that should be learned and enhanced so that the medical students are mentally prepared to face the upcoming challenges in the future as competent doctors.

5.4 Association between psychological flexibility and psychological distress

Mental health of college students have been influenced by the continuous spread of the pandemic, strict isolation measures and delays in educational sectors across the country. There have been reports on the psychological impact of the pandemic on the general public, medical staff, patients, children, and elderly. However, there has been no detailed study done on the mental health status of college students facing the pandemic. (Cao et al., 2020). The main goal of this study was to evaluate the psychological distress of medical students in UPM during the pandemic and explore its association with psychological flexibility.

This study revealed that there was a statistically significant association among AAQ-II and MAAS and Kessler 10 (p -value <0.001). Where both AAQ-II and MAAS measure psychological flexibility. Whereas, Kessler 10 measures psychological distress. The result is in line with many previous study, such as mentioned by Kashdan & Rottenberg (2010) in case of low level of psychological flexibility, psychopathology present. Psychological flexibility has been a vital aspect to psychological health and well being, in such cases where psychological distress present, the individual exhibited reduced psychological flexibility (Azadeh, Kazemi-Zahrani, & Besharat, 2015; Kashdan & Rottenberg, 2010). It is also mentioned, interventions conducted on individuals with psychological distress to increase psychological flexibility help to overcome their current psychological problems such as social anxiety and distress (Azadeh, Kazemi-Zahrani, & Besharat, 2015; Swash, Bramwell, & Hulbert-Williams, 2017).

These findings suggest that interventions that targets psychological flexibility are able to help medical students with psychological distress. In the future the faculty and institution can be advised to recruit more flexible medical students as to decrease the chances of them from having psychological distress along their journey to become a medical practitioner. Fledderus, Bohlmeijer, Smit & Westerhof (2010) supported that psychological flexibility interventions deems effective to improve mental well-being as it stimulates skills of acceptance and value-based action. In addition, Gloster, Meyer and Lieb (2017) also mentioned psychological distress and mental health in the general population is continually moderated by psychological flexibility.

5.5 Association between resilience and psychological distress

Our study revealed that there is a statistically significant association among BRS and Kessler 10 (p-value <0.001). Where both BRS measure resilience and Kessler 10 measures psychological distress. The findings suggest, when medical students are not able to achieve resilience, there will be increased chances for the student to develop psychological distress.

CHAPTER 6

CONCLUSION

6.1 Conclusions

Based on the results, we can observe that associations between psychological flexibility with resilience and psychological distress is present among medical students of UPM. More attention should be paid by faculty and government to medical students with psychological distress, and its symptoms should be carefully evaluated. Further studies with regard to treating psychological distress among medical students during a pandemic should be systematically evaluated. On the other hand, future prospective cohort studies are encouraged to investigate whether psychological flexibility would affect resilience and psychological distress and will these lead to the improvement of medical student performance in the medical field.

6.2 Recommendations

The study has revealed that some of the students are experiencing distress that may or may not be related to the pandemic. Thus, it is recommended for the faculty to promote a proactive approach to address mental illness by coordinating a mental health screening event for the students so that they are aware of their psychological state and can reach out for help if they are in need. Furthermore, psychological flexibility is found to increase resilience and decrease psychological distress. Thus preventions and interventions that target to improve psychological flexibility are deemed to be effective. In addition, in the process of recruiting new medical students, the institution may assess their psychological flexibility to decrease the chances of developing psychological distress.

6.3 Limitations

Based on the results, it cannot be interpreted to make any diagnosis as it is just a set of questionnaires to measure psychological flexibility, resilience and psychological distress. For medical students that have participated in this study, it is not known if they currently have any form of mental illness as there are no screening tests done. This means that students who previously have been diagnosed with mental illness would cause confusion in the results and should be addressed as confounder. On the other hand, to fulfill the ethical confidentiality of this study, it is not the researchers' place to interpret, diagnose and reveal information to other parties. The researchers can only be involved if there are requests from respondents to seek help and support. Also, this study was conducted only on medical students, generalizations on students from other courses may result in biases. Furthermore, results from this study cannot determine the causal factor for psychological distress experience by the students.

6.3 Strengths of study

This has been one of the first few studies conducted to determine associations between psychological flexibility, resilience and psychological distress among UPM medical students during COVID-19 pandemic. This study also gives awareness to the medical students' own psychological state and the psychological distress they might be facing. Thus, the students can take preventative measures before the condition worsens.

Reference List

1. Asikainen, H., Hailikari, T., & Mattsson, M. (2017). The interplay between academic emotions, psychological flexibility and self-regulation as predictors of academic achievement. *Journal of Further and Higher Education*, 42(4), 439–453. doi: 10.1080/0309877x.2017.1281889
2. Azadeh, S. M., Kazemi-Zahrani, H., & Besharat, M. A. (2015). Effectiveness of Acceptance and Commitment Therapy on Interpersonal Problems and Psychological Flexibility in Female High School Students With Social Anxiety Disorder. *Global Journal of Health Science*, 8(3), 131. doi: 10.5539/gjhs.v8n3p131
3. Baran, L., Hyla, M., Pilch, I., Bolek-Kochanowska, M., Boj Maciej, Friedrich, W., & Sikora, J. (2019). Psychological Flexibility, Emotional Regulation, And Well-being In Various Life Situations. Retrieved from [https://contextualscience.org/files/105.Psychological flexibility, emotional regulation, and well-being in various life situations.pdf](https://contextualscience.org/files/105.Psychological%20flexibility,%20emotional%20regulation,%20and%20well-being%20in%20various%20life%20situations.pdf)
4. Hoffmann, D., Rask, C. U., & Frosthalm, L. (2019). Acceptance and Commitment Therapy for Health Anxiety. *The Clinicians Guide to Treating Health Anxiety*, 123–142. doi: 10.1016/b978-0-12-811806-1.00007-x
5. Janssen, E. (2018). Body awareness and psychological flexibility as resilience factors against somatic symptoms and poor physical and mental health, 1–18. Retrieved from <https://dspace.library.uu.nl/handle/1874/376928>
6. Kashdan, T. B., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clinical Psychology Review*, 30(7), 865–878. doi: 10.1016/j.cpr.2010.03.001
7. Meyer, E. C., Kotte, A., Kimbrel, N. A., Debeer, B. B., Elliott, T. R., Gulliver, S. B., & Morissette, S. B. (2019). Predictors of lower-than-expected posttraumatic symptom

severity in war veterans: The influence of personality, self-reported trait resilience, and psychological flexibility. *Behaviour Research and Therapy*, 113, 1–8. doi: 10.1016/j.brat.2018.12.005

8. Swash, B., Bramwell, R., & Hulbert-Williams, N. J. (2017). Unmet psychosocial supportive care needs and psychological distress in haematological cancer survivors: The moderating role of psychological flexibility. *Journal of Contextual Behavioral Science*, 6(2), 187–194. doi: 10.1016/j.jcbs.2017.02.005
9. Gloster, A. T., Meyer, A. H., & Lieb, R. (2017). Psychological flexibility as a malleable public health target: Evidence from a representative sample. *Journal of Contextual Behavioral Science*, 6, 166-171. doi: 10.1016/j.jcbs.2017.02.003
10. Fledderus, M., Bohlmeijer, E. T., Smit, F., & Westerhof, G. J. (2010). Mental health promotion as a new goal in public mental health care: A randomized controlled trial of an intervention enhancing psychological flexibility. *American Journal of Public Health*, 100, 2372-2372. doi: 10.2105/AJPH.2010.196196
11. Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., et al. (2011). Preliminary psychometric properties of the acceptance and action questionnaire - II: a revised measure of psychological flexibility and experiential avoidance. *Behav. Ther.* 42, 676–688. doi: 10.1016/j.beth.2011.03.007
12. Brown, K. W., and Ryan, R. M. (2003). The benefits of being present: mindfulness and its role in psychological well-being. *J. Pers. Soc. Psychol.* 84, 822–848. doi: 10.1037/0022-3514.84.4.822
13. Ramaci, T., Bellini, D., Presti, G., & Santisi, G. (2019). Psychological Flexibility and Mindfulness as Predictors of Individual Outcomes in Hospital Health Workers. *Frontiers in Psychology*, 10. doi:10.3389/fpsyg.2019.01302

14. Stallman, H. M. (2010). Psychological distress in university students: A comparison with general population data. *Australian Psychologist*, 45(4), 249-257. doi:10.1080/00050067.2010.482109
15. Charan, J., & Biswas, T. (2013). How to calculate sample size for different study designs in medical research? *Indian Journal of Psychological Medicine*, 35(2), 121. doi:10.4103/0253-7176.116232
16. Devakani, J. S. M., Jayabharathi, B., Manonmani, K., Lavanya, L., & Rajeshwari, M. (2019). Assessment of Psychological Distress among B.Sc Nursing Students at SRM College of Nursing. *International Journal of Nursing Education*, 11(3), 45–50. <https://doi.org/10.5958/0974-9357.2019.00062.X>
17. Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Research*, 287, 112934. doi:10.1016/j.psychres.2020.112934
18. World Health Organization. Chronic of WHO,(Internet) (Cited on 2016, March 13th) 1947, : 1-2.
19. Ahmad, N. S. binti, Khairani, A. Z. bin, & Aman, R. binti C. (2018). Assessing Resilience among Malaysian University Undergraduates. 133, 82–85. <https://doi.org/10.2991/acpch-17.2018.59>
20. Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine*, 15(3), 194–200. <https://doi.org/10.1080/10705500802222972>
21. Wu, G., Feder, A., Cohen, H., Kim, J. J., Calderon, S., Charney, D. S., & Mathé, A. A. (2013). Understanding resilience. In *Frontiers in Behavioral Neuroscience* (Vol. 7,

Issue JANUARY 2013). *Frontiers Media SA*.

<https://doi.org/10.3389/fnbeh.2013.00010>

22. Subhan, M., Amat, S., Abu Bakar, A. Y., Zainal Abidin, M. H., Ahmad Faisal, R., Tohirin, & Kamin, A. H. (2015). Level of Resilient Among International Students in Public Higher Education Institutions in Malaysia. *Scientific Journal of PPI-UKM*, March, 181–188. <http://www.indjsp.org/text.asp?2017/33/2/148/209186>
23. Windle, G., Bennett, K. M., & Noyes, J. (2011). A methodological review of resilience measurement scales. *Health and Quality of Life Outcomes*, 9. <https://doi.org/10.1186/1477-7525-9-8>
24. Mindful Attention Awareness Scale. (n.d.). Retrieved June 11, 2020, from <https://ppc.sas.upenn.edu/resources/questionnaires-researchers/mindful-attention-awareness-scale>
25. Acceptance and Commitment Questionnaire 2. (n.d.). Retrieved from <http://www.ruthbaer.com/academics/AAQ-II.pdf>
26. Wax, R. S., & Christian, M. D. (2020). Practical recommendations for critical care and anesthesiology teams caring for novel coronavirus (2019-nCoV) patients. *Canadian Journal of Anesthesia/Journal Canadien D'anesthésie*, 67(5), 568-576. doi:10.1007/s12630-020-01591-x
27. Peng, X., Xu, X., Li, Y., Cheng, L., Zhou, X., & Ren, B. (2020). Transmission routes of 2019-nCoV and controls in dental practice. *International Journal of Oral Science*, 12(1). doi:10.1038/s41368-020-0075-9
28. Maunder, R., Hunter, J., Vincent, L., Bennett, J., Peladeau, N., Leszcz, M., . . . Mazzulli, T. (2003, May 13). The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. Retrieved June 11, 2020, from <https://www.cmaj.ca/content/168/10/1245.short>

29. Ayittey, F. K., Ayittey, M. K., Chiwero, N. B., Kamasah, J. S., & Dzuovor, C. (2020). Economic impacts of Wuhan 2019-nCoV on China and the world. *Journal of Medical Virology*, 92(5), 473-475. doi:10.1002/jmv.25706
30. Cornine, A. (2020). Reducing Nursing Student Anxiety in the Clinical Setting. *Nursing Education Perspectives*, Publish Ahead of Print. doi:10.1097/01.nep.0000000000000633
31. Bao, Y., Sun, Y., Meng, S., Shi, J., & Lu, L. (2020). 2019-nCoV epidemic: Address mental health care to empower society. *The Lancet*, 395(10224). doi:10.1016/s0140-6736(20)30309-3
32. Moreno, E., Muñoz-Navarro, R., Medrano, L. A., González-Blanch, C., Ruiz-Rodríguez, P., Limonero, J. T., . . . Moriana, J. A. (2019). Factorial invariance of a computerized version of the GAD-7 across various demographic groups and over time in primary care patients. *Journal of Affective Disorders*, 252, 114-121. doi:10.1016/j.jad.2019.04.032
33. Kmietowicz, Z. (2020). Rules on isolation rooms for suspected COVID-19 cases in GP surgeries to be relaxed. *Bmj*, M707. doi:10.1136/bmj.m707
34. Tang, B., Bragazzi, N. L., Li, Q., Tang, S., Xiao, Y., & Wu, J. (2020). An updated estimation of the risk of transmission of the novel coronavirus (2019-nCov). *Infectious Disease Modelling*, 5, 248–255. <https://doi.org/10.1016/j.idm.2020.02.001>
35. Gentili, D., Bardin, A., Ros, E., Piovesan, C., Ramigni, M., Dalmanzio, M., ... Cinquetti, S. (2020). Impact of Communication Measures Implemented During a School Tuberculosis Outbreak on Risk Perception among Parents and School Staff, Italy, 2019. *International Journal of Environmental Research and Public Health*, 17(3), 911. <https://doi.org/10.3390/ijerph17030911>

36. Song, Z., Xu, Y., Bao, L., Zhang, L., Yu, P., Qu, Y., ... Qin, C. (2019). From SARS to MERS, Thrusting Coronaviruses into the Spotlight. *Viruses*, 11(1), 59. <https://doi.org/10.3390/v11010059>
37. Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S.-L. T., ... Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine*, 32(6), 959–976. <https://doi.org/10.1017/s0033291702006074>
38. Phongsavan, P., Chey, T., Bauman, A., Brooks, R., & Silove, D. (2006). Social capital, socio-economic status and psychological distress among Australian adults. *Social Science & Medicine*, 63(10), 2546–2561. <https://doi.org/10.1016/j.socscimed.2006.06.021>
39. Sinclair, V. G., & Wallston, K. A. (2004). The Development and Psychometric Evaluation of the Brief Resilient Coping Scale. *Assessment*, 11(1), 94-101. doi:10.1177/1073191103258144
40. Wang, H., Xia, Q., Xiong, Z., Li, Z., Xiang, W., Yuan, Y., ... Li, Z. (2020). The psychological distress and coping styles in the early stages of the 2019 coronavirus disease (COVID-19) epidemic in the general mainland Chinese population: A web-based survey. *Plos One*, 15(5). doi:10.1371/journal.pone.0233410

Appendix A

Budget Planning

| no. | Items | Estimated cost |
|-----|----------------------------------|----------------|
| 1 | Hard cover and binding of thesis | RM 200.00 |
| 2 | Printing | RM 20.00 |
| | Total | RM 220.00 |

Table 1: Budget Planning



Appendix B

JAWATANKUASA ETIKA UNIVERSITI UNTUK PENYELIDIKAN MELIBATKAN MANUSIA
(JKEUPM) UNIVERSITI PUTRA MALAYSIA, 43400 UPM SERDANG,
SELANGOR, MALAYSIA



FORM 2.4: RESPONDENT'S INFORMATION SHEET AND INFORMED CONSENT FORM

Please read the following information carefully and do not hesitate to discuss any questions you may have with the researcher.

1. STUDY TITLE :

Association Between Psychological Flexibility, Resilience and Psychological Distress Among Medical Students During COVID-19.

2. INTRODUCTION:

Since COVID-19 crisis, the government has instructed all schools and universities to close their premises until further notice as an effort to curb the spread of the virus. Medical students is one of the groups of people greatly affected by this pandemic and it is of great importance to study how they can adapt with changing demands of life (flexibility), find a way to cope (resilience) and if they are adversely affected by it (psychological distress)

3. WHAT WILL YOU HAVE TO DO?

Respondents are required to fill up the online questionnaire that includes psychological flexibility scales (AAQ-II and MAAS), resilience scale (Brief Resilience Scale), and psychological distress scale (K10) and submit through google form.

4. WHO SHOULD NOT PARTICIPATE IN THE STUDY?

- Medical students not from Universiti Putra Malaysia
- Medical students not registered in the academic year 2019/2020

5. WHAT WILL BE THE BENEFITS OF THE STUDY:

(a) TO YOU AS THE SUBJECT?

Medical students will be able to reflect on their psychological state during the pandemic. Once the research is done, those with high psychological distress and wishes guidance will be guided to seek help.

(b) TO THE INVESTIGATOR?

The researcher will be able to demonstrate the association between psychological flexibility, resilience and psychological distress among medical students in University Putra Malaysia. If a factor is found to be an advantage for students for

better mental well-being, this factor could be emphasised or adapted into the daily basis of the students.

6. WHAT ARE THE POSSIBLE RISKS?

There will be no risk to the respondents as the information given is private and confidential. The result obtained from this research will be used for good purposes only.

7. WILL THE THAT YOU PROVIDE AND YOUR IDENTITY REMAIN CONFIDENTIAL?

All information obtained will be kept in a secure online storage to ensure privacy and confidentiality. The data will only be accessible by the researcher.

8. WHO SHOULD YOU CONTACT IF YOU HAVE ADDITIONAL QUESTIONS DURING THE COURSE OF THE RESEARCH?

- Supervisor: Dr Eugene Koh Boon Yau (03-97692541)
Eugene@upm.edu.my
- Abdul Mukmin Bin Husain (019-9886424)
198849@student.upm.edu.my
- Nur Alia Binti Baharuddin (013-3605342)
199164@student.upm.edu.my
- Rangeetha Balachander (016-5097743)
199111@student.upm.edu.my

Please initial here if you have read and understood the contents of this page_____

9. CONSENT

I Identity Card No.
address.....
.....

.....hereby voluntarily agree to take part in the
research stated above

*(clinical /drug trial/video recording/ focus group/interview-based/ questionnaire-based).

I have been informed about the nature of the research in terms of methodology, possible
adverse
effects and complications (as written in the Respondent’s Information Sheet). I understand that
I have the right to withdraw from this research at any time without giving any reason
whatsoever. I also understand that this study is confidential and all information provided with
regard to my identity will remain private and confidential.

I* wish / do not wish to know the results related to my participation in the research

I agree/do not agree that the images/photos/video recordings/voice recordings related to me be
used in any form of publication or presentation (if applicable)

* delete where necessary

Signature Signature
(Respondent) (Witness)

Date : Name :

I/C No. :

I confirm that I have explained to the respondent the nature and purpose of the above-
mentioned research.

Date Signature
(Researcher)

Appendix C

QUESTIONNAIRE

Section A: Sociodemographic

1. Gender: M F

2. Ethnicity: Malay Indian Chinese other: _____

3. Year of study: 1 2 3 4 5

4. Location (current): Urban Rural

Section B: Acceptance and Commitment Questionnaire II (AAQ-II)

Below you will find a list of statements. Please rate how true each statement is for you by circling a number next to it. Use the scale below to make your choice.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|------------|---------------------|-------------|-------------------|--------------------|-----------------------|-------------|
| never true | very seldom true | seldom true | sometimes true | frequently true | almost always true | always true |

1. My painful experiences and memories make it difficult for me to live a life that I would value. 1 2 3 4 5 6 7
2. I'm afraid of my feelings. 1 2 3 4 5 6 7
3. I worry about not being able to control my worries and feelings. 1 2 3 4 5 6 7
4. My painful memories prevent me from having a fulfilling life. 1 2 3 4 5 6 7
5. Emotions cause problems in my life. 1 2 3 4 5 6 7
6. It seems like most people are handling their lives better than I am. 1 2 3 4 5 6 7
7. Worries get in the way of my success. 1 2 3 4 5 6 7

Total score:

Section C: Mindfulness Attention Awareness Scale (MAAS)

Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be. Please treat each item separately from every other item.

1 2 3 4 5 6
 Almost Very Somewhat Somewhat Very Almost
 Always Frequently Frequently Infrequently Infrequently Never

| Items | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1. I could be experiencing some emotion and not be conscious of it until some time later. | | | | | | |
| 2. I break or spill things because of carelessness, not paying attention, or thinking of something else. | | | | | | |
| 3. I find it difficult to stay focused on what's happening in the present. | | | | | | |
| 4. I tend to walk quickly to get where I'm going without paying attention to what I experience along the way. | | | | | | |
| 5. I tend not to notice feelings of physical tension or discomfort until they really grab my attention. | | | | | | |
| 6. I forget a person's name almost as soon as I've been told it for the first time. | | | | | | |
| 7. It seems I am "running on automatic," without much awareness of what I'm doing. | | | | | | |
| 8. I rush through activities without being really attentive to them. | | | | | | |
| 9. I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there. | | | | | | |
| 10. I do jobs or tasks automatically, without being aware of what I'm doing. | | | | | | |
| 11. I find myself listening to someone with one ear, | | | | | | |

| | | | | | | |
|---|--|--|--|--|--|--|
| doing something else at the same time. | | | | | | |
| 12. I drive places on 'automatic pilot' and then wonder why I went there. | | | | | | |
| 13. I find myself preoccupied with the future or the past. | | | | | | |
| 14. I find myself doing things without paying attention. | | | | | | |
| 15. I snack without being aware that I'm eating. | | | | | | |

Total Score:

Section D: Brief Resilience Scale

Below is a collection of statements about your everyday experience. Using the 1-5 scale below, please indicate how you agree or disagree with the statements by circling one answer per row. Please answer according to what really reflects your experience rather than what you think your experience should be.

| Respond to each statement below by circling one answer per row | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|-------------------|----------|---------|-------|----------------|
| I tend to bounce back quickly after hard times | 1 | 2 | 3 | 4 | 5 |
| I have a hard time making it through stressful events | 5 | 4 | 3 | 2 | 1 |
| It does not take me long to recover from a stressful event | 1 | 2 | 3 | 4 | 5 |
| It is hard for me to snap back when something bad happens | 5 | 4 | 3 | 2 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| I usually come through difficult times with little trouble | 1 | 2 | 3 | 4 | 5 |
| I tend to take a long time to get over set-backs in my life | 5 | 4 | 3 | 2 | 1 |

Section E : Kessler-10 (K10)

Below is a collection of statements about your everyday emotions. Using the 1-5 scale below, please indicate how often you agree with questions by circling 1,2,3,4 or 5. Please answer according to what really reflects your feelings during the pandemic. During COVID-19 pandemic how often,

| no. | Questions | none of the time(1) | a little of the time (2) | some of the time(3) | most of the time(4) | all of the time(5) |
|-----|--|---------------------|--------------------------|---------------------|---------------------|--------------------|
| 1 | did you feel tired out for no good reason | 1 | 2 | 3 | 4 | 5 |
| 2 | did you feel nervous | 1 | 2 | 3 | 4 | 5 |
| 3 | did you feel so nervous that nothing could calm you down *do not need to answer if the answer for num 2 is (1) | 1 | 2 | 3 | 4 | 5 |
| 4 | did you feel hopeless | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|-------|--|---|---|---|---|---|
| 5 | did you feel restless or fidgety | 1 | 2 | 3 | 4 | 5 |
| 6 | did you feel so restless that you could not sit still, did you feel depressed *do not need to answer if the answer for num 5 is (1) | 1 | 2 | 3 | 4 | 5 |
| 7 | did you feel depressed | 1 | 2 | 3 | 4 | 5 |
| 8 | did you feel that everything was an effort | 1 | 2 | 3 | 4 | 5 |
| 9 | did you feel so sad that nothing could cheer you up | 1 | 2 | 3 | 4 | 5 |
| 10 | did you feel worthless | 1 | 2 | 3 | 4 | 5 |
| total | | | | | | |

Total score: