



UNIVERSITI PUTRA MALAYSIA

***ASSOCIATION BETWEEN SOCIAL MEDIA USE AND MENTAL
HEALTH AMONG UNIVERSITI PUTRA MALAYSIA MEDICAL
STUDENTS***

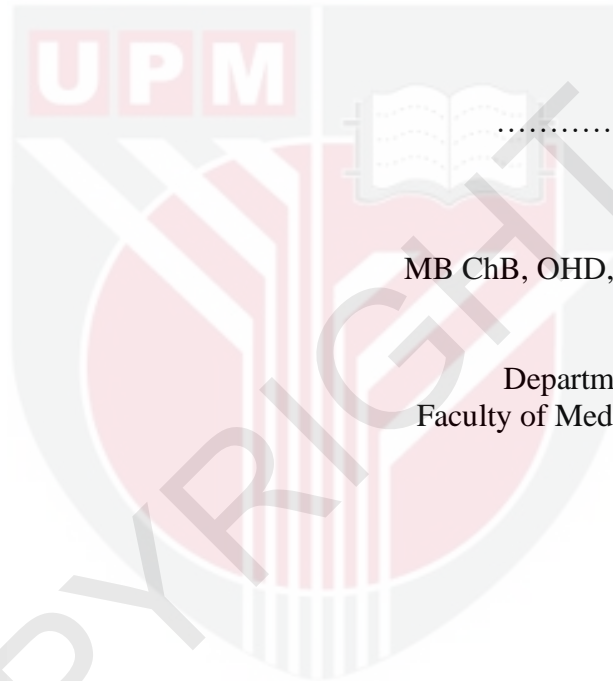
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We declare that the project is our original work except for quotations and citations which have been duly acknowledged. We also declare that it has not been previously and is not concurrently, submitted for any other degree at Universiti Putra Malaysia or at any other institutions.

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ASSOCIATION BETWEEN SOCIAL MEDIA USE AND MENTAL HEALTH AMONG MEDICAL STUDENTS IN UNIVERSITI PUTRA MALAYSIA (UPM)

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ABSTRACT

Introduction: Mental health problems are highly prevalent among young adults with up to 25% experiencing a mental health problem in a given year. As reported by the World Health Organization (WHO), half of all mental illnesses begin by the age of 13 and three-quarters by mid-20s. In 2015, Pew Research Centre reported that young adults were among the earliest social media adopters. The volume of social media use (SMU), encompassing metrics of quantity, have been associated with increased risk for both depression and anxiety among young adults. Many studies have shown that greater daily time spent on social media, increased frequency of Social Media Use (SMU), and multiple platform use were associated with both depression and anxiety. Depression, anxiety and stress in youth may be caused by a lot of factors. Another factor that is poorly researched on could be social media use, which will be the focus of the study. **Objective:** The main objective of this study was to determine the association between social media use and mental health among medical students in UPM. **Materials & Methods:** A cross sectional study was conducted among medical students of Universiti Putra Malaysia. The stratified random sampling was used to divide all the medical students into homogeneous strata. A google form questionnaire was used. Data was analysed using SPSS Statistics version 25.0 for windows. **Results:** The response rate was 87%. The respondents consist of mostly Malays, female, and second year medical students of UPM. As for sociodemographic factors, there is an association between ethnicity and mental health problems such as depression, anxiety and stress among medical students of UPM. There is a statistically significant difference between daily Facebook usage and the level of anxiety and stress among medical students with the percentage of 51.4% and 32.4% respectively. There is an association between the number of friends on Facebook with level of depression and anxiety with p-value = 0.003 and p-value = 0.009 respectively. The frequency of updating on Instagram also contributed to the level of depression among these medical students with the frequency of 37 out of 139 and percentage of 27.4%. Frequency of updating on Twitter contributed to mental health problems including depression, anxiety and stress as the p-value is less than 0.05. **Conclusion:** The association between social media use (SMU) and depression, anxiety, and stress was able to be determined from this study. Hence, there is an association between social media use (SMU) and mental health problems among medical students of UPM. Future study is suggested to increase and raise awareness regarding mental health by educating the public and not solely to medical students only.

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LIST OF ABBREVIATION

UPM - Universiti Putra Malaysia

WHO - World Health Organisation

SMU - Social Media Use

SNS - Social Networking Sites

GAD - Generalised Anxiety Disorder

PTSD - Post-traumatic Stress Disorder

OCD – Obsessive Compulsive Disorder

DSM-5 - Diagnostic Statistical Manual -5

APA - American Psychiatric Association

MSSQ - Medical student's Stressor Questionnaire

PSS-10 - Cohen's Perceived Stress Scale

GHQ-12 - General Health Questionnaire

DASS-42 - Depression Anxiety Stress Scale 42 Questions

QOL - Quality of Life

SES - Socioeconomic status

SPSS - Statistical Package for the Social Science

JKEUPM - Jawatankuasa Etika Universiti untuk Penyelidikan Melibatkan Manusia

MCO - Movement Control Order

B40 – Bottom 40%

M40 – Middle 40%

T20 – Top 20%

CHAPTER 1

INTRODUCTION

1.1 Background

The World Health Organization (WHO, 2017) reported that 10-20% of children and adolescents worldwide experience mental health problems. The most common disorders in children and adolescents are generalized anxiety disorder and depression, respectively (Mental Health Foundation, 2018; Stansfeld et. al, 2016). Depression and anxiety have adverse consequences on adolescent development, including lower educational attainment, school dropout, impaired social relationships, and increased risk of substance abuse, mental health problems and suicide (Copeland, Angold, Shanahan & Costello, 2014). Rates for both depression and anxiety are disproportionately high among women, individuals of low socioeconomic status and emerging adults (Bethesda, 2015). Meanwhile, the prevalence of depression or depressive symptoms among medical students vary across studies from 1.4% to 73.5% (Prinz et. al, 2012).

Mental health problems are highly prevalent among young adults with up to 25% experiencing a mental health problem in a given year (Wittchen, Nelson, and Lachner, 1998). However, despite this high prevalence, young adults are unlikely to seek help and, hence, many do not receive adequate care (Collins, Westra, Dozois, and Burns, 2004). Kessler et. al 2001, described that the peak age of onset of which mental illness occurs is adolescence and early adulthood. As reported by the World Health Organization (WHO), half of all mental illnesses begin by the age of 13 and three-quarters by mid-20s. Neuropsychiatric conditions are the leading cause of disability in young

people in all regions. If left untreated, these conditions may severely influence their development and educational attainments. The mental health of young adults aged 16-24 years was summarized in the December 2014 report on the well-being of young people (Office for National Statistics, 2014). In this study, it was also stated that one in five young adults had symptoms of depression or anxiety.

The term 'social media' refers to the various internet-based networks that enable users to interact with others, verbally and visually (Carr & Hayes, 2015). According to the Pew Research Centre (2015), at least 92% of teenagers are active on social media. Pew Research Centre reported that young adults were among the earliest social media adopters and continue to use these sites at high levels. Pew Research Centre (2015) reported that the usage of Social Media by young adults aged 18-29 years old was around 90% in that following year. The percentage of 18 to 24 years old using Facebook, Instagram and Twitter is 80%, 71% and 45% respectively (Mir, Novas, and Seymour, 2020). The volume of social media use (SMU), encompassing metrics of quantity, have been associated with increased risk for both depression and anxiety among young adults. Many studies have shown that greater daily time spent on social media, increased frequency of Social Media Use (SMU), and multiple platform use were associated with both depression and anxiety (Vannucci, Flannery, Ohannessian, & Affect, 2017). Problematic behaviours related to internet usage are often described in psychiatric terminology such as 'addiction'. Research has demonstrated that the association between Social Media Use and depression and anxiety may be more indicative of a personal experience rather than the volume of Social Media Use (Lee Won, Herzog, and Park, 2015).

Social media has both its benefits and drawbacks. Studies show the benefits of enabling people to express their thoughts and feelings, and to receive social support (Deters & Mehl, 2013; Lenhart et al., 2015; Lilley, Ball & Vernon, 2014; O’Keeffe & Clarke-Pearson, 2011; Rosen, 2011). However, research also suggests that increased social media consumption may lead to negative online experiences, fewer in-person social interactions, and decreased ability to sustain attention (Litsa T., 2014). The relationship between social media and mental health problems is not straightforward, but many studies have highlighted the contributing factors. A report by the Royal Society for Public Health, & Young Health Movement (2017) suggested impaired sleep as a mechanism. Internet use is sedentary behaviour, which in excess raises the risk of health problems (Iannotti et. al, 2009). Several studies found that users may develop addictive or problematic levels of SMU, which have been associated with increased anxiety and depression (Lee Won et. al, 2015). Similarly, individuals who feel more emotionally connected to social media may be more susceptible to negative social interactions and feedback, and subsequently, at higher risk for depression (Pettijohn et. al, 2012).

University students face various stressors such as academic requirements, time pressure and social adjustments, and medical students, in particular, may face additional challenges such as the large workload, the time commitment and the number of assessments, as well as the pressures of a clinical environment (Sreeramareddy, Shankar, Binu, Mukhopadhyay, Ray, & Menezes, 2007). A recent meta-analysis showed that depression affects approximately one-third of medical students worldwide (Puthran, Zhang, Tam, & Ho, 2016) and it is also likely that the overall prevalence of depressive symptoms among medical students is higher than that reported in the general population (Rotenstein et. al, 2016). Students with depressive symptoms also suffer from other psychological

difficulties, such as anxiety, burnout, suicidal thoughts, and substance abuse (Dyrbye, Thomas, Shanafelt, 2005; Jackson, 2017). Another possible factor of medical students experiencing depression and anxiety that is poorly researched is the association with social media use (SMU). In this study, we sought to identify the association of social media use and symptoms of anxiety and depression among medical students.



1.2 Problem Statement

In the era of globalisation, we have seen a lot of changes in our technology. Everything is just within our fingers as they said. One of the great changes is the increase in the usage of social media in society. It has been a great change but there is a hidden negative side of it. Social media serves as a tool of communication, sources of beneficial input and knowledge and a lot more. We always welcomed the fact that social media brings happiness and joy but on the other side, social media has been proven from time to time that it caused depression and anxiety which are the most common disorders in children and adolescents (Mental Health Foundation, 2018; Stansfeld et. al, 2016). In fact, according to the (World Health Organization, 2016), depression is the leading cause of disability around the world. As its consequence, many people with depression also experience physical or psychiatric chronic conditions which contribute to the overall burden of the disease (Greenberg, P. E., Fournier, A.-A., Sisitsky, T., Pike, C. T., & Kessler, R. C., 2015).

Prior research has identified media exposures, such as television, movies, video games, and the internet, to have a relation with depression which occurred among adolescents (Bickham, D. S., Hswen, Y., & Rich, M., 2015). A systematic analysis of studies assessing depressive symptoms in children and adolescents who used social media found a small but statistically significant association (McCrae, Gettings, & Purssell, 2017). In this research, we are targeting medical students in Universiti Putra Malaysia because medical students also get exposed to depression and anxiety through the usage of social media. In fact, medical students are mostly affected by mental health problems such as depressive symptoms (Al Faris et. al, 2016).

Understanding the impact of social media on adolescents' well-being has become a priority due to a simultaneous increase in mental health problems stated (Kim, 2017). However, social media is often blamed for the rise in mental health problems in adolescents and young adults (Charles, 2019), the question is, is social media really the main cause? Previous similar research but not specifically among Universiti Putra Malaysia on how social media affects mental health on medical students in UPM showed a less and significant relationship between usage of social media and depression and anxiety. With our knowledge, we are dedicated to carrying out the research to see if the relationship between social media and depression and anxiety among Universiti Putra Malaysia medical students is becoming bigger and more significant from time to time parallel to the increasing years. Thus, this study is to prove the association between social media and depression and anxiety among Universiti Putra Malaysia medical students.

1.3 Significance of Study

Studying the association between social media and depression and anxiety in medical students is important because nearly half of adolescents visit social networking sites daily and spend an average of 1 hour per day on social media use (Rideout & Fox, 2018). It was found that medical students also contribute to at least 92% teenagers who are active on social media according to the Pew Research Centre 2015. Our study will determine the association between social media and depression and anxiety specifically among Universiti Putra Malaysia medical students. The number of different social media platforms used is rising from time to time. Associations between social media and self-reported depression and anxiety also may be related to the use of multiple social media (SM) platforms which we believe that medical students also use multiple social media. the amount of social media usage (SMU), which includes quantity metrics, has been associated with increased risk among young adults for both depression and anxiety (Shensa, A., Sidani, J. E., Dew, M. A., Escobar-Viera, C. G., & Primack, B. A., 2018). Numerous researches showed that both depression and anxiety were correlated with greater average time spent on social media, increased SMU frequency and multiple platform use (Vannucci, A., Flannery, K. M., & Ohannessian, C. M., 2017). Research suggests that greater usage of social media can result in negative online experiences, lesser in-person human interaction and decreased attention-sustainability (Baek, Y. M., Bae, Y., & Jang, H., 2013). There were several similar studies conducted but not specifically involved medical students in Universiti Putra Malaysia. Our study will provide information on the psychological state of medical students who are active on social media. This study is very important as depression and anxiety has been increasing from medical

students up to medical practitioners. but our study here will be based on the core which are the medical students specifically medical students of Universiti Putra Malaysia.

Individuals with anxiety disorders are around 4 times more likely than people without this illness to see a doctor or be hospitalized for a mental disorder (Shensa, A., Sidani, J. E., Dew, M. A., Escobar-Viera, C. G., & Primack, B. A., 2018). From that statement we can know that anxiety is a serious condition which needs to be prevented. It was found by the Anxiety and Depression Association of America that the most common manifestations of mental illness In the United States of America are anxiety disorders. While according to (World Health Organization, 2016) among mental and behavioral disorders depression carries the heaviest burden of disability. Another importance of this study is to reduce the economic burden as the consequences of depression by identifying and curing at the first stage. Consequences of depression are decreasing in productivity in the workplace, suicide cases, and comorbidities. It has been estimated that the economic burden of depression in the US alone is \$210 billion, the majority of which is due to lower productivity in the workplace, suicide and comorbidities (Greenberg, P. E., Fournier, A. A., Sisitsky, T., Pike, C. T., & Kessler, R. C., 2015). Thus, it is important to determine the level of depression and anxiety due to social media among medical students in University Putra Malaysia to prevent its consequences which contribute to the economic burden since medical students are future doctors and losing them due to depression is a huge loss.

As we all know, good psychological well-being is important for medical students as they are the future doctor and their mental health surely will impact their performances as a professional. Identifying signs of depression and anxiety at the first stage is helpful in preventing any later

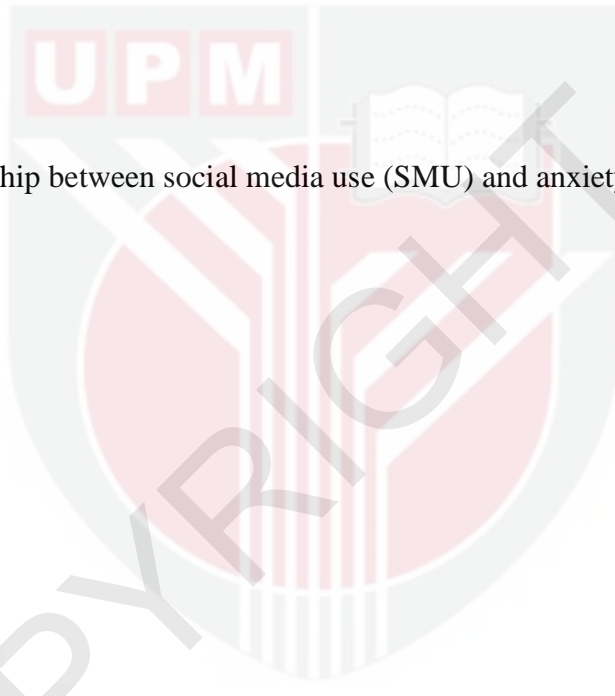
serious conditions due to depression. This study hopes to provide a clear association between social media and depression and anxiety and thus knowing the extension of the depressive symptoms and anxiety experienced by medical students who are active on social media. Findings from our study may help guide future educational and clinical interventions in preventing depression. For example, depression and anxiety prevention and management tools may include recommendations for social media use. Those recommendations should include both the importance of how much social media one uses, and how behaviorally and emotionally attached an individual is to social media. This information also hopefully can be used to raise awareness and the importance of good psychological well-being. The data obtained can surely be used to find alternatives to cope with depression and anxiety among medical students in Universiti Putra Malaysia to produce high-quality medical graduates with healthy psychological well-being.

1.4 Research Questions

I. What is the prevalence of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM)?

II. What is the level of social media use among medical students in Universiti Putra Malaysia (UPM)?

III. What is the relationship between social media use (SMU) and anxiety, depression and stress?



1.5 Study Objective

1.5.1 General Objective

The aim of the study is to determine social media use (SMU) and its association with anxiety, depression and stress among Universiti Putra Malaysia (UPM) Medical Students.

1.5.2 Specific Objective

1. To determine the level of social media use; Facebook, Instagram and Twitter use, among medical students in UPM.
2. To determine the prevalence of anxiety, depression and stress among medical students in UPM.
3. To assess the association between the levels of anxiety, depression and stress among medical students in UPM with their Facebook usage.
4. To assess the association between the levels of anxiety, depression and stress among medical students in UPM with their Instagram usage.
5. To assess the association between the levels of anxiety, depression and stress among medical students in UPM with their Twitter usage.

1.6 Hypothesis

1.6.1 Alternative Hypothesis

1. There is an association between Facebook use and levels of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM).
2. There is an association between Instagram use and levels of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM).
3. There is an association between Twitter use and levels of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM).
4. There is an association between the number of friends on Facebook and the levels of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM).
5. There is an association between the number of followers on Instagram and the levels of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM).
6. There is an association between the number of followers on Twitter and the levels of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM).
7. There is an association between frequency of updating Facebook and the levels of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM).

8. There is an association between frequency of updating Instagram and the levels of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM).
9. There is an association between frequency of updating Twitter and the levels of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM).



1.6.2 Null Hypothesis

1. There is no association between Facebook use and levels of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM).
2. There is no association between Instagram use and levels of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM).
3. There is no association between Twitter use and levels of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM).
4. There is no association between the number of friends on Facebook and the levels of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM).
5. There is no association between the number of followers on Instagram and the levels of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM).
6. There is no association between the number of followers on Twitter and the levels of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM).
7. There is no association between frequency of updating Facebook and the levels of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM).
8. There is no association between frequency of updating Instagram and the levels of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM).

9. There is no association between frequency of updating Twitter and the levels of anxiety, depression and stress among medical students in Universiti Putra Malaysia (UPM).



CHAPTER 2

Literature Review

2.1 Social Media

Social media is mushrooming in the world of developing science and technology and perhaps it is something we start and end the day with. Social media has been proven to be useful and beneficial for so many years. Social media is a site for everyone to keep in touch with family and friends, exchanging thoughts and opinions, a place for finding useful information and socialising virtually. Besides social media also a place for you to probably find love as well. Social media has been also defined in a variety of ways. Academically, the definition of social media a “platform to create profiles, make explicit and traverse relationships” (Boyd & Ellison, 2008). Social Media has been defined as websites which allow profile creation and visibility of relationships between users. Social media has been defined as websites that allow the creation of profiles and the visibility of user relationships (Boyd & Ellison, 2008). Social media is also defined as web-based applications which offer sharing, relationships, group, conversation and profiles in terms of functionality (Kietzmann et. al, 2011). In simple meaning, O’Keeffe and Clarke-Pearson (2011) define social media as; “any Web site that allows social interaction is considered to be a social media site. There is some controversy regarding whether the use of social media can worsen or help relieve mental disorders such as depression and anxiety. Social media comes in different platforms and most of it allows us to interact verbally and visually. Interaction via platforms such as Facebook, Twitter, Instagram, Snapchat, Tumblr and Reddit can provide opportunities to stay in touch with family and friends, as well as other social interactions that can improve depression and anxiety (Bessiere et. al, 2010). Hence, is social media always positive? That’s the question we are carrying forward for this study.

Some of these well-known social media include 'Facebook, Instagram and Twitter'. Facebook is a social networking service that was launched on 4 February 2004 as The Facebook. It was created by Mark Zuckerberg and his college roommates and fellow students at Harvard University. Membership of the website was originally limited to Harvard students by the founders but extended to include other colleges and eventually most universities in the United States and Canada. By September 2006, 'Facebook' was accessible to all individuals with a valid email address and an age limit of 13 years and older. Zuckerberg's intention is to create a universal website that could connect people around the world. Eventually, Facebook is a fun website where you can interact with people, upload pictures, showing your daily activities and expressing thoughts and opinions. Different from Facebook, Twitter mostly is used to express feelings, thoughts and opinions. Jack Dorsey, Noah Glass, Biz Stone, and Evan Williams launched Twitter in July of that year in March 2006. The service quickly gained popularity around the globe. By 2018, twitter had over 321 million active monthly users. Twitter is an SMS based social networking which users post and interact with messages known as "tweets". Twitter presented with logo of a bluebird and that was called simply the "Twitter Bird," and has been used as the company's branding since. Instagram, on the other hand, is a photo and video-sharing social networking service which was created by Kevin Systrom and Mike Krieger. It was launched in October 2010. Instagram quickly gained popularity after its launch in 2010, with one million registered users in two months, 10 million in a year, and 1 billion as of May 2019. All of these social media are suspected to be the cause of depression among students and adolescents. It is because at least one of these social media is used by students. Social media is believed to have been part of daily life for many people. Usage of social media can be addictive thus lead to depression and anxiety. In

this study, we will determine the association between the usage of social media and depression and anxiety among Universiti Putra Malaysia medical students.

2.2 Anxiety

According to the World Health Organization (WHO), anxiety disorders refer to a group of mental disorders characterized by feelings of anxiety and fear, including generalised anxiety disorder (GAD), panic disorder, phobias, social anxiety disorder, obsessive-compulsive disorder (OCD) and post-traumatic stress disorder (PTSD). In the most recent Diagnostic Statistical Manual-5 (DSM-5), these disorders were placed in other categories. The disorders include Separation Anxiety Disorder, Selective Mutism, Specific Phobia, Social Anxiety Disorder, Panic Disorder, Agoraphobia, Generalized Anxiety Disorder, Substance-Induced Anxiety Disorder and Anxiety Disorder Due to Other Medical Conditions. Diagnostic criteria specify that an individual must have 2 or more symptoms most days of the week for at least 6 months (Lakhan, Vieira, 2010). Disease onset typically occurs early in life and quickly erodes quality of life, social relationships, job performance and physical health (Gao, Sheehan, Calabrese, 2009). As with depression, symptoms can range from mild to severe. The duration of symptoms typically experienced by people with anxiety disorders makes it more chronic than an episodic disorder. The symptoms can interfere with daily activities such as job performance, school work, and relationships. American Psychiatric Association (APA) describes anxiety as an anticipation of a future concern and is more associated with muscle tension and avoidance behaviour. Anxiety disorders often remain underdiagnosed and undertreated in primary care (Wittchen et. al, 2002).

2.3 Depression

The term “depression” was first brought in the 19th century, initially called “mental depression,” to describe lowering of typical quality, mood or attitude of a person, hence replacing melancholia as a diagnosis (Paykel, 2008). Depression is associated with a combination of biological, psychological, and social factors (World Health Organization, 2016). According to the World Health Organisation (WHO), characteristics of depression include persistent sadness and a lack of interest or pleasure in previously rewarding or enjoyable activities, feelings of guilt or low self-worth. Depression also disrupts sleep and appetite leading to fatigue and poor concentration. Depression can be long-lasting or recurrent, significantly impeding an individual’s ability to take up responsibilities at work or school or subsist with daily life. In his review, Ng (2018) says “Depression is characterised as deterioration from previous function with the presence of psychological complaints such as depressed mood, loss of interest or pleasure, feelings of worthlessness or guilt and recurrent thoughts of death or suicide, together with somatic symptoms which include significant weight change, sleep disturbance, physical agitation or retardation, fatigue and inability to concentrate.” Iyer K. and Khan Z.A. (2012) studies show several types of depression which are major depression, dysthymia and manic-depressive or bipolar.

2.4 Stress

The word stress has many connotations and definitions based on various perspectives. Originally, the word stress is used as a term in physics to describe an enough force or tension applied on an object to move it, bend it or break it. Later on, the term stress was brought further to describe a human condition. The word stress describing human condition was introduced by a physiologist Hans Selye in his book titled 'Stress of Life'. Stress is defined as an absence in inner peace in Eastern philosophies, while in Western culture, stress was described as loss of emotional control (Seaward, L. Brian, 2017). Stress is the body's nonspecific reaction to any demand put on it to adapt whether the demand is causing pleasure or pain. Stress is the inability to cope with a perceived (real or imaginary) threat to one's mental, physical, emotional and spiritual well-being which results in a series of physiological responses and adaptations (Chopra, 2000; Dossey 2004). "Stress" has been dubbed the "Health Epidemic of the 21st Century" by the World Health Organization.

The effect of the stress can be detrimental to both our mental and physical health. More than 50% of individuals thought that stress had a negative effect on job performance in a latest United States study (F. George, 2017). Between 1983 and 2009, the levels of stress among all United states demographic groups increased by 10%–30 % (F. George, 2017). Numerous epidemiological studies have tried to define the effects of social, workplace and lifestyle on stress, health and wellbeing (F. George, 2017). Increased work stress levels as assessed by the perception of little control, but many demands have been shown to be associated with increased rates of heart attack, hypertension, obesity, addiction, anxiety, depression and other disorders.

To correlate social media use and stress following our study, there is a little association between both variables. More precisely, certain teenagers have been argued to experience high rates of stress from using social media (Beyens, Frison, & Eggermont, 2016). Another devastating effect of stress is that it impacts the quality of sleep. Adolescents, for example, reported that stress may cause lying awake at night and daytime sleepiness (American Psychological Association, 2014). The negative impact of stress on sleep has been explained by multiple neurotransmitter activation and stress hormone release (Sanford, Suchecki & Meerlo, 2014). To date, only few studies have specifically focused on the relationship between social media, stress and adolescent sleep (Garett et. al, 2016; Xanidis & Brignell, 2016). Apart from that, another research also found devastating effects of stress to be related to other diseases. Studies conducted by American Institute of Stress studies now indicate 43% of adults suffer adverse health effects due to stress and 80% of all visits to primary care physicians are for stress related complaints or disorders.

2.5 Global and local prevalence of anxiety, depression and stress

2.5.1 Prevalence of Anxiety

According to the World Health Organisation (WHO, 2017), the percentage of the world population with anxiety disorders in 2015 is estimated at 3.6%. Anxiety disorders worldwide are more prevalent among females at 4.6% than males at 2.6%. In the year 2015, the total estimation of people living with anxiety disorders in the world is 264 million. There has been a rise of 14.9% since 2005, as an outcome of population growth and ageing. Next, the rates differ from the Western Pacific Region (2.9%) to the Region of the Americas (5.8%) as well.

Based on the Prevalence, associated factors and predictors of anxiety: a community survey in Selangor, Malaysia (2015), a total of 1455 out of 1556 participants showed completion of all the items in the GAD-7 questionnaire. Hence, producing a response rate of 93.5 %. Moving on to the prevalence of anxiety from the same study, “Based on the cut-off point of 8 and above on the GAD-7, the prevalence of anxiety among adults in the community was 8.2 %. A total of 119 participants had anxiety in this study” (Kader Maideen, Mohd Sidik, Rampal, et. al, 2015). Anxiety was found to be higher among females (8.4 %) in comparison with males (7.7 %). Anxiety was also found to be more common in the other ethnic groups also known as natives; Bidayu, Iban, Dusun, Kadazan, Melanau and Murut at 9.1 %. The percentage was higher compared to Malays (8.4 %), Chinese (8.1 %) and Indians (7.4 %).

According to a study carried out among secondary school students in Pasir Gudang district, Johor, 1486 out of 2924 respondents were found to have anxiety, giving a prevalence of 50.8%.

From the main socio-demographic factors studied, age was found to be a predictor of anxiety among the adolescents in this study (Abdul Latiff, Mohd Sidik, Ibrahim et. al, 2015).

2.5.2 Prevalence of Depression

According to the World Health Organisation (WHO, 2017), depression is a common mental disorder which impacts over 264 million people across the globe. The percentage of the world population with depression in 2015 is estimated to be 4.4%. Depression is higher among females (5.1%) than males (3.6%). The total estimated number of people living with depression increased by 18.4% between 2005 and 2015. The rates differ from the Western Pacific Region (3.6%) to the African Region (5.4%) as well.

Based on the Malaysia Mental Healthcare Performance Report (2016), “The prevalence of current depression in Malaysia was 1.8% (95% CI 1.5 - 2.1)”. The effect was higher in females compared to males and highest prevalence showed Indians at 4.6%. (Ministry of Health Malaysia, 2017).

Table 2.1 The prevalence (%) of current depression, National Health Morbidity Survey 2011

Characteristics	Prevalence (%)	Confidence Interval
MALAYSIA	1.8	1.5 - 2.1
Location		
Urban	1.9	1.5 - 2.3
Rural	1.6	1.2 - 1.9
Sex		
Male	1.4	1.0 - 1.7
Female	2.3	1.8 - 2.7
Ethnicity		
Malays	1.6	1.3 - 1.9
Chinese	1.3	0.6 - 2.0
Indians	4.6	2.9 - 6.3
Other Bumiputeras	1.8	1.1 - 2.5
Others	2.5	1.1 - 3.9

2.5.3 Prevalence of Stress

Based on the Mental Health Foundation (2018), 74% of people have at certain point experienced being very stressed that they felt overwhelmed or unable to cope. Over half of adults (51%) who felt stressed reported feeling depressed, and 61% reported feeling anxious. 30% of elderly reported never feeling as such in the past year, compared to 7% of young adults.

Based on the study “Prevalence of Stress and its Associated Factors ” in the Journal of Evolution of Medical and Dental sciences, 100 first year students were required to fill the questionnaires of Medical student’s Stressor Questionnaire (MSSQ), Cohen’s Perceived Stress Scale (PSS - 10) and General Health Questionnaire (GHQ - 12). “The prevalence of stress as per MSSQ was 93.75%, P

SS was 69.79% and GHQ was 65.62%” (Sivan, Sheela, Rangasubhe et. al, 2013).59% of the study patients indicated stress levels. Females showed to be more stressed than males as well (Wiegner, Hange, Björkelund et. al, 2015).

A Medical Student Research on Stress and its Associated Factors among Medical Students in a Public Medical Faculty, Malaysia “Stress prevalence in medical students were 19.8%. Stress prevalence was higher among students aged ≤ 21 years (22.1%), male (20.2%), Indian (24.0%) and Hindus (31.6%) and low income family (21.4%) Prevalence of stress among students in pre-clinical year (21.4%) and clinical year students (17.9%)”(Nmz, KO, BZ et. al, 2016). A study titled Prevalence of stress, stressors and coping strategies among secondary school students in Kota Bharu, Kelantan, Malaysia was conducted in 2011. The study found that the prevalence of distressed secondary school students was 32.8% with academics being the prime stressor (Yusoff, Ahmad, Amirah et. al, 2011).

2.6 Anxiety, Depression and Stress among Medical Students

Depression and anxiety symptoms presented among the medical students of Chongqing Medical and Pharmaceutical College were 57.5% and 30.8%, respectively. Students older than 20 years of age suffered higher levels of depression and anxiety. Other than that, students with heavy financial issues, stress result of their studies and poor sleep quality were among the reasons most of them manifested symptoms of anxiety and depression. On the other hand, students with massive employment strain confirmed greater anxiety symptoms. Students who stayed alone or had unpleasant relationships with their significant others, classmates or friends showed greater depression and anxiety scores. Their depression and anxiety symptoms had especially sizable correlations with household functioning, social aid and coping style (Shao, He, Ling et. al, 2020). In Dubai, UAE, a depression prevalence of 28.6% was reported among medical students (Ahmed, Banu, Al-Fageer et. al, 2009).

A study on medical students at a university in the Brazilian Southern State of Santa Catarina exhibits the prevalence of anxiety at and 35.5% whereas the prevalence of depression was at 32.8%. The occurrence of symptoms for anxiety and depression among medical students in this study was shown to be more towering than the norm in the general population. "There is indication that the psychosomatic injuries provided by depressive and anxiety morbidity inflicted to medical students are resulting from constant exhaustion and various stressors inherent to medical school" (Tabalipa, Souza, Pfütenreuter et. al, 2015). Kulsoom and Afsar (2015) say that based on their study, the students had more standard traits of depression, anxiety, and stress especially with examinations around the corner, smokers and among the female students comparatively to males.

Students propounded that the study burden and a tight schedule were the prime reasons for their scores to be high when tested DASS-42.

2.7 Association between social media use and anxiety, depression and stress among Medical Students

Social media use is like a double-edged sword, that can have both favourable and unfavourable consequences. Madaiah, Seshaiyengar, Suresh et. al, (2015) says in the current generation the cons outweigh the pros, especially in medical college students. Positive communication, social support, and social attachments on social media were steadily associated with low levels of depression and anxiety, while negative communication and social comparisons on social media were connected to higher levels of depression and anxiety. (Seabrook, Kern, Rickard, 2016).

Barman, Mukhopadhyay, and Bandyopadhyay (2018) quoted that “Although the number of social media platforms used had no bearings on depression and anxiety of study participants in the present study, the depression and anxiety scores were found to be higher in students who use social media frequently and for a longer duration” through their research among medical students in Kolkata, West Bengal. They also reported that 20% of the study participants had mild-to-moderate depression and another 4.0% had severe depression. Besides, their study also showed 59.0% of the participants had moderate anxiety, and 9.5% had severe anxiety. Kross et. al, 2013 illustrated that more use of social networks exposed the young adults to experiences of negative affect and reduced their sense of well-being. Neira et. al, 2014 also found a significant association between frequency of social network use and depression. Furthermore, in Saudi Arabia, depression

is a common masked health issue among medical students. However, the prevalence of depressive symptoms was not remarkably associated with the length of time of social media use (Alsabaani, Alshahrani, Abukaftah, et. al, 2018).

2.8 Sociodemographic factors

Sociodemographic factors are important determinants in anxiety, depression and stress among medical students. Aspects to be discussed further would be the effect of: (1) Gender, (2) Ethnicity, (3) Socioeconomic status and (4) Year of Study.

2.8.1 Gender

To recapitulate, factors associated with anxiety, depression and stress were greatly taken into account in the majority studies on depression. Specifically, a factor extracted and derived out from socio-demographic which is the impact of gender is observed. It's generally concluded that women are more prone to depression than men. In terms of biological sex, girls report depressive symptoms more often than boys in early adolescence, with approximately 25–40% of adolescent girls showing higher levels of depression compared with 20–35% of adolescent boys having the same mental disorder (Petersen, Compas, Brooks-Gunn, & Stemmler, 1993). A study that was done by Hishan et. al (2018) reported that 62.2 percent of students reported having depression while 78.3 percent and 55.9 percent of students suffered anxiety and stress, respectively. In addition, several studies reported connection between increased time spent on social networking systems and increased levels of depression and anxiety among adolescent (Pantic et. al, 2012; Woods & Scott, 2016), specifically among girls (Viner et. al, 2019). Depression, anxiety and stress were found more in females than males. Majority of the university students try to cope with stress in a healthy,

possible and positive way. Unfortunately, there are some students who failed to cope with the stress and hence lead to depression. It is stated that males have better coping mechanisms in coping with a prolonged state of stress which will lead to depression compared to females. This is also a solid reason why females suffer more from depression than males. The study that was done by Hishan et. al (2018) also reported that prevalence of stress, anxiety and depression was higher in females than in males which were in concurrence with the study done in Malaysia and Turkey. It is reported that the main reasons for stress in females are social hardships, physiological factors and stress caused by the environment. In addition, a study conducted by Gin-Gin Gan and Yuen-Ling Hue in 2019 showed that female students had significantly lower psychological scores compared to males; 70.73 vs 66.32 ($P < 0.05$) indicating indirectly that females suffer more from depression than males. They also proved that results showed females to have significantly lower psychological domains, similar to reports elsewhere. This may be because compared to males, females could be more sensitive to pressure. It is also possible that females were more emotional and could not effectively cope with a prolonged state of stress compared to males which contribute to the increasing cases of depression among females than males.

2.8.2 Ethnicity

In reference to ethnicity, various studies have been done in Malaysia to observe the level of anxiety, depression and stress among medical students and medical officers. A study that was done by Gin-Gin Gan and Yuen-Ling Hue in 2019 suggested that Malay students had significantly more anxiety compared to other ethnic groups. They also mentioned that anxiety and depression were associated with significantly poorer quality of life (QOL). This has similar results to the studies that were done by Shamsudin et. al 2013, where Malay students had the highest stress score as compared to Chinese and Indian. However, it is to note that this study was not limited to medical programmes. Furthermore, according to Hishan et. al 2018, they discovered that the prevalence of anxiety was more in Malays, but depression and stress were more in other ethnicities. We believe that their coping mechanism, religion and cultural differences contribute to these differences of anxiety and depression level among these races. At a global perspective, the World Health Organization (WHO) discovered that the South-East Asia region has the highest prevalence for both anxiety disorder and depression at 23% and 27% respectively.

2.8.3 Socioeconomic status

Apart from gender, ethnicity and education level, socioeconomic status also plays a big role in determining the level of depression among medical students. Socioeconomic status also known as SES is the social status or class of an individual or group. Both financial and non-financial dimensions are included in the concept of socioeconomic status. Socioeconomic status (SES) is a wide concept which includes such factors as occupation, income, wealth and educational attainment. It is also often measured as a combination of income, education, and occupation. Current social and economic conditions are not only factors that affect health outcomes in adulthood, but also by childhood socioeconomic conditions (Lindstrom et. al, 2014). This means that poverty during childhood can affect an individual mental health in their adulthood. However, research has shown that the association between mental disorders and education or social class respectively is weaker than the association between mental disorders and financial circumstances (Laaksonen et. al, 2007; Linander, Hammarstrom & Johansson, 2015). In other meaning, financial circumstances contributed to the major leading cause of depression compared to the aspect of educational level and social class. Recent research that was done by Serafetinidou and Verropoulou (2019), which found that economic stress in childhood seems to have a greater impact for men, while economic stress during adulthood has a greater impact on women. Generally, students coming from financially stable backgrounds suffer less depression than those who are not fortunate. Research conducted by Gin-Gin Gan and Yuen-Ling Hue in 2019 suggested that students from better financial backgrounds reported better environmental scores which again were consistent with other studies. In simple meaning, students from financially stable families are shown to be less likely to suffer depression compared to those who are not. This is related to the belief that families with unstable finances have to struggle and overwork to get as much salary to

survive. In this case, burnout syndromes including depression appeared to be affecting those poor families more than the rich. Common problems arising also from financial problems such as bank loans and studying fees will put the family under stress which eventually leads to depression. A study conducted by Sanil et. al, 2018 reported that anxiety and depression were seen more in students with a rural background and in the other hand stress in students coming from an urban area. Anxiety and depression are seen in rural upbringing because of the difference in the environment they need to cope compared to where they have been living in the past. For example, buildings and concrete jungle tend to bring anxiety to students from rural areas who used to live in a peaceful and green environment. Stress is seen in the urban upbringing as a result of urban spray, environmental pollution, traffic jams and a lot more.

2.8.4 Year of Study

The year of study in medical programmes plays a significant role as they face different challenges and levels of education in each year. In the first and second year of medical programmes, students would only be undergoing preclinical curriculum and syllabus. When they enter third year to fifth year of study, they will enter the era of clinical curriculum. Research suggests that mental health deteriorates during medical school years and continues to decline when trainees enter the workforce (Dyrbye, Thomas, and Shanafelt, 2005). A recent study showed that students are more likely to engage in active coping by their final year of medical school than they were in their earlier years (Puthran, Zhang, Tam and Ho, 2016). Other studies had been done in public universities that suggested students in their first and second year of study exhibit higher levels of depression and anxiety compared to students in higher years of study (Bayram and Bilgel, 2008; Dyson and Renk, 2006; Hafen, Reisbig, White, and Rush, 2006). This shows that junior medical students are at a higher risk of developing anxiety and depression. However, in contrast, in another study, it was identified that students undertaking clinical training exhibit higher depression levels compared to preclinical students (Baldasin, Alves, Andrade, and Martins, 2008). These inconsistent findings could simply be explained by the way the students develop their coping skills and maturity through experiences throughout the years in medical school. Understanding the different ways in which financial hardship across the life course can impact adult health is therefore increasingly important, particularly as the UK government has abolished previous plans and policies that attempted to eradicate childhood poverty.

2.9 Confounders

Confounders, or confounding variable, is a variable that influences both the dependent and independent variables. Epidemiologists had visualized confounders as a pre-exposure variable that was associated with exposure and associated also with the outcome conditional on the exposure, possibly conditional also on other covariates (Miettinen, 1974). The confounders that may have contributed to the association of social media use and mental health among medical students of UPM includes wifi coverage, condition of the phone, social media accounts being hacked and cyberbullying. The first confounder that was found to be related to the association of social media use and mental health among medical students is wifi coverage. Wifi coverage plays an important role to stay and maintain in using social media or any websites. Wifi coverage affects speed of surfing the internet and usually urban areas have better wifi coverage than rural areas. Slow internet connection happens due to low wifi coverage and it affects people who use social media. A new study reported that slow internet speeds contribute to stress. According to a new report by the mobile broadband company Ericsson in 2016, even minor connection speed disruptions can cause your stress level to increase. Next confounder found to be related to the association of social media use and mental health among medical students is the condition of the phone. Condition of an individual mobile phone can affect their mental health. Conditions of mobile phones include lagging and having an old operating system. Mobile phones produced in the past 10 years have an old operating system compared to the latest one. Stress appears when having a problem with a mobile phone while surfing the social media. Apparently, lagging during surfing the social media is common in old mobile phones. Furthermore, the next confounder is the situation of being hacked. Hacking victims experience anxiety, stress and depression. Hacking can have serious repercussions for mental health. A report that was done by a security firm Norton in 2010 revealed

that victims feel “powerless” because it seems unlikely that online criminals will be brought to justice. Being hacked can cost our financial information and confidential details as well. Such crimes can cause depression, anxiety and stress. Lastly, cyberbullying. Cyberbullying is defined as willful and repeated harm inflicted through the use of computers, cell phones and other electronic devices (Patchin and Hinduja, 2006). Youths who have been targets of cyberbullying have been reported of higher levels of depression and suicidal ideation, as well as emotional distress and externalised hostility as compared to non-victimized peers (Ybarra, Mitchell, Wolak and Finkelhor, 2006). Adolescents who are involved in cyberbullying as both bullies and victims have been found to be most at risk for negative mental and physical health consequences (Kowalski and Limber, 2013). Hence, all of these confounding factors mentioned above are not the main focus of our study, but it may indirectly contribute and influence the level of depression, anxiety and stress among medical students of UPM.

2.10 Conceptual framework

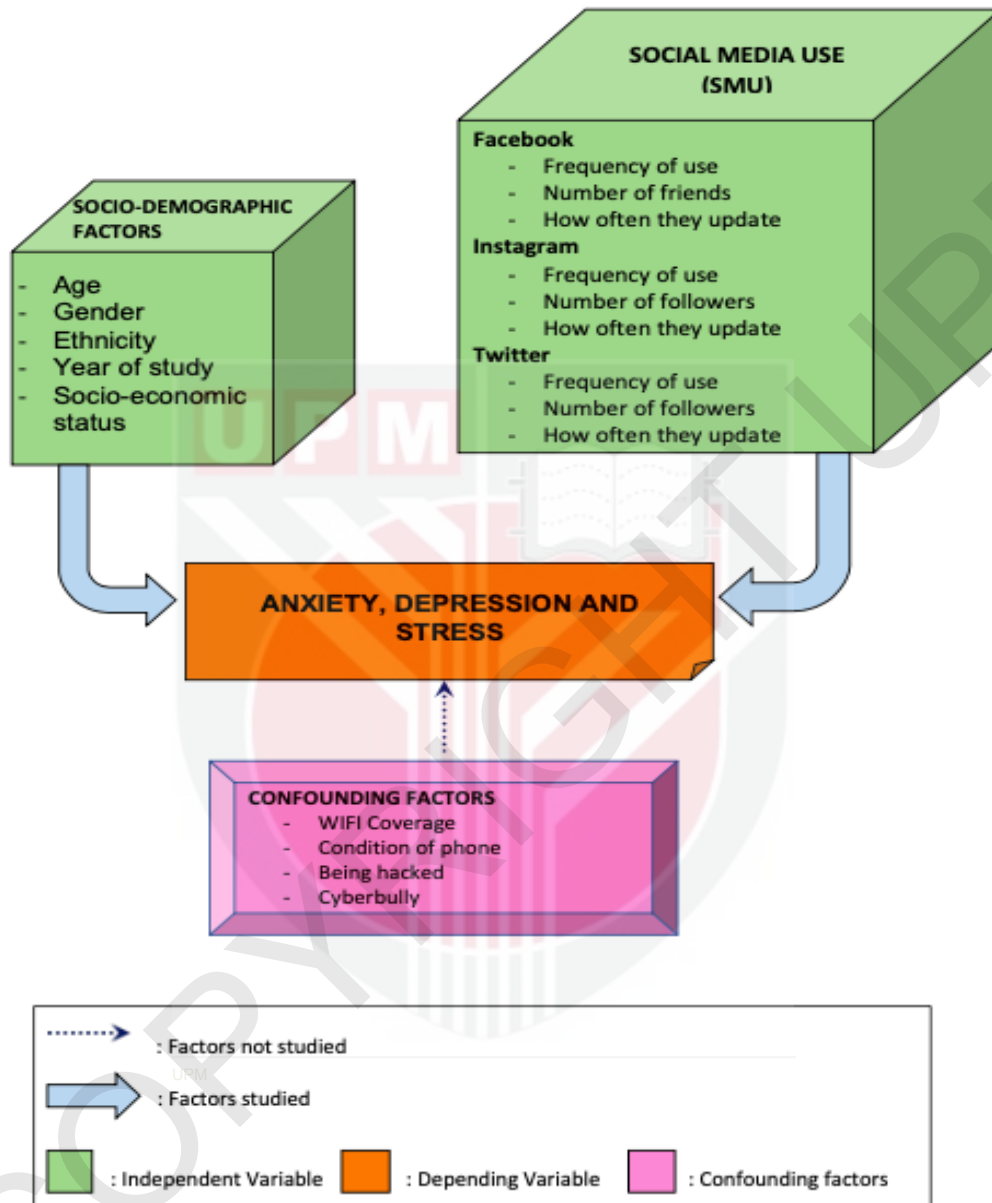


Figure 2.1: Conceptual framework of sociodemographic factors and social media use contributing to anxiety, depression and stress among medical students in Universiti Putra Malaysia.

CHAPTER 3

METHODOLOGY

3.1 Study Location

This study was carried out at the Faculty of Medicine and Health Sciences, Universiti Putra Malaysia in Serdang. This faculty is one of the 16 faculties in Universiti Putra Malaysia. It has almost 2000 health sciences and medical students.

3.2 Study Design

The study design used was a cross-sectional study.

3.3 Study Duration

The study was conducted from April 2020 and continues until October 2020.

3.4 Sampling

3.4.1 Study Population

The study population consisted of all medical students of Universiti Putra Malaysia from Year 1 to Year 5 who are registered in the academic year 2019/2020. There is a total of 508 medical students in this faculty; 113 first year medical students, 114 second year medical students, 95 third year medical students, 104 fourth year medical students and 82 fifth year medical students.

3.4.2 Sampling Population

There is a total of 508 medical students in this faculty; 113 first year medical students, 114 second year medical students, 95 third year medical students, 104 fourth year medical students and 82 fifth year medical students.

3.4.2.1 Inclusion Criteria

Year 1, Year 2, Year 3, Year 4 and Year 5 medical students in UPM.

3.4.2.2 Exclusion Criteria

1. Medical students who are on long leave.
2. Medical students who have dropped out of the course.
3. Medical students who are unwell.

3.4.3 Sampling Frame

The list of names and matric numbers of all first year to fifth year medical students in the Faculty of Medicine and Health Sciences, Universiti Putra Malaysia will be obtained from the academic unit.

3.4.4 Sampling Unit

A medical student in Faculty of Medicine and Health Sciences, Universiti Putra Malaysia.

3.4.5 Sample Size Estimation

By using the two proportion formula to find the sample size, n:

$$n = (Z_{\alpha/2} + Z_{\beta})^2 \times (p_1(1-p_1) + p_2(1-p_2)) / (p_1 - p_2)^2$$

$$n = (1.96 + 0.84)^2 \times (0.1(1-0.1) + 0.05(1-0.05)) / (0.1 - 0.05)^2$$

$$n = 431$$

Where:

$Z_{\alpha/2}$ is the critical value of the normal distribution at $\alpha/2$

e.g. for a confidence level of 95%, α is 0.05 and the critical value is **1.96**

Z_{β} is the critical value of the Normal distribution at β

e.g. for a power of 80%, β is 0.2 and the critical value is **0.84**

$P_1 = 0.1$, sample proportion in Group 1

$P_2 = 0.05$, sample proportion in Group 2

The sample size calculated is 431 considering the expected response rate will be 80%.

For anxiety,

$$n = (Z_{\alpha/2} + Z_{\beta})^2 \times (p_1(1-p_1) + p_2(1-p_2)) / (p_1 - p_2)^2$$

$$n = (1.96 + 0.84)^2 \times (0.1(1-0.1) + 0.05(1-0.05)) / (0.1 - 0.05)^2$$

$$n = 431$$

For depression,

$$n = (Z_{\alpha/2} + Z_{\beta})^2 \times (p_1(1-p_1) + p_2(1-p_2)) / (p_1 - p_2)^2$$

$$n = (1.96 + 0.84)^2 \times (0.1(1-0.1) + 0.05(1-0.05)) / (0.1 - 0.05)^2$$

$$n = 431$$

For stress,

$$n = (Z_{\alpha/2} + Z_{\beta})^2 \times (p_1(1-p_1) + p_2(1-p_2)) / (p_1 - p_2)^2$$

$$n = (1.96 + 0.84)^2 \times (0.1(1-0.1) + 0.05(1-0.05)) / (0.1 - 0.05)^2$$

$$n = 431$$

Considering there is a 20% unresponsive rate,

$$431 \times 120\% = 517$$

There will be a total of **517** sample populations.

3.4.6 Sampling Technique

The stratified random sampling was used to divide all the medical students into homogeneous strata. Stratified random sampling is a method of sampling that involves the division of a population into smaller sub-groups known as strata. All medical students of Universiti Putra Malaysia will be listed. The students were divided into stratas according to their year of study. The medical students are stratified into their two groups which consist of the pre-clinical group (first and second year medical students) and clinical group (third, fourth and fifth year medical students).

3.5 Data Collection

3.5.1 Study Instruments

The consent from respondents was obtained beforehand. A google form questionnaire was used as the study instrument. Study instruments included a validated questionnaire such as the Depression Anxiety Stress Scale (DASS). The DASS is a compilation of 3 self-report scales designed to assess depression, anxiety, and stress in the negative emotional states. The DASS was designed not simply as another set of measures to quantify conventionally defined emotional states, but to advance the process of identifying, recognizing, and assessing the pervasive and clinically important emotional states usually identified as depression, anxiety, and stress. Each of the three DASS scales comprises 14 items, divided into 2-5 subscales of similar contents. Subjects are asked to use 4-point severity/frequency scales to rate the extent to which they have experienced each state over the past week. Scores for Depression, Anxiety and Stress are calculated by a summation of scores (Lovibond & Lovibond, 1995).

The DASS-42 is a self-report scale of 42 items, designed to measure the negative emotional conditions of depression, anxiety and stress Lovibond, S.H. & Lovibond, P.F. (1995). In a clinical setting, the primary benefit of DASS is to explain the locus of emotional distress as part of the larger clinical assessment process. The basic task of DASS is to determine the extent of the core symptoms of depression, anxiety, and stress. The DASS was designed by Syd Lovibond and Peter Lovibond at the University of New South Wales in 1995. Complete DASS consists of 42 questions also known as DASS 42 while DASS 21 is an incomplete version of DASS and the result obtained from DASS 21 needs to be multiplied by 2. The sum of the corresponding 14 items per scale shall

be the scores of the participants for each of Depression, Anxiety and Stress. Since the scales of the DASS have been shown to be of high internal consistency and to produce meaningful discrimination in a variety of settings, the scales should satisfy the needs of both researchers and clinicians who wish to measure the current state or change the state over time.

Table 3.1: DASS-42 SCORE AND DEPRESSION, ANXIETY, STRESS SEVERITY

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely severe	28+	20+	34+

However, for the questionnaire on Social Media Usage, a pretest had been done among 30 medical students. The internal consistency of the instrument and reliability of our questionnaire is determined via IBM SPSS Cronbach Alpha. The range of Cronbach alpha coefficients is between 0 to 1. The closer the alpha towards 1, the more reliable the questions are.

3.5.2 Data Collection Techniques

Respondents were explained about the study and what they were required to do if they agreed to participate in this study. Respondents were required to answer all the questions in the self-administered questionnaire given by the researchers. The data collected is primary data since it is directly obtained from the questionnaire answered by the medical students who are from all medical students in Universiti Putra Malaysia. This data is confidential as only the researchers will have access to it. The data collection period was for a week in August 2020.

3.5.3 Validity and Reliability

The instruments that was used have been validated and are reliable measurement tools. The Social Media Questionnaire was validated by Public Health experts. It was also pretested in 20 of the study population. The reliability of the questionnaire was tested using Cronbach Alpha to assess the internal consistency of the instrument and the reliability of the questions. The range of Cronbach alpha coefficients is between 0 to 1. The closer the alpha towards 1, the more reliable the questions are. The DASS-42 is reliable and suitable for use to assess symptoms of common mental health problems, especially depression, anxiety and stress. The DASS-42 item is a self-report inventory designed to measure the presence and severity of symptoms of depression, anxiety and stress among people as young as 12 years of age (Lovibond and Lovibond, 1995). It has been shown to be reliable and valid with a three-factor structure (Clara, Cox and Enns, 2001). This tool has also been translated and validated in other languages including Bahasa Melayu (Musa and Fadzil, 2007). Both English and non-English versions have high internal consistency, Cronbach's alpha scores of > 0.7 . Cronbach's alpha coefficients are calculated to measure the internal

reliability for each subscale with a cut-off of 0.7 used to indicate high internal reliability. Reliability of DASS-42 showed excellent Cronbach's alpha values of 0.94, 0.90 and 0.87 for depression, anxiety and stress domains respectively (Musa, Ramli, 2012).

3.6 Data Analysis

The data was analysed using the Statistical Package for the Social Science (SPSS) version 25.0. The sociodemographic factors were analysed by descriptive statistics where frequency and percentage were used for presenting categorical data. Normality test was done to the numerical data including age and number of followers for each social media; Facebook, Instagram and Twitter. Normality assessment of these numerical variables were determined statistically using Kolmogorov-Smirnov and Shapiro-Wilk test and graphically using histogram. The numerical data which is the number of followers for each social media are then converted to categorical data.

3.6.1 Descriptive Statistics

Descriptives were shown as frequency and percentage (%) for categorical variables while mean and standard deviation were used to describe continuous variables. Normal distribution of the continuous variables was accessed using the Shapiro-Wilk test, Kolmogorov-Smirnov, normal Q-Q plots and histogram.

3.6.2 Analytical Statistics

Analytical statistics are the statistical procedures that are used to reach conclusions about associations between variables. Ronald A. Fisher established the basic guidelines for significance testing. He stated that a statistical result may be considered significant if it can be shown that the

probability of it being rejected due to chance is 5% or less. In inferential statistics, this probability is known as the p-value, 5% is called the significance level (α), and the desired relationship between the p-value and α is denoted as: $p \leq 0.05$. Chi Square Test will be used to determine statistically differences between the association of social media use (SMU) and anxiety and depression in medical students of Universiti Putra Malaysia. The level of significance will be set $\alpha = 0.05$. P value less than 0.05 is considered as significant. If p-value is more than 0.05, we do not have enough evidence to reject the null hypothesis or accept the alternative hypothesis. The significance level is the maximum level of risk that we are willing to accept as the price of our inference from the sample to the population.

3.7 Study Ethics

- The ethical clearance from Ethics Committee for Study involving Human subjects of Universiti Putra Malaysia (JKEUPM) has been obtained.
- Each respondent has been requested for an informed consent to participate in the study.
- The information received from the respondents is kept confidential.

3.8 Variables

3.8.1 Independent variable

The independent variable of this study is social media use.

3.8.2 Dependent variable

The dependent variables of this study are anxiety, depression and stress among medical students in Universiti Putra Malaysia.

3.9 Expected Outcome

The level of depression and anxiety with its association of social media usage in medical students of Universiti Putra Malaysia was determined. Apart from that, the sociodemographic factors of the students was also determined during this study. In the future, we hope that there will be actions taken to help these medical students that are suffering from depression, anxiety and stress.

3.10 Limitations of Study

There were a few limitations that we experienced during the research which include information bias and non-response bias. For information bias, it arised due to the prepared questionnaire. For example, if the respondent has misunderstood the instructions and filled in wrongly. In preventing information bias, pretesting the questionnaire will help to correct this problem.

For non-response bias, as our questionnaire was distributed online, mainly due to the Corona Virus pandemic where social distancing is very important to continue being practised, the respondent might have been unable to participate or answer the questionnaire due to many reasons. For example, poor connectivity of the internet, they may have not received the correct link or missed it through the forwarding of messages. However, hopefully, this was prevented to a certain extent as the study location should provide a good internet connection for all users. We hope to receive good cooperation from all the medical students in Universiti Putra Malaysia.

3.11 Definition of Terms

3.11.1 Social Media Use

The respondents are asked on how much time per day they spent on their social media accounts; Facebook, Instagram and Twitter and how many followers and friends they have on social media; how often they update on Facebook, Instagram and Twitter.

3.11.2 Anxiety, Depression and Stress

The response is based on the DASS 42 Questionnaire filled up by respondents.

CHAPTER 4

RESULTS

4.1 Response Rate

Our research initially targeted 518 respondents from 1st year to 5th year of University Putra Malaysia medical students. After considering the unresponsive rate, the calculated sample size was 431. We started to distribute the questionnaires on 18th of August. After one week of distributing the questionnaires through Google Forms, 374 respondents had responded. The remaining non-respondents were from the 4th and 5th year medical students since they are busy with the end of posting examinations. As calculated, the response rate for the study was 87%.

4.2 Descriptive Statistics

The questionnaires were given to the medical students in Universiti Putra Malaysia (UPM). Table 4.1 shows the distribution of respondents according to socio-demographic factors of medical students in UPM based on the data analysis. The socio-demographic aspect of the respondents in our research consisted of the gender, age, ethnicity, year of study and household income. The respondents were made up of 110 male (29.4%) and 264 (70.4%) females. The ethnic composition was 233 Malays (62.3%), 77 Chinese (20.6%), 56 Indians (15%) and 8 other races (2.1%). Regarding year of study, most of the respondents were preclinical, year 1 at 80 with a percentage of 21.4% and year 2 at 99 (26.5%). It was found that the majority of the respondents were female (70.6%). Sixty-two-point three percent of the respondents were Malay. Twenty-six-point five percent of the second year contributed in the study, making them the largest group in comparison to the other year of study. Most of the respondents were staying at home as of MCO and 87%

response rate was recorded as 374 respondents. Household income of the respondents were from less than RM4360 (M40) with a percentage of 33.2%, more than RM4360 to RM 9619 (B40) with a percentage of 42.5% and more than RM9619 with a percentage of 24.3%. The highest respondents received from M40 group (42.5%). For age, the majority of respondents were 21 with a percentage of 26.2%. The majority of respondents were Year 2 students (26.5%). The median of the age of the respondent was 22 with an interquartile range of 2. The mean and standard deviation for age was 21.68 and 1.250 respectively. The median of the year of study of the respondent was 3 with an interquartile range of 2. The mean and standard deviation for age was 2.67 and 1.252 respectively.

Table 4.1(a) Distribution of Respondents Based on Socio-Demographic Factors among Medical Students in UPM.

Sociodemographic Factors	Frequency (n=374)	Percentage (%)
Gender		
Male	110	29.4
Female	264	70.6
Age		
20	79	21.2
21	98	26.2
22	95	25.4
23	67	17.9
24	35	9.4
Ethnic Group		
Malay	233	62.3
Chinese	77	20.6
Indian	56	15
Others	8	2.1
Year of Study		
Year 1	80	21.4
Year 2	99	26.5
Year 3	94	25.1
Year 4	66	17.6
Year 5	35	9.4

Table 4.1(b): Distribution of Respondents Based on Socio-Demographic Factors among Medical Students in UPM.

Sociodemographic Factors	Frequency (n=374)	Percentage (%)
Household Income		
B40 (<4360)	124	33.2
M40 (>RM4,360 - RM9,619)	150	42.5
T20 (>RM 9,619)	91	24.3

4.3 Normality Assessment

The numerical data that was collected in our studies were age and number of followers of each social media, including Facebook, Instagram, Twitter. Normality assessment of continuous variables which were age and number of followers were determined statistically using Kolmogorov-Smirnov and Shapiro-Wilk test and graphically using histogram. Variables are normally distributed if the p-value of Shapiro-Wilk is more than 0.05. As for age, both Kolmogorov-Smirnov and Shapiro-Wilk tests showed a p-value less than 0.05. Hence, the data is not normally distributed. The mean is the age of 21, with a standard deviation of 1.250. As for the number of followers of Facebook, Instagram and Twitter, it is also further tested using Kolmogorov-Smirnov and Shapiro-Wilk tests. Both tests showed a p-value less than 0.05 for the number of followers of Facebook, Instagram and Twitter. Hence, this data is also not normally distributed. Figure 4.1 to 4.4 demonstrates the histogram of age. All histograms showed the data is positively skewed. It is to note that the numerical data for the number of followers of Facebook, Instagram and Twitter is then converted to categorical data. Table 4.3 shows the normality test results for age and the number of followers on Facebook, Instagram and Twitter.

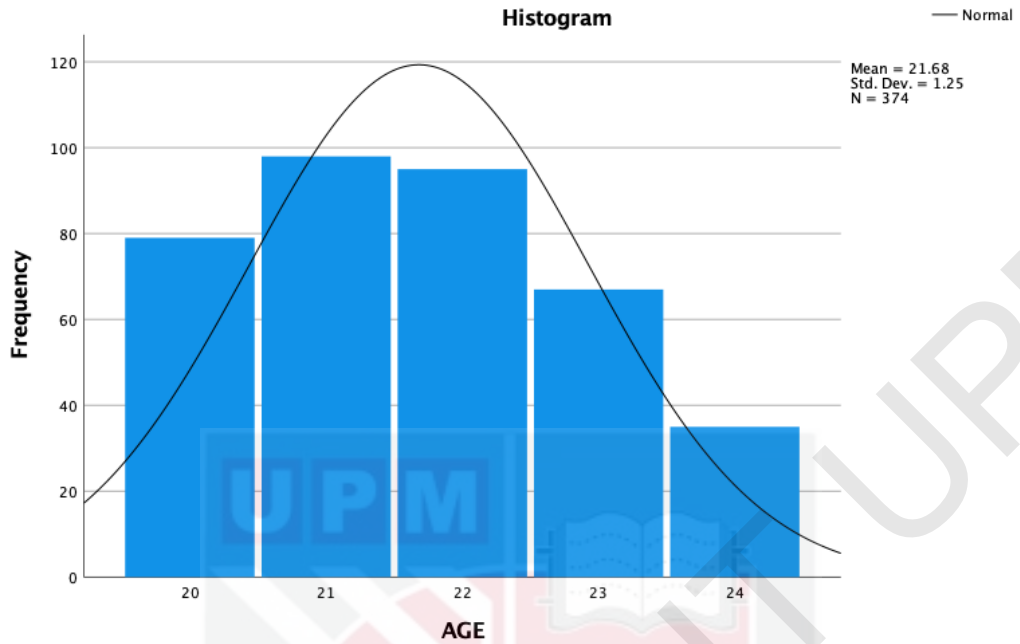


Figure 4.1: Distribution of Age

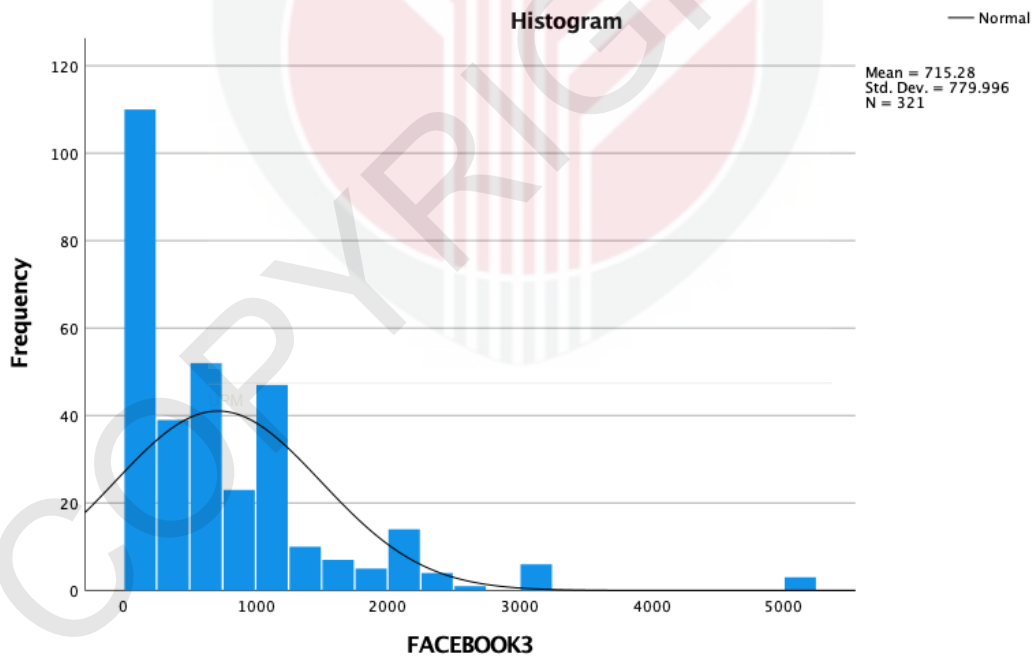


Figure 4.2: Distribution of number of followers on Facebook

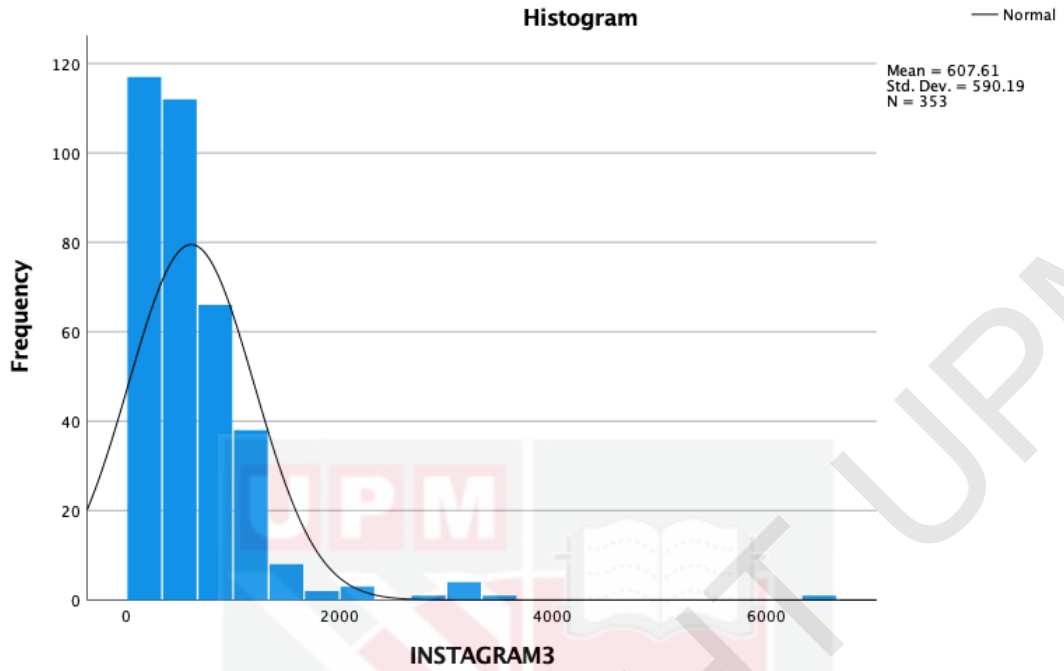


Figure 4.3: Distribution of number of followers on Instagram

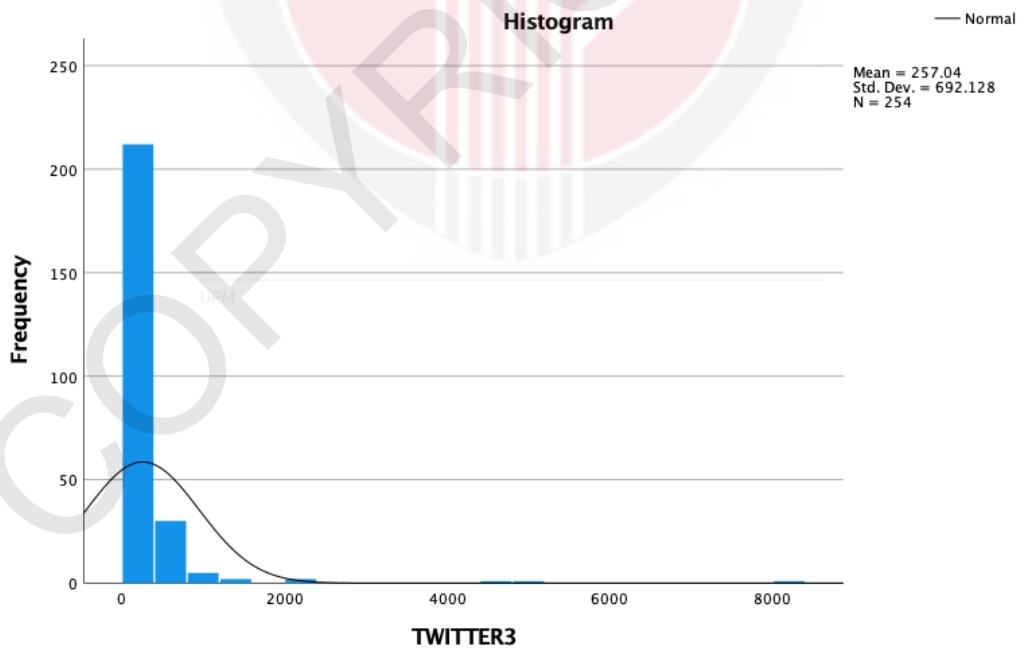


Figure 4.4: Distribution of number of followers on Twitter

Table 4.3 Normality test result

Variable	Kolmogorov-Smirnov		Shapiro-Wilk		Median	Interquartile range
	Statistic	Sig.	Statistic	Sig.		
Age	.180	.000	.903	.000	22.00	2
Number of followers on Facebook	.180	.000	.781	.000	500.00	850
Number of followers on Instagram	.160	.000	.676	.000	500.00	503
Number of followers on Twitter	.355	.000	.318	.000	100.00	280

4.4 Social Media Usage among Medical Students in UPM

The recorded percentage of respondents with a Facebook account was 85.8%. Among them, most of them did not use Facebook on a daily basis although with an account (39.6%). A majority of respondents had less than 250 followers on Facebook (29.7%) and do not use Facebook for any updates (67.9%).

On the other hand, 94.1% of respondents have an Instagram account. Among them, most of them used Instagram for 2 to 3 hours on a daily basis (45.2%). A majority of respondents had between 251 to 500 followers on Instagram (31.6%) and update a few times a month on their Instagram platform (36.1%).

Next for Twitter, 68.7% of respondents have an account. Among them, most of them do not use Twitter on a daily basis although having an account (36.9%). A majority of respondents had less than 50 followers on Twitter (28.9%) and large numbers do not update on their Twitter platform (36.1%).

Table 4.4 Distribution of Respondents Based on their Social Media Usage among Medical Students in UPM.

SOCIAL MEDIA USAGE	Frequency (n=374)	Percentage (%)
FACEBOOK		
Facebook Account		
No	53	14.2
Yes	321	85.8
Daily usage of Facebook		
Do not use	148	39.6
Once a week or less	40	10.7
Less than 30 minutes	84	22.5
1 hour	53	14.2
2 to 3 hours	38	10.2
More than 6 hours	11	2.9
Number of followers on Facebook		

Less than 250	111	29.7
251 to 500	62	16.6
501 to 750	28	7.5
More than 750	58	15.5

Update frequency on Facebook

Do not use	254	67.9
More than once everyday	9	2.4
Once everyday	12	3.2
Once every week	5	1.3
Few times a week	16	4.3
Few times a month	78	20.9

Instagram

Instagram Account

No	22	5.9
Yes	352	94.1

Daily usage of Instagram

Do not use	27	7.2
Once a week or less	8	2.1
Less than 30 minutes	42	11.2
1 hour	85	22.7
2 to 3 hours	169	45.2
More than 6 hours	43	11.5

Number of followers on Instagram

Less than 250	76	20.3
251 to 500	118	31.6
501 to 750	59	15.8
More than 750	100	26.7

Update frequency on Instagram

Do not use	58	15.5
More than once everyday	31	8.3
Once everyday	37	9.9
Once every week	36	9.6
Few times a week	77	20.6

Few times a month	135	36.1
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Twitter

Twitter Account

No	117	31.3
Yes	257	68.7

Daily usage of Twitter

Do not use	138	36.9
Once a week or less	10	2.7
Less than 30 minutes	52	13.9
1 hour	50	13.4
2 to 3 hours	74	19.8
More than 6 hours	50	13.4

Number of followers on Twitter

Less than 50	108	28.9
51 to 100	43	11.5
101 to 150	7	1.9
More than 151	96	25.7

Update frequency on Twitter

Do not use	180	48.1
More than once everyday	66	17.6
Once everyday	26	7.0
Once every week	16	4.3
Few times a week	35	9.4
Few times a month	51	13.6

4.5 Prevalence of Mental Health Problems among Medical Students in UPM

By conducting this research, we can determine the prevalence of mental health problems among medical students in UPM. The mental health problems mentioned include depression, anxiety and stress.

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Normal	235	62.8	62.8	62.8
	Depressed	139	37.2	37.2	100.0
	Total	374	100.0	100.0	

Table 4.5.1 (a): Prevalence of Depression Among UPM Medical students

The table 4.5.1 (a) shows the prevalence of depression among medical students in UPM. Out of all 375 respondents who participated, it was found that 139 medical students in University Putra Malaysia have depression. It accounts for 37.2% in total for medical students who have depression. While the rest of them, which are 235 medical students and more than half, are normal and mentally healthy (62.8%)

		Frequency %	Percent %	Valid Percent%
Valid	Normal	236	62.8	62.8
	Mild	50	13.4	13.4
	Moderate	47	12.6	12.6
	Severe	18	4.8	4.8
	Extremely Severe	24	6.4	6.4
	Total	374	100	100

Table 4.5.1(b): Prevalence of Depression Among Medical Students of UPM

The prevalence of depression is further divided into 5 levels based on Depression Anxiety Stress Scale. Based on the table 4.5.1(b) above, more than half of the respondents were normal with frequency and percentage of 235 and 62.8% respectively. Second highest was mild with

frequency of 50 and percentage 13.4%. The least was severe with 18 respondents reported to have severe depression (4.8%).

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Normal	193	51.6	51.6	51.6
	Anxious	181	48.4	48.4	100.0
	Total	374	100.0	100.0	

Table 4.5.2 (a): Prevalence of Anxiety Among UPM Medical students

The table 4.5.2(a) above shows the prevalence of anxiety among medical students in UPM. It was determined that 181 University Putra Malaysia medical students from those 374 respondents who participated have anxiety. It contributed to the 48.4 % which is almost half of the respondents. While the rest of them, which are 193 medical students, are normal and mentally healthy (51.6).

		Frequency %	Percent %	Valid Percent%
Valid	Normal	193	51.6	51.6
	Mild	38	10.2	10.2
	Moderate	70	18.7	18.7
	Severe	27	7.2	7.2
	Extremely Severe	46	12.3	12.3
	Total	374	100	100

Table 4.5.2(b): Prevalence of Anxiety Among Medical Students of UPM

Based on the table 4.5.2(b), 193 respondents were normal with frequency and percentage of 193 and 51.6% respectively. Seventy respondents were found to have moderate anxiety level with a percentage of 18.7%. The least was severe with 27 respondents reported to have severe anxiety (7.2%).

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Normal	267	71.4	71.4	71.4
	Stressed	107	28.6	28.6	100.0
	Total	374	100.0	100.0	

Table 4.5.3 (a): Prevalence of Stress Among UPM Medical students

The table 4.5.3 (a) above shows the prevalence of stress among medical students in University Putra Malaysia. 107 out of all 374 medical students in University Putra Malaysia who participated have stress. It accounts for 28.6% over 100%. While the rest of them, more than half which are 267 medical students, are normal and mentally healthy (71.4).

		Frequency	%	Valid Percent%
Valid	Normal	267	71.4	71.4
	Mild	25	6.7	6.7
	Moderate	42	11.2	11.2
	Severe	28	7.5	7.5
	Extremely Severe	12	3.2	3.2
	Total	374	100	100

Table 4.5.3(b): Prevalence of Stress Among Medical Students of UPM

Based on the table 4.5.3(b) above, 267 out of 374 respondents were found normal with frequency and percentage of 267 and 71.4% respectively. Second highest was moderate with 50 respondents and percentage 11.2%. The least was extremely severe with 12 respondents reported to have severe stress (3.2%).

4.6 Association between Sociodemographic factors and Mental Health among Medical Students in UPM

4.6.1 Age

The range of age from the respondents are ranging from 21 to 24 years old as they are from first year to fifth year medical degree programmes. Depression level is found to be highest at the age of 22 years old, with the frequency of $f = 41$ and at percentage of 43.2%. As for anxiety, it is also highest amongst the age of 22 years old, with the frequency of 54 (56.8%). Stress level is highest amongst respondents aged 21 years old at 35.7% and frequency of 35. From the result of the Chi-Square test, there is no association between age and mental health as the p-value is more than 0.05 for depression, anxiety and stress level.

4.6.2 Gender

Depression level was found to be highest among female with a frequency of 95 and percentage of 36%. Meanwhile, anxiety and stress levels are highest in females at frequency of 132 and 78 respectively. Chi-Square test was used to determine the association between gender and level of depression, anxiety and stress. However, the p-value is shown to be more than 0.05 hence indicating that there is no association and significant difference between gender and mental health problems among these medical students.

4.6.3 Ethnicity

The ethnicity of the respondents were classified as Malay, Chinese, Indians and other races. Depression level is the highest among Malays at 100 out of 233, 42.9%, followed by Indian respondents at a frequency of 24 out of 77 and percentage of 31.2%. As for anxiety levels, it is also highest among Malays at 133 out of 233, 57.1% followed by Indian respondents at frequency of 30 out of 77 with percentage of 39%. Moving on, for stress as well, it is the highest among Malays at 80 out of 233, 34.3% followed by Indians again, at a frequency of 17 out of 77 and percentage of 22.1%. From the result of the Chi-Square test, there is association between ethnicity and mental health as the p-value is less than 0.05 for all three; depression, anxiety and stress level.

4.6.4 Year of Study

A total 374 respondents in our research are basically from 1st year, 2nd year, 3rd year, 4th year and 5th year. We received the highest response from 1st and 2nd year meanwhile the lowest from the 5th since they are having their professional examinations. Depression level was found to be the highest among year 3 medical students with a percentage of 43.6%. Meanwhile, the depression level was to be the least among year 1 medical students with a percentage of 31.3%. Chi-square tests were conducted to determine the relationship between year of study and depression, anxiety and stress. The results for depression showed that the p-value is more than 0.05 indicating that there is no association between year of study and depression among UPM medical students.

For anxiety, the result showed that the level of anxiety also is the highest among year 3 medical students which accounts for 57.4%. The Chi-Square tests showed the p-value is less than 0.05. Therefore, there is an association between years of study and anxiety among medical students. Moving on to stress, with a percentage of 30.9%, the level of stress is seen highest among the year 2 UPM medical students while the lowest among year 1 medical students (22.5%). Chi-Square tests were conducted, and the results showed that the p-value is more than 0.05. Therefore, there is no association between years of study and stress level among UPM medical students.

4.6.5 Household Income

Household income is also one the aspect taken into consideration in our research. We classified the household income based on the range of the parent's incomes combined per month. We refer to the standard classification of household income which consists of B40 (<RM4360), M40 (>RM4360-RM9169) and T20 (>RM9169). The level of depression is highest among M40 group with a frequency of 64 and percentage of 40.3%. Chi-square tests were conducted to determine the association between household income and depression, anxiety and stress. For depression, the Chi-Square tests showed the p-value is more than 0.05. Therefore, there is no association between household income and depression among UPM medical students.

Next is for anxiety. For anxiety, with frequency of 78 and percentage of 49.1%, the level of anxiety is seen highest among M40 group meanwhile the lowest among T20 group with a frequency of 47 and percentage of 51.6%. Chi-square tests showed the p-value is more than 0.05. To conclude, there is no association between household income and anxiety among UPM medical students.

Lastly for stress, the level of stress is seen highest among M40 group which accounts for 45 and 28.3% for frequency and percentage respectively. On the other hand, the level of stress is seen lowest among T20 group with a percentage of 33.0% and frequency of 30. The Chi-square tests revealed that the p-value is more than 0.05. So, there is no association between household income and stress among UPM medical students since the p-value is more than 0.05.



Variables	Depression			Anxiety			Stress		
	Normal <i>f</i> (%)	Depressed <i>f</i> (%)	P-value	Normal <i>f</i> (%)	Anxious <i>f</i> (%)	P-value	Normal <i>f</i> (%)	Stressed <i>f</i> (%)	P-value
Age (years old)									
20	55 (69.6)	24 (30.4)		43 (54.4)	36 (45.6)		62 (78.5)	17 (21.5)	
21	60 (61.2)	38 (38.8)		46 (46.9)	52 (53.1)		63 (64.3)	35 (35.7)	
22	54 (56.8)	41 (43.2)	.436	41 (43.2)	54 (56.8)	.075	66 (69.5)	29 (30.5)	.285
23	45 (67.2)	22 (32.8)		43 (64.2)	24 (35.8)		50 (74.6)	17 (25.4)	
24	21 (60)	14 (40)		20 (57.1)	15 (42.9)		26 (74.3)	9 (25.7)	
Gender									
Male	66 (60)	44 (40)	.464	61 (55.5)	49 (44.5)	.336	81 (73.6)	29 (26.4)	.535
Female	169 (64)	95 (36)		132 (50)	132 (50)		186 (70.5)	78 (107)	
Ethnicity									
Malay	133 (57.1)	100 (42.9)		100 (42.9)	133 (57.1)		153 (65.7)	80 (34.3)	
Indian	53 (68.8)	24 (31.2)	.006	47 (61)	30 (39.0)	.000	60 (77.9)	17 (22.1)	.005
Chinese	45 (80.4)	11 (19.6)		43 (76.8)	13 (23.2)		49 (87.5)	7 (12.5)	
Others	4 (50)	4 (50)		3 (37.5)	5 (62.5)		5 (62.5)	3 (37.5)	

Table 4.6(a): Association between Sociodemographic Factors and Mental Health among Medical Students of UPM

Variables	Depression			Anxiety			Stress		
	Normal f (%)	Depressed f (%)	P- value	Normal f (%)	Anxious f (%)	P- value	Normal f (%)	Stressed f (%)	P- value
Year of Study									
Year 1	55 (68.8)	25 (31.3)		43 (53.8)	37 (46.3)		62 (77.5)	18 (22.5)	
Year 2	62 (62.6)	37 (37.4)		47 (47.5)	52 (52.5)		65 (65.7)	34 (34.3)	
Year 3	53 (56.4)	41 (43.6)	.491	40 (42.6)	54 (57.4)	.057	65 (69.1)	29 (30.9)	.449
Year 4	44 (66.7)	22 (33.3)		43 (65.2)	23 (34.8)		49 (74.2)	17 (25.8)	
Year 5	21 (60.0)	14 (40.0)		20 (57.1)	15 (42.9)		26 (74.3)	9 (25.7)	
Household Income									
B40	85 (68.5)	39 (31.5)		68 (54.8)	56 (45.2)		92 (74.2)	32 (25.8)	
M40	95 (59.7)	64 (40.3)	.272	81 (50.9)	78 (49.1)	.672	114 (71.7)	45 (28.3)	.514
T20	55 (60.4)	36 (39.6)		44 (48.4)	47 (51.6)		61 (67.0)	30 (33.0)	

Table 4.6(b): Association between Sociodemographic Factors and Mental Health among Medical Students of UPM

4.7 Association between Social Media Use and Mental Health among Medical Students in UPM

4.7.1 Facebook

Table 5.1 shows the result of the Chi-Square test to determine the association of Facebook use and mental health among medical students of UPM. It is found that about 41.5% is depressed amongst people with no Facebook account. Meanwhile, 36.4% among medical students with a Facebook account is found to be depressed. However, there is no association between having a Facebook account with the level of depression as the p-value is more than 0.05. The p-value for anxiety and stress level is also more than 0.05, hence there is no association of having a Facebook account and mental health among these medical students.

Next, as for daily usage of Facebook, 51.4% with a frequency of 76 were found to be anxious and their usage is do not use. The p-value is less than 0.05 and there is an association of daily usage of Facebook and anxiety level. There is also a significant difference and association between daily usage of Facebook and stress level as the p-value is less than 0.05.

Moreover, for the number of friends on Facebook, 48.6% were found to be depressed and their number of friends on Facebook is less than 250. The p-value is less than 0.05 hence there is an association between the number of friends on Facebook and depression level. The p-value is also less than 0.05 for stress level proving that there is an association of number of friends on Facebook and stress level.

Lastly, as to how often they update their Facebook account, it is found that the p-value is more than 0.05 for depression, anxiety and stress. Hence, there is no association between how often they update on their Facebook account and their mental health.



Table 4.7.1: Association between Facebook Usage and Mental Health

Variables	Have a Facebook account	Daily Facebook Usage	Number of friends on Facebook	How often they update on Facebook	
Depression	Normal <i>f</i> (%)	204 (63.6)	20 (50.0)	57 (51.4)	160 (63.0)
	Depressed <i>f</i> (%)	117 (36.4)	20 (50.0)	54 (48.6)	94 (37.0)
	P-value	.480	.115	.003	.112
	Odds Ratio	.808			
	95% CI (lower)	.447			
	95% CI (upper)	1.460			
Anxiety	Normal <i>f</i> (%)	168 (52.3)	13 (32.5)	49 (44.1)	130 (51.2)
	Anxious <i>f</i> (%)	153 (47.7)	27 (67.5)	62 (55.9)	124 (48.8)
	P-value	.486	.012	.009	.130
	Odds Ratio	.813			
	95% CI (lower)	.454			
	95% CI (upper)	1.455			
Stress	Normal <i>f</i> (%)	234 (72.9)	23 (57.5)	73 (65.8)	181 (71.3)
	Stressed <i>f</i> (%)	87 (27.1)	17 (42.5)	38 (34.2)	73 (98.7)
	P-value	.113	.019	.167	.212
	Odds Ratio	.613			
	95% CI (lower)	.334			
	95% CI (upper)	1.126			

4.7.2 Instagram

Number of respondents with an Instagram account was most depressed at 92%. 54.5% of respondents with no Instagram account were depressed and only 36.1% of respondents who had an Instagram account were depressed. Chi-Square Tests showed p-value is less than 0.05 indicating an association between having an account and depression. Other than that, Chi-Square Tests showed p-value is more than 0.05 indicating there is no association between having an Instagram account and anxiety. Chi-Square Tests showed p-value is more than 0.05 again indicating there is also no association between having an Instagram account and stress.

Next, Chi-Square Tests showed p-value more than 0.05 indicating there is no association between the daily usage of Instagram and depression. Chi-Square Tests showed p-value more than 0.05 again indicating there is also no association between daily usage of Instagram account and anxiety. However, there is an association between daily usage of Instagram and stress indicated by p-value less than 0.05 on Pearson Chi-Square. Majority of respondents using Instagram for 2 to 3 hours (frequency = 44 percentage 26%) were stressed at 41% and there were no respondents who recorded to be stressed by using Instagram once a week or less.

Moving on to a number of followers on Instagram and its association with mental health. Chi-Square Tests showed p-value more than 0.05 for all three mental health problems; depression, anxiety and stress. Hence, there is no association between number of followers and depression. There is also no association between number of followers and anxiety. Lastly, there is no association between number of followers and stress.

Finally, between update frequency on Instagram and mental health. There is an association between update frequency on Instagram and depression indicated by a p-value of less than 0.05. Majority of respondents updating on Instagram few times a week (frequency= 37 percentage = 27.4%) were depressed at 26.6%. However, with p-value more than 0.05 for both anxiety and stress; there is no association between frequency of updating on Instagram account and anxiety nor was there an association between frequency of updating on Instagram account and stress.



Table 4.7.2: Association between Instagram Usage and Mental Health

Variables	Have an Instagram account	Daily Instagram Usage	Number of followers on Instagram	How often they update on Instagram	
Depression	Normal <i>f</i> (%)	235 (63.9)	14 (51.9)	61 (61.0)	98 (72.6)
	Depressed <i>f</i> (%)	139 (36.1)	13 (48.1)	39 (39.0)	37 (27.4)
	P-value	.082	.493	.605	.042
	Odds Ratio	.470			
	95% CI (lower)	.198			
	95% CI (upper)	1.119			
Anxiety	Normal <i>f</i> (%)	193 (51.7)	18 (41.9)	56 (47.5)	79 (58.5)
	Anxious <i>f</i> (%)	181 (48.3)	25 (58.1)	62 (52.5)	56 (41.5)
	P-value	.877	.555	.144	.064
	Odds Ratio	.934			
	95% CI (lower)	.395			
	95% CI (upper)	2.211			
Stress	Normal <i>f</i> (%)	267 (71.3)	23(54.8)	69 (69.0)	101 (74.8)
	Stressed <i>f</i> (%)	107 (28.7)	19(45.2)	31 (31.0)	34 (25.2)
	P-value	.886	.076	.923	.140
	Odds Ratio	1.073			
	95% CI (lower)	.408			
	95% CI (upper)	2.820			

4.7.3 Twitter

Table 4.7.3 shows the result of the Chi-Square test to determine the association of twitter use and mental health among medical students of UPM. It was found that 31.6% of respondents with no twitter account were suffering from depression. Meanwhile, 39.7% respondents who used twitter were found to be depressed. Chi-square test showed p-value is more than 0.05 which indirectly shows that there is no association between owning a twitter account and depression. For anxiety, the chi-square test showed the p-value is also more than 0.05, indicating that there is no association between having a twitter account and anxiety among UPM medical students. On the other hand, for stress, the p-value is more than 0.05, which again proves that there is no relationship between having a twitter account and stress.

Move to daily usage of twitter, as for daily usage of twitter, it was found that 41.3% with frequency of 57 respondents who in the category of 'do not use' were found to be anxious. while only 20% of respondents with frequency of 2 who used twitter once a week or less were found to be anxious. Chi-square test showed The p-value is less than 0.05 and there is an association of daily usage of twitter and anxiety level. For stress, the Chi-square test showed that there is also a significant difference and association between daily usage of twitter and stress level as the p-value is less than 0.05.

Next is the association between the number of followers on twitter and depression, anxiety and stress. Both depression and stress were seen highest among those with number of followers more than 151 with frequency and percentage 43 (44.8%) and 31 (32.3%) respectively. Chi-Square Tests showed p value more than 0.05 for depression. Hence, there is no association between number of followers and depression. Chi-Square tests for anxiety and stress also showed the p-value is more than 0.05. So, there is also no association between number of followers and anxiety.

Lastly, there is no association between number of followers and stress among these medical students.

Lastly, we move to the association between the frequency of updating a post on twitter and mental health. There is an association between frequency of updating a post on twitter and depression as the Chi-Square tests showed the p-value is less than 0.05. With frequency of 42 and percentage of 30.2%, depression level is seen highest among group 'do not use'. On the other hand, respondents who update their twitter a few times a week were found to the least depressed with frequency of 7 and percentage of 20.0%. For anxiety and stress, with frequency and percentage of 58 (41.7%) and 32 (23.0%) respectively, anxiety and stress level are seen highest among group 'do not use'. For anxiety, the p-value is less than 0.05. This concluded that there is an association between frequency of updating on twitter account and anxiety. The same result was obtained for stress. The p-value is less than 0.05. Hence, there is an association between frequency of updating on twitter account and stress.

Table 4.7.3: Association between Twitter Usage and Mental Health

Variables	Have a Twitter account	Daily Twitter Usage	Number of followers on Twitter	How often they update on Twitter	
Depression	Normal <i>f</i> (%)	155 (60.0)	7 (70.0)	5 (71.4)	122 (67.8)
	Depressed <i>f</i> (%)	102 (31.6)	26 (52.0)	43 (44.8)	58 (32.2)
	P-value	.135	.135	.554	.003
	Odds Ratio	1.423			
	95% CI (lower)	.896			
	95% CI (upper)	2.260			
Anxiety	Normal <i>f</i> (%)	127 (49.4)	8 (80.0)	53 (49.1)	104 (57.8)
	Anxious <i>f</i> (%)	130 (50.6)	34 (68.0)	4 (57.1)	76 (42.2)
	P-value	.210	.004	.980	.003
	Odds Ratio	1.325			
	95% CI (lower)	.853			
	95% CI (upper)	2.056			
Stress	Normal <i>f</i> (%)	178 (69.3)	10 (100)	5 (71.4)	136 (75.6)
	Stressed <i>f</i> (%)	79 (30.7)	21 (42.0)	14 (32.6)	42 (24.2)
	P-value	.117	.040	.940	.002
	Odds Ratio	1.411			
	95% CI (lower)	.855			
	95% CI (upper)	2.327			

CHAPTER 5

Discussion

5.1 Introduction

This study was conducted to determine the association between social media usage and mental health among medical students in Universiti Putra Malaysia (UPM). It was carried out from May 2020 to October 2020. Currently, there is not much studies regarding association between social media use and depression, anxiety and stress is done specifically among medical students which have attempted to research the association of these aspects of mental health with social media usage and relevant sociodemographic factors. Hence, this study would be essential to determine whether there is an association among these factors. The outcome of this study would help us understand the factors that affect mental health and what can be done to overcome this issue.

5.2 Social media usage

Snapchat, Instagram, Facebook, YouTube, and Twitter are the most prominent social media sites. More than 40% of teenage girls and more than 20% of teenage boys report using social media for 3 or more hours a day (Mir, Novas & Seymour, National Center for Health Research, 2020). Based on their report as well, the percentage of 18 to 24 year olds using Facebook was 80%, followed by Instagram at 71%, and lastly for Twitter at 45%. Comparatively to our study, the recorded percentage of respondents consisting of medical students with a Facebook account was 85.8% which is almost equally as high as the previous report. Among them, most of them did not use Facebook on a daily basis although with an account (39.6%). Although most of the respondents do have an Facebook account the probability of them using it on a daily basis is much lower. Next up based on our research, Instagram showed more significant results at 94.1% of respondents having an Instagram account and among them, most of them used Instagram for 2 to 3 hours on a daily basis at 42.5%. Most of them even update several times a month along with their Instagram usage. These results can be said to be similar to the report by Mir, Novas and Seymour, 2020 with an overall active usage by respondents.

Last but not least, the report by Mir, Novas and Seymour, 2020 recorded a percentage of 45% for young adults aged 18 to 24 using Twitter. Relatively, based on results of our data analysis 68.7% of our respondents have a Twitter account and although, most of them have an account they do not use Twitter on a daily basis. The percentage is at 36.9% roughly around the percentage shown by the previously mentioned report. Hence, Instagram is more likely to be used compared to Facebook and Twitter based on results we obtained. This indirectly relates to the popularity of

Instagram, along with the ease of usage of Instagram among medical students in UPM at this current period. We can also argue that Facebook is rarely being used compared to a few years ago when it was at its peak and on the other hand Twitter usage is rising with its different approach as a social media platform and as of today Instagram is most used among adolescents and young adults, specifically medical students in UPM. This is inconsistent with results from Mir, Novas and Seymour's report as well as Pantic et. al 2014, as they state that Facebook is most widely used worldwide compared to other social media sites.

As a summary, our results showed the majority of the respondents having an account on each of the 3 social media platforms; Facebook, Instagram and Twitter, however their active usage varies from one to another. These results may be supported by a study on "Adolescent social media use and mental health from adolescent and parent perspectives". Adolescent participants were generally active on social media in 82.1% of them reported having had social media accounts for at least one year, and 92.9% reported having at least one social media account (Barry, Sidoti, Briggs et. al, 2017).

5.3 Prevalence of Mental Health

Other than to determine the social media usage, to determine the prevalence of mental health is also one of our objectives. For prevalence of depression, the results showed that the prevalence of depression among medical students in University Putra Malaysia is 37.2%. 139 medical students in University Putra Malaysia out of 374 respondents have depression. Since our research specifically targets medical students, the prevalence of depression is higher than the prevalence of current depression in Malaysia which was 1.8% based on the Malaysia Mental Healthcare Performance Report (2016). Medical schools are considered to be challenging and stressful environments for their students (Puthran, Rohan, et. al 2016). Moreover, for medical students, the prolonged hours of studying, the emotional challenges of becoming health care professionals, as well as the heavy workload placed a considerable strain on those student groups (Puthran, Rohan et. al 2016). This, in turn, will raise their risk of depression at some stage in their academic life.

For anxiety, the results showed that the prevalence of anxiety among University Putra Malaysia is 48.8%. 181 University Putra Malaysia medical students from those 374 respondents who participated were anxious while the rest of 193 medical students were normal and mentally healthy. The prevalence of anxiety among UPM medical students is a little bit higher compared to the local prevalence of anxiety among adults in the community which was 8.2 % in 2015 (Kader Maideen, Mohd Sidik, Rampal, et. al, 2015). In previous research, a total of 119 participants out of 1455 had anxiety in this study (Kader Maideen, Mohd Sidik, Rampal, et. al 2015).

Meanwhile as for stress level, the results we obtained showed that the prevalence of stress among University Putra Malaysia medical students is 28.6%. 107 out of all 374 medical students

in University Putra Malaysia who participated were stressed. The prevalence of stress among medical students in UPM (28.4%) was higher compared with a previous research done by other university medical students. They reported that the stress prevalence of medical students in their universities was 19.8% (Anis, N. M. Z., et. al 2016). The prevalence of stress is high because medical students in particular face various stressors such as academic requirements, time pressure and social adjustments, and may face few additional challenges for example large workload, the time commitment and the number of assessments, as well as the pressures of a clinical environment (Sreeramareddy, Chandrashekhar T., et. al 2007). Moreover, according to Moir, Fiona, et. al 2018, medical curriculum may contribute to the high prevalence of psychological ill-health among medical students.

5.4 Association between Sociodemographic Factors and Mental Health

In this study, there is no association between age and mental health issues including depression, anxiety and stress ($p=0.436$, $p=0.075$, $p=0.285$) respectively. Depression and anxiety level were reported to be highest among the age of 22 years old. This could be due to the third year medical students are slowly adapting and adjusting to the era of clinical years. As for gender, there is no association between gender and mental health issues. Depression, anxiety and stress level were found to be highest in females. Similar to a previous study, Dreger et. al, 2014 reported that women are associated with higher poor positive mental health which is 30% compared to men at 24%.

In terms of ethnicity, there is an association between ethnicity and depression, anxiety and stress as the p-value is less than 0.05. The Malays held the highest frequency and percentage of being depressed, anxious and stressed. This correlates with many of the previous studies mentioned before, Shamsudin et. al, 2013 found that Malay students had the highest stress score as compared to Chinese and Indian. It also shows similar findings to study that was done by Gin-Gin Gan and Yuen-Ling Hue in 2019 which suggested that Malay students had significantly more anxiety compared to other ethnic groups. They also mentioned that anxiety and depression were associated with significantly poorer quality of life (QOL). Moreover, as for year of study, there is no association between year of study and having mental health issues. Depression and anxiety level were highest among Year 3 medical students meanwhile stress level was highest among Year 2 medical students. The year 3 medical students could develop depression and anxiety as they are slowly adjusting and coping to the clinical world, and as for the year 2 medical students could be

stressed as they were facing Professional Exam 1 during this period of time. Baldasin et. al, 2008 concluded that students undertaking clinical training exhibit higher depression levels compared to preclinical students. Lastly, for household income. There is no association between household income and mental health problems as the p-value is more than 0.05. Generally, students coming from financially stable backgrounds suffer less depression than those who are not fortunate. Our findings contradict research conducted by Gin-Gin Gan and Yuen-Ling Hue in 2019 which suggested that students from better financial backgrounds reported better environmental scores. In simple meaning, students from financially stable families are shown to be less likely to suffer depression compared to those who are not.

5.5 Association between Social Media Usage and Mental Health

For association between social media usage and mental health, we focused on main social media which include Facebook, Instagram and Twitter. Few aspects were taken in consideration which were asked in the questionnaire. For Facebook, we have found that there is no association in having a Facebook account and mental health issues as the p-value is more than 0.05. However, people with a Facebook account had the highest percentage of being depressed, anxious and stressed with the percentage of 36.4%, 47.7% and 27.1% respectively. As for their daily Facebook usage, we found that there is an association between daily Facebook usage and anxiety as well as stress level. This correlates with the study done by Pantic et. al 2012, they found a significant positive correlation between depressive symptoms and time spent on social networking sites (SNS). The longer the hours they spend on their social media might cause them to see posts that may affect them emotionally or lessen their interaction with the real world hence causing these mental health issues. In terms of number of friends on Facebook, there is a statistically significant association with the number of friends and depression and anxiety. Students with the highest percentage of being depressed, anxious and stressed are those with a number of friends on Facebook that are less than 250. This showed a consistent finding with a study that was published by Park et. al 2013, that concluded a depressed Facebook user has characteristics such as fewer friends and location tagging. Facebook users with a lesser number of followers could also mean they have fewer people to interact with, thus leading to these depressive symptoms. Kraut et. al 1998, managed to indicate in his study that online communication with friends and family on SNS is associated with a decline in depression. Hence, we can say that people with a greater number of followers may interact more with their loved ones and reduce the risk of developing depression,

anxiety as well as stress. Lastly, we found that there is no association with frequency of updating their Facebook with mental health issues. This contradicts the previous study mentioned, Kross et. al 2013, illustrated that more use of social networks exposed the young adults to negative affect and reduced their sense of well-being.

Advancing to the next social media platform; Instagram, that we have also conducted our research upon. There is an association between having an Instagram account and depression. Most of our respondents had an Instagram account and 36.1% of them were depressed. Although merely 22 respondents did not have an account, 54.5% of them were depressed. Other than that, there is no association between having an Instagram account and anxiety and stress. However, most respondents with an Instagram account were reported to be anxious and stressed. Based on our data analysis we found out that there is no association between daily usage of Instagram and depression, anxiety and stress. However, a majority of respondents using Instagram for 2 to 3 hours were depressed, anxious and stressed which is supported by the following study. According to the authors of a report #StatusOfMind, published by the Royal Society for Public Health, “Using social media for more than two hours per day has also been independently associated with poor self-rating of mental health, increased levels of psychological distress and suicidal ideation”(Firestone,2017). For the number of followers on Instagram, there is no association between number of followers and depression, anxiety and stress. Nevertheless, respondents who were most depressed, anxious and stressed fell into the category of having 251 to 500 followers. With a greater number of followers on Instagram, young adults are capable of comparing themselves and their lifestyles with those they see online. Prior research indicated that social comparison could make people feel socially anxious. Social comparison consists of people’s

biological inclination to evaluate their situation, skill, and overall identity in comparison to others, based on the information they receive about others (Festinger, 1954). For update frequency on Instagram and mental health, there is an association between update frequency on Instagram and depression. Majority of respondents updating on Instagram a few times a month were most depressed compared to those updating a few times a week, do not use, update more than once every day, once every day and once every week.

Alhabash and Ma conducted a study in 2017. Their findings showed that participants spent the most time daily on Instagram, followed by Snapchat, Facebook, and Twitter, respectively. They also indicated the highest use intensity for Snapchat and Instagram followed by Facebook and Twitter, respectively.

Moving on to the number of followers on Instagram and its association with mental health. Chi-Square Tests showed p-value more than 0.05 for all three mental health problems; depression, anxiety and stress. Hence, there is no association between number of followers and depression, anxiety and stress. Nevertheless, respondents who were most depressed, anxious and stressed fell into the category of having 251 to 500 followers on Instagram. With a greater number of followers on Instagram it can be said that young adults are capable of comparing themselves and their lifestyles with those they see online on a daily basis. Prior research indicated that social comparison could make people feel socially anxious. Social comparison consists of people's biological inclination to evaluate their situation, skill, and overall identity in comparison to others, based on the information they receive about others (Festinger, 1954).

Finally, between update frequency on Instagram and mental health. There is an association between update frequency on Instagram and depression. Majority of respondents updating on

Instagram a few times a month were most depressed. On the other hand, there is no association between frequency of updating on Instagram account and anxiety and stress. Nonetheless, those who update only a few times a month reported to be most anxious and stressed based on the results obtained. A research with young adults specifically does show that there are high levels of anxiety around the feedback that posts receive and that are in particular related to appearance (Sarwari,2019). In the same study, special mention by Rachel Rodgers, an associate professor in the Department of Applied Psychology at Northeastern, says doing away with like counts could help reduce anxiety. Rodgers also states that, a reason that some users develop an addiction towards likes and attention, could be for social validation, in order to gain trust and fit in.

For twitter on the other hand, the aspect we look at is whether respondents have a twitter account or not. The results obtained showed that there is no association between owning a twitter account with mental health issues studied which are depression, anxiety and stress. This was proven by doing Chi-Square tests which show the p values are more than 0.05 for depression, anxiety and stress. However, the depression, anxiety and stress level are all seen highest among those who have a twitter account with a percentage of 39.7%, 50.6%, and 30.7% for depression, anxiety and stress respectively. Next is for average time spending on twitter per day, the results obtained showed that there is no association between average time spending on twitter with depression since the p-value is more than 0.05. However, for anxiety and stress, there is an association as the p values are more than 0.05. The result was consistent with findings from Barman, Mukhopadhyay, and Bandyopadhyay (2018) which they found out that the depression and anxiety scores were higher in students who use social media frequently and for a longer duration. Their research was done among medical students in Kolkata, West Bengal. This is

because, the longer the time spent on twitter, the more the users are exposed to variety contents on twitter. Contents in twitter are basically everything ranging from political news, educational news, lifestyle, skincare, environmental issues, crimes, business and many more. Crimes such as murder cases, rape cases, sexual abuse and harassment, snatch thief cases and many more similar crime cases can cause anxiety and stress to its users.

Next is for the number of followers the respondents have on twitter. The results obtained showed that, there is no association between number followers the respondents have on twitter with depression anxiety and stress since the p values for depression, anxiety and stress are all more than 0.05. However, depression and stress are seen highest among those respondents who have more than 150 followers with frequency and percentage of 43 (44.8%) for depression and 31 (32.3%) for stress. It is common for adolescents to compare the number of followers they have with their peers which is probably an aspect which contributes to mental health issues. The result is inconsistent with research done by Seabrook, Kern, Rickard, 2016 which found that negative communication and social comparisons on social media were connected to higher levels of depression and anxiety. Besides, the more followers you have, the more you are thinking about what you will post since you have more followers who are going to see it. People with more followers also often are more careful and think deeply of their posting to avoid misunderstanding. This probably causes anxiety to users who have more than 150 followers.

Next is the frequency of updating a post on their twitter account. The results showed that there is an association between frequency of updating a post on their social media and depression, anxiety and stress as the Chi-Square showed the p values less than 0.05 for all three dependent

variables. This was consistent with findings from Neira et. al 2014, which found a significant association between frequency of social network use and depression. However, the results obtained showed that the level of depression, anxiety and stress are seen highest among those who do not frequently update a post on their twitter. Unlike other social media, twitter is basically an emotion based social media. Through twitter, its users express their feelings, thoughts and opinions. Increasing in updating a twitter post shows that the person is sharing his or her feelings in social networking rather than sharing it in a face to face communication. The results obtained show that there is an association between frequency of updating and depression, anxiety and stress. It is consistent with a research done by Davila, Joanne, et. al 2012. In this research, the authors found that an increase in the frequency of social media use caused an increase in frequency of positive and negative feelings which is likely to contribute to worse mental health outcomes. Moreover, according to Kross, Ethan, et. al 2013, more frequent social media use caused its users to experience more negative effects and reduced in life satisfaction and frequent experience of negative effects may contribute to the onset of depression.

CHAPTER 6

Conclusion

6.1 Conclusion

In conclusion, out of 431 sample sizes calculated which included first to fifth year medical students of Universiti Putra Malaysia, only 374 respondents participated in this research, hence giving a response rate of 87%. From this research, we found that the most used social media is Instagram with 94.1% of respondents having an Instagram account followed by Facebook (85.8%) and Twitter (67.8%). Next, among depression, anxiety and stress, we found that prevalence of anxiety among UPM medical students is the highest with a percentage of 48.4% compared to depression (37.2%) and stress (28.6%). Moving on to sociodemographic factors, there is no association between age and mental health. For gender, there is no association and significant difference between gender and mental health problems among these medical students. For ethnicity, there is an association between ethnicity and mental health. Depression, anxiety and stress level are all seen among Malays. For year of study and household income, there is no association between both of it and mental health. From this study, we have found that there is an association between social media usage and mental health issues among medical students of UPM. Factors such as daily usage of each social media, number of followers they have and frequency of updating a post on their account could contribute to their depression, anxiety and stress level.

6.2 Recommendations

This study that we have conducted only involves medical students in the Faculty of Medicine and Health Sciences (FMHS), Universiti Putra Malaysia (UPM). For future studies, we would like to recommend to involve students from other courses as well in the Faculty of Health Sciences, such as biomedical and nursing students, as this will allow an increase in the number of respondents. So that we can determine association between social media usage and mental health not only for medical students but for other courses as well.

Due to the limitations and time constraints that are apparent in our study, we would like to recommend future researchers to find a way to make the process of participation easier for respondents that wish to participate in this study. May that be by a different approach, perhaps meeting medical students in UPM, our respondents, in person, providing enough information and conducting the questionnaires on the spot.

We would also like to recommend future researchers to carry out a cohort study in the future to investigate the temporal relationship and direction of the variables in depth since our current study does not show whether high smartphone usage causes mental health issues or vice versa. Furthermore, regarding social media usage, in order to try to curb mental illnesses emerging from one's social media usage, mindfulness of screentime, social media detox, proper counselling, support groups and even just good communication with people who care for you are some good recommendations. As most of us know, in life everything should be done in moderation and there is always light at the end of the tunnel no matter what.

6.3 Limitations

In this study, we have had a few limitations which resulted in a lower response rate than expected with our sample size. Mainly, we were set back by non-response bias, as our questionnaire was distributed online, mainly due to the Covid-19 pandemic where social distancing is very important to continue being practised, the respondent might have been unable to participate or answer the questionnaire due to many reasons. For example, poor connectivity of the internet, they may have not received the correct link or missed it through the forwarding of messages. Year 2 students no longer had daily classes after their Professional 1 examination and most of them were busy with their own research, nevertheless most of them managed to participate. The clinical year students on the other hand, consisting of Year 3, Year 4 and Year 5 students were very busy and occupied with their own end of posting examinations which had been delayed and complicated due to the pandemic as well. Nevertheless, many third-year students managed to participate as respondents once their exams were over.

Furthermore, the questionnaires that we used for medical students were self-reported, in which it had to be filled out by the students themselves, without supervision. This may cause information bias particularly self-reporting bias, that may affect the validity of the data obtained. For example, some respondents may not reveal that they are going through certain challenges that could predispose to depression, thus answering the questionnaires in a different manner.

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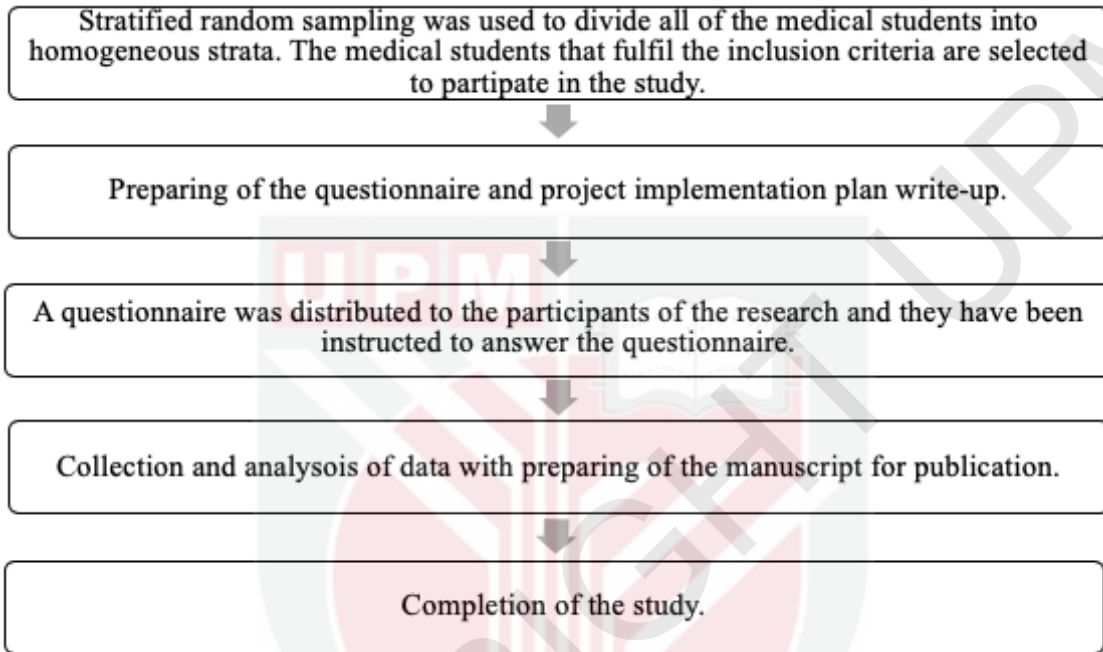
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APPENDICES

FLOW CHART



WORK PLAN

Gantt Chart

	May	June	July	Aug	Sep	Oct
Proposal preparation	■					
Submission of proposal		■				
Proposal Presentation		■				
Preparation of ethical approval to organization		■				
Data collection and analysis		■				
Presentation of analyzed data				■		
Report writing				■		
Poster presentation					■	
Final Presentation						■
Submission of Log book						■

BUDGET PLANNING

The estimated budget for the research and details of expenditure are according to the table provided below:

Budget details	Amount (in RM)
Printing	RM50
Binding Hardcover	RM200
Total	RM250



**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 of Social Media Use and Mental Health Among Medical Students in Universiti Putra Malaysia

2. INTRODUCTION

Mental health problems are highly prevalent among young adults. These mental health problems include depression, anxiety and stress. Many studies have shown that greater daily time spent on social media, increased frequency of Social Media Use (SMU), and multiple platform use were associated with both depression and anxiety (Vannucci, Flannery, Ohannessian, & Affect, 2017). The objective of this study is to determine social media use (SMU) and its association with depression, anxiety and stress among medical students of Universiti Putra Malaysia.

3. WHAT WILL YOU HAVE TO DO?

Please fill up all the questions provided and return it to the researchers. All the answers given are confidential and will be private.

4. WHO SHOULD NOT PARTICIPATE IN THE STUDY?

- Students include in the field of health sciences but are not in the Doctor of Medicine (MD) programme in UPM.
- Medical students who are not accessible during the data collection period.

5. WHAT WILL BE THE BENEFITS OF THE STUDY:

(a) TO YOU AS THE SUBJECT?

This research will give information about the prevalence of depression, anxiety and stress among medical students of UPM.

(b) TO THE INVESTIGATOR?

To determine the association of social media use and depression, anxiety and stress among medical undergraduates of UPM.

6. WHAT ARE THE POSSIBLE RISKS?

There will be no risk nor harm to the respondent as the information given is private and confidential. The result obtained from this research will be used for good purposes only.

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

All the information that is collected will remain confidential. The results will be analyzed and published in a collective form and not pointing to any individual.

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

- Supervisor: Dr. Ahmad Zaid Fattah Bin Azman (+603-89472404)

azfa@upm.edu.my

- Erika Quraisha Binti Shaiful Azli (017-5781373)

Quraishaerika3@gmail.com

- Preyanka Dewi A/P Subramaniam (014-3550912)

preyankadewi@gmail.com

- Amirul Hadi Bin Abu Bakar (017-5428189)

amirulhadidz@gmail.com

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.

* delete where necessary

Signature

(Respondent)

Signature

(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)

Questionnaire

SECTION 1 : SOCIO DEMOGRAPHIC PROFILE

This part is related to sociodemographic background. Please answer ALL the questions below or place a tick (/) in the box which best describes you.

1. Full name :

2. Age : years old

3. Gender : Male Female

4. Ethnicity : Malay Chinese Indian

Others : *Please specify* :

4. Year of Study :

Year 1 Year 2 Year 3 Year 4 Year 5

5. Family Income :

<RM4360 >RM4360 - RM9619 > RM 9619

SECTION 2 : SOCIAL MEDIA USAGE

Do you use Facebook?

- Yes
- No

Do you use Instagram?

- Yes
- No

Do you use Twitter?

- Yes
- No

1. FACEBOOK USAGE

How much time on average do you spend on Facebook per day? *

- Do not use
- less than 30 minutes
- 1 hour
- 2 - 3 hours
- more than 6 hours
- Once a week

How many friends do you have on Facebook? *

- Do not use
- less than 250 friends
- 250 to 500 friends
- 500 to 1000 friends
- 1000 to 2000 friends

How often do you update/post on Facebook? *

- Do not use
- More than once everyday
- Once everyday
- Once every week
- Few times a week
- Few times every month
- Never

2. INSTAGRAM USAGE

How much time on average do you spend on Instagram per day? *

- Do not use
- less than 30 minutes
- 1 hour
- 2 - 3 hours
- more than 6 hours
- Once a week

How many followers do you have on Instagram? *

- Do not use
- less than 250 followers
- 250 to 500 followers
- 500 to 1000 followers
- more than 1000 followers
- more than 5000 followers
- more than 10000 followers

How often do you update/post on Instagram? *

- Do not use
- More than once everyday
- Once everyday
- Once every week
- Few times a week
- Few times every month
- Never

3. TWITTER USAGE

How much time on average do you spend on Twitter per day? *

- Do not use
- less than 30 minutes
- 1 hour
- 2 - 3 hours
- more than 6 hours
- Once a week

How many followers do you have on Twitter? *

- Do not use
- less than 250 followers
- 250 to 500 followers
- 500 to 1000 followers
- more than 1000 followers
- more than 5000 followers

How often do you Tweet/retweet on Twitter ? *

- Do not use
- More than once everyday
- Once everyday
- Once every week
- Few times every month
- Never

Do you think you are using too much of social media *

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

SECTION 3 : DASS-42

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all

1 Applied to me to some degree, or some of the time

2 Applied to me to a considerable degree, or a good part of time

3 Applied to me to very much, or most of the time

- | | | | | |
|---|---|---|---|---|
| 1. I found myself getting upset by quite trivial things | 0 | 1 | 2 | 3 |
| 2. I was aware of dryness of my mouth | 0 | 1 | 2 | 3 |
| 3. I couldn't seem to experience any positive feeling at all | 0 | 1 | 2 | 3 |
| 4. I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion) | 0 | 1 | 2 | 3 |
| 5. I just couldn't seem to get going | 0 | 1 | 2 | 3 |
| 6. I tended to over-react to situation | 0 | 1 | 2 | 3 |
| 7. I had a feeling of shakiness (eg, legs going to give way) | 0 | 1 | 2 | 3 |
| 8. I found it difficult to relax | 0 | 1 | 2 | 3 |
| 9. I found myself in situations that made me so anxious I was most relieved when they ended | 0 | 1 | 2 | 3 |
| 10. I felt that I had nothing to look forward to | 0 | 1 | 2 | 3 |
| 11. I found myself getting upset rather easily | 0 | 1 | 2 | 3 |
| 12. I felt that I was using a lot of nervous energy | 0 | 1 | 2 | 3 |
| 13. I felt sad and depressed | 0 | 1 | 2 | 3 |
| 14. I found myself getting impatient when I was delayed in any way (eg, lifts, traffic lights, being kept waiting) | 0 | 1 | 2 | 3 |

- | | |
|---|---------|
| 15. I had a feeling of faintness | 0 1 2 3 |
| 16. I felt that I had lost interest in just about everything | 0 1 2 3 |
| 17. I felt I wasn't worth much as a person | 0 1 2 3 |
| 18. I felt that I was rather touchy | 0 1 2 3 |
| 19. I perspired noticeably (eg, hands sweaty) in the absence of
high temperatures or physical exertion | 0 1 2 3 |
| 20. I felt scared without any good reason | 0 1 2 3 |
| 21. I felt that life wasn't worthwhile | 0 1 2 3 |
| 22. I found it hard to wind down | 0 1 2 3 |
| 23. I had difficulty in swallowing | 0 1 2 3 |
| 24. I couldn't seem to get any enjoyment out of the things I did | 0 1 2 3 |
| 25. I was aware of the action of my heart in the absence of physical exertion
(eg, sense of heart rate increase, heart missing a beat) | 0 1 2 3 |
| 26. I felt down-hearted and blue | 0 1 2 3 |
| 27. I found that I was very irritable | 0 1 2 3 |
| 28. I felt I was close to panic | 0 1 2 3 |
| 29. I found it hard to calm down after something upset me | 0 1 2 3 |
| 30. I feared that I would be 'thrown' by some trivial but unfamiliar task | 0 1 2 3 |
| 31. I was unable to become enthusiastic about anything | 0 1 2 3 |
| 32. I found it difficult to tolerate interruptions to what I was doing | 0 1 2 3 |
| 33. I was in a state of nervous tension | 0 1 2 3 |
| 34. I felt I was pretty worthless | 0 1 2 3 |
| 35. I was intolerant of anything that kept me from getting on with
what I was doing | 0 1 2 3 |
| 36. I felt terrified | 0 1 2 3 |
| 37. I could see nothing in the future to be hopeful about | 0 1 2 3 |
| 38. I felt that life was meaningless | 0 1 2 3 |
| 39. I found myself getting agitated | 0 1 2 3 |
| 40. I was worried about situations in which I might panic and
make a fool of myself | 0 1 2 3 |

41. I experienced trembling (eg, in the hands)

0 1 2 3

42. I found it difficult to work up the initiative to do things

0 1 2 3



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