

**A STUDY ON DEPRESSION, ANXIETY AND STRESS
AMONG FIRST YEAR STUDENTS AT SCHOOL OF
MEDICAL SCIENCES, SCHOOL OF DENTAL
SCIENCES AND SCHOOL OF HEALTH SCIENCES,
HEALTH CAMPUS UNIVERSITI SAINS MALAYSIA,
KELANTAN**

by

SHARIFAH NOR HIDAYAH BINTI SYED SHAHAR

**Dissertation submitted in partial fulfilment of the
requirements for the degree of Bachelor of Health Sciences
(Honours) (Environmental and Occupational Health)**

June 2015

AKNOWLEDGEMENT

Praise to Allah, Most Gracious, Most Merciful Love and blessing upon the Prophet Muhammad. Praise to Allah for enabling this research which has been completed successfully. I also take the opportunity to express my sincere appreciation to my supervisor, Dr. Hj. Mohd Nazhari Bin Hj. Mohd Nawawi for his guidance, discussion and advice given during the period of this study. Although burdened with other duties and responsibilities, yet he still managed to give space and time to guide and supervised towards this research study.

Next, a big appreciation given to the first year students at School of Medical Sciences, School of Dental Sciences and School of Health Sciences in Health Campus Universiti Sains Malaysia, Kelantan who were volunteer as a respondent in this research. Without their involvement, I'm sure this research cannot move certainly.

Special thanks to my beloved parents, Syed Shahar Bin Syed Mansor and Saripah Aminah Binti Syed Abdullah for the support and encourage me. Finally, this appreciation also given to anyone who are involved directly or indirectly throughout this research. Without the cooperation and support, this research would not have been possible.

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LIST OF ABBREVIATIONS AND SYMBOLS

APA	American Psychiatric Association
DASS	Depression Anxiety Stress Scale
IDRE	Institute of Digital Research and Education
NHMS IV	National Health and Morbidity Survey IV
NIMH	National Institute of Mental Health
USM	Universiti Sains Malaysia
WHO	World Health Organization
YLD	Year Lived Disability

KAJIAN TENTANG KEMURUNGAN, KEBIMBANGAN DAN TEKANAN DALAM KALANGAN PELAJAR TAHUN SATU DI PUSAT PENGAJIAN SAINS PERUBATAN, SAINS PERGIGIAN DAN SAINS KESIHATAN, UNIVERSITI SAINS MALAYSIA KAMPUS KESIHATAN, KELANTAN

ABSTRAK

Pertukaran seseorang pelajar dari zaman persekolahan ke zaman universiti boleh menyebabkan kejutan psikologi, akademik dan sosial kepada mereka kerana perbezaan besar sistem pendidikan membuat mereka menghadapi pelbagai tuntutan seperti belajar dalam kaedah yang baharu, mempunyai beban kerja yang berat, hidup jauh daripada keluarga, hubungan di antara pelajar lain dan sebagainya. Ini akan menjadikan mereka lebih terdedah kepada gangguan emosi seperti kemurungan, kebimbangan dan tekanan. Objektif kajian ini adalah untuk mengenal pasti kelaziman kemurungan, kebimbangan dan tekanan dan sumber utama tekanan dalam kalangan pelajar tahun satu di Pusat Pengajian Sains Perubatan, Sains Pergigian dan Sains Kesihatan, Universiti Sains Malaysia Kampus Kesihatan, Kelantan. *Depression, Anxiety and Stress Scale (DASS-42)* telah digunakan untuk mencapai objektif kajian ini dan seramai 164 orang pelajar tahun satu telah terlibat dalam kajian ini. Secara keseluruhan kelaziman kemurungan, kebimbangan dan tekanan masing-masing 24.3%, 62.8% dan 40.2%. Antara jantina, pelajar lelaki mempunyai hubungan yang ketara dengan kemurungan. Sementara itu, Pusat Pengajian Sains Kesihatan juga didapati mempunyai hubungan yang signifikan dengan kemurungan. Mengenai sumber tekanan, sepuluh tekanan diputuskan oleh pelajar sebagai faktor terutamanya faktor interpersonal dan intrapersonal. Faktor-faktor yang boleh dianggap sebagai sebab kemurungan, kebimbangan dan tekanan adalah perubahan dalam persekitaran, beban kerja meningkat, jangkaan tamat pengajian dan perubahan dalam aktiviti sosial. Manakala perubahan dalam persekitaran merupakan faktor yang paling tinggi sebagai sebab stress.

A STUDY ON DEPRESSION, ANXIETY AND STRESS AMONG FIRST YEAR STUDENTS AT SCHOOL OF MEDICAL SCIENCES, SCHOOL OF DENTAL SCIENCES AND SCHOOL OF HEALTH SCIENCES, HEALTH CAMPUS UNIVERSITI SAINS MALAYSIA, KELANTAN

ABSTRACT

Changes of a students from school environments to university environments could cause a psychological, academic and social shock to them, since this educational system has big different, make them to face variety of demands such as learned in a new method, have heavy workload, living away from families, the relations between students, and so on. This will make them more vulnerable to emotional disturbances such as depression, anxiety and stress. The objectives of this study are to identify the prevalence of depression, anxiety and stress and the main sources of stressor among first year students at School of Medical Sciences, School of Dental Sciences and School of Health Sciences Health Campus Universiti Sains Malaysia, Kelantan. *Depression, Anxiety and Stress Scale (DASS-42)* were used in order to meet the objectives and about 164 of first year students were involved in this study. The overall prevalence of depression, anxiety and stress was 24.3%, 62.8% and 40.2% respectively. Between genders, the male students had significant association with depression while, School of Health Sciences also found had significantly association with depression. Regarding the sources of stressors, the top ten stressors decided by the students were mainly interpersonal and intrapersonal factors. Factors including change in living environment, increased workload, anticipation of graduation and change in social activities can be considered as source of stressors that possible caused for depression, anxiety and stress while, the most stressors was change in living environment.

CHAPTER 1

INTRODUCTION

1.1 Background of Study

Interchange from school to university environments could caused a psychological, academic and social shock to the students. Since this educational system has big different, it make them to face variety of demands such as learned in a new method, have heavy workload, living away from families, the relations between students, and so on. Due to this changes, it will make them more vulnerable to psychological problems such as depression, anxiety and stress (Radeef *et al.*, 2014).

Normally, a students are able to thinks clearly and logically in order to initiate good social relationships, excited to learn with considerable ambition to implement their plans in their future. However, since students are at the critical stage of development, being in the transition from adolescence to adult, they are more threatened to have mental illness (Giugliano, 2004).

In addition, students were susceptible to mental health or psychological problem due to challenge matter such as related with independent living, academic challenges and have to cope with social demands in preparing for their professional careers (Uehara *et al.*, 2010).

Stanley & Manthorpe, (2001) was suggested that university students are vulnerable to psychological problems and it has generated increased concern in western societies. The common psychological problems among students are depression, anxiety and stress (Dyrbye *et al.*, 2006). While, in Malaysia, the National

Health and Morbidity Survey IV (NHMS IV) in 2011 has revealed the prevalence of mental health problems of young adult from 16 years and above. About 1.7% (0.3 million) of them have Generalized Anxiety Disorders and about 1.8% (0.3 million) have current depression (Ministry of Health, Malaysia, 2011).

Many studies discovered that student's performance in school, college and university are affected by symptom of depression (Stark & Brookman, 1994) such as constant strain, and unhappiness depressed mood, anxiety (Anson *et al.*, 1984) dry mouth, diarrhea and stress (Dusselier *et al.*, 2005). This symptoms may impair student's general well-being (Mukhtar & Hashim, 2010), academic performance (Stewart-Brown *et al.*, 2000), lead to decline relationship (Ali *et al.*, 2002), marital problem and affect future employment (Eisenberg *et al.*, 2007).

American Psychiatric Association (APA) (2014) was defined depression as a serious medical illness that negatively affects how people feel, the way they think and act in pleasure activity. In addition, depression has variety symptoms at least four other symptoms within a period of at least two weeks. These symptoms included, impaired appetite, disturbed sleep, and poor concentration, loss of energy, retardation or psychomotor agitation, inappropriate guilt or feeling or worthlessness, thoughts of deaths or attempts at suicide. Although the depression can strike at any time, but the prevalence of major depression is increasing during adolescence and young adulthood (Angst & Preisig, 1995).

Anxiety is a condition that is characterized by extreme feeling of fear, accompanied by somatic symptoms that indicate hyperactive autonomic nervous systems such as tachycardia, seating, dry mouth, frequent or urgent micturition and

diarrhea. Anxiety also damages cognition and may produce distortions of perceptions (Sadock *et al.*, 2005).

While, stress is defined as the body's non-specific response to demands placed on it and related to disturbing events in the environment (Rosenham & Seligman, 1989). According to Selye (1974), stress during education can lead to mental distress and have a negative impact on cognitive functioning and learning (Saipanish, 2003).

This study was focused to assess the prevalence of depression, anxiety and stress among first year students at School of Medical Sciences, Dental Sciences and Health Sciences Health Campus Universiti Sains Malaysia (USM), Kelantan.

There are many sources that contributed to stress among students such as from academic source, interpersonal source, interpersonal source and environmental source. Thus, it is important to study about those potential sources among the students in USM especially at Health Campus.

1.2 Problem Statement

Mental health is a basic aspect overall health and well-being. Most of mental problems diagnosed in adulthood may have begun earlier during teenage year period. Depression, anxiety and stress are the common mental problems or psychological disturbances happen to university students.

Health Campus USM, Kelantan comprises three major schools which are School of Medical Sciences, School of Dental Sciences and School of Health Sciences. Every year, the junior students were enter and learned in new academic session. They were experience many new things related to university life such as adapted with new

learning method of teaching, build new relations with friends and must arranged their scheduled properly.

In addition, while try to digest and accept the new environment and living far away from family, they experienced psychological disturbances because of that. Generally, the common problem or factor that might related to psychological disturbances among students were competitive academic environment, lack of recreational activities, lack of peer support, staying away from home and financial problems (Wolf, 1994).

Furthermore, previous studies have suggested that depression is high among medical and nursing students (Smith *et al.*, 2007; Stewart *et al.*, 1997). In addition, various studies around the world have highlighted that students studying in medical and dental course experience higher stress (Marjani *et al.*, 2012; Al-Dubai *et al.*, 2011; Al-Dabal *et al.*, 2010; Supe, 1998).

Moreover, many previous study reported that the first year students had higher psychological disturbance in university. For instance, a study involved the first year of science students conducted in the International Islamic University Malaysia in 2013 which had significantly higher mean score in depression than Second Year and Third Year students (Radeef *et al.*, 2014).

The risk factors from socio-demographic factors such as age, gender, ethnicity, school, parent's marital status, family monthly income and placed of birth also might lead to depression, anxiety and stress among students. From a previous study, females are reported to have higher level of depression, anxiety and stress which can contribute to biopsychosocial factor such as social roles and physiological status (Bangasser *et*

al., 2010; Zaid *et al.*, 2007; Dyrbye *et al.*, 2006). Then, another study also reported minority ethnic group may influence to these psychological disturbances (Dyrbye *et al.*, 2007).

Therefore, this study was done to assess the prevalence of depression, anxiety and stress and the sources of stressors among first year students at School of Medical Sciences, Dental Sciences and Health Sciences, Health Campus USM, Kelantan.

1.3 Research Objectives

1.3.1 General Objective

The general objectives of this study is to assess the prevalence of depression, anxiety and stress among first year students at School of Medical Sciences, School of Dental Sciences and School of Health Sciences, Health Campus USM, Kelantan.

1.3.2 Specific Objectives

- i) To determine the main sources of stressors among first year students at School of Medical Sciences, Dental Sciences and Health Sciences, Health Campus Universiti Sains Malaysia, Kelantan.
- ii) To find the association of depression, anxiety and stress with socio-demographic factor and main sources of stressors among first year students at School of Medical Sciences, School of Dental Sciences and School of Health Sciences, Health Campus Universiti Sains Malaysia, Kelantan.

1.4 Research Questions

- i) What is the prevalence of depression, anxiety and stress among the first year students at School of Medical Sciences, School of Dental Sciences and School Health Sciences, Health Campus Universiti Sains Malaysia, Kelantan?
- ii) What are the main sources of stressors among first year students at those three schools at Health Campus Universiti Sains Malaysia, Kelantan?
- iii) What are the association between depression, anxiety, stress, socio-demographic factor and main sources of stressors among first year students at School of Medical Sciences, School of Dental Sciences and School of Health Sciences, Health Campus Universiti Sains Malaysia, Kelantan?

1.5 Research Hypothesis

Null Hypothesis

- i) There is no significance association of depression, anxiety and stress with socio-demographic factors among first year students at School of Medical Sciences, School of Dental Sciences and School of Health Sciences, Health Campus Universiti Sains Malaysia, Kelantan.

Null Hypothesis

- ii) There is no significance association of depression, anxiety and stress with main sources of stressors among first year students at School of Medical Sciences, Dental Sciences and Health Sciences, Health Campus Universiti Sains Malaysia, Kelantan.

1.6 Significance of Study

Students arriving at university for the first time need to adapt to significant changes, such as moving to a new area, separation from family and friends, establishing a new social network, managing a tight budget, combining academic study with family commitments, coping with a disability in a new environment and, for international students, living in a new country and adjusting to a different culture. For many, these changes are exciting and challenging and an intrinsic part of the attraction of going to university. This study will encourage the student to manage their daily activities wisely after known the factors or sources of depression, anxiety and stress.

This study were provided the information about the prevalence of depression, anxiety and stress among first year students at School of Medical Sciences, School of Dental Sciences and School of Health Sciences, Health Campus Universiti Sains Malaysia, Kelantan. This will help the university to develop new interventions services which in helping their students adapt and face challenging situations.

Moreover, by knowing the state of psychological disturbances that occurred among the students, parents will be more concerned to their children. They will give more support and take an action to avoid this issue become worse.

CHAPTER 2

LITERATURE REVIEW

Depression, anxiety and stress are varying from their concept. They are parts of a natural emotional and physical response to life up and down. In this part, the knowledge about depression, anxiety, stress and the sources of stress was reviewed and discussed to introduce an overview about mental status among students in university and college.

2.1 Depression

Depression was defined by the American Psychiatric Association (APA) in the Diagnostic and Statistical Manual of Mental Disorders- Text Revision (DSM-V-TR) as a disorder that is characterized by either a depressed mood or distinctly diminished interest in pleasure activity. World Health Organization (WHO) (2015), stated that depression is a common mental disorder which categorized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness and poor concentration.

According to WHO's Global Burden of Disease 2010, 36.5% of the years lived with disability (YLD) are due to mental and behavioral disorder in which including major depressive disorder is one of two unipolar depressive disorder of the four leading to cause of years lived with disability. More than 350 million people of all ages are suffer from depression at point in time (WHO, 2012).

Depending on the number and severity of symptoms, the depressive episode may be classified as mild, moderate, or severe. An individual with a mild depressive episode will have difficulty in continuing work or social activities however, will perhaps not to end function completely. While, during a severe depressive episode, usually the sufferer of depression will unlikely able to continue with social, work, or domestic activities, except to a very limited extend.

Depression can apparent itself under a variety circumstance and due to many factors. The bio-psychosocial model was useful to know and understand the causation of depression including biological (biochemical and genetic), sociological (stressor) and psychological (development and life experiences). While, risk factors of depression in adolescent are various such as family history, marital status, parental deprivation (parental loss), social stressor such as life events, chronic stress and daily hassles. Social support and family type also the risk factor of depression in adolescent (McDermott *et al.*, 2010).

Depression can be continuing or recurrent, significantly it can impair an individual's ability to function at work or college or cope with daily life. In addition, the prevalence of major depression is increasing during adolescence and young adulthood (Angst & Preisig, 2005). On the other hand, depression also can lead to suicide (WHO, 2015). Warning signs of depression include threatening to hurt people, or engaging in aggressive or risky behavior (WHO, 2015).

2.2 Anxiety

People with anxiety disorders usually have frequent disturbing thoughts or concerns. They may avoid certain situations out of worry. By definition, anxiety is an emotion characterized by feelings of tension, worried thoughts and physical changes like increased blood pressure (APA, 2015). Anxiety also defined as a bodily response to a perceived threat or danger (real or imagined) and it seem to be triggered by an individual's thoughts, beliefs and feelings.

Anxiety disorders affect about 40 million American adults age 18 years and older (about 18%) in a given year, causing them to be filled with fearfulness and indecision. Women are 60% more likely than men to experience an anxiety disorder over their lifetime (National Institute of Mental Health (NIMH), 2015).

Distinct the relatively mild, brief anxiety caused by a stressful event such speaking in the public. Anxiety disorders last at least 6 months and can get worse if they are not treated. The physical symptoms such as sweating, trembling, dizziness or a rapid heartbeat are the symptoms of anxiety disorder (NIMH, 2015).

The characteristics such as the status of family relationships, difficulty understanding lecturers, difficulty adapting to university life, having to solve problems independently, a vision of self-sufficiently in problem solving, negative life experience, and satisfaction with their department of study was predicted both state and trait of anxiety (Ozen *et. al.*, 2010).

2.3 Stress

Stress is defined as the brain's response to any demand on it (NIMH, 2015) or to disturbing events in the environment (Rosenham & Seligman, 1989; Selye, 1974). Feeling of stress in human result from interactions between peoples and their environment that are perceived as straining or exceeding their adaptive capacities and threatening their well-being. The element of perception showed that human stress response reflect differences in personality as well as differences in physical strength or health.

Stress can be divided into eustress and distress (Lazarus, 1974). Stress enhances function either in physical or mental, such as through training or challenging work is considered as eustress. While, distress is a persistent stress that is not resolved through coping or adaptation and it may lead to anxiety or depression behavior.

Lazarus (1990), stated that stressors are as a personal and environmental event that causes stress. Stressor can be categorized as acute or chronic, and as external or internal to the organism. The Diagnostic and Statistical Manual of Mental Disorders (DSM-V-TR) expresses a psychosocial stressor as “any life event or life change that may be associated temporally with the onset, occurrence, or worsening of a mental disorder”. In addition, stress also thoroughly related with depression and can deteriorate the symptoms of most other disorders (Rebbeca, 2003).

Whole pattern of stressor did not seem influenced by the differences of curriculum among students although frequency of some stressors may be significantly different (Kaufman *et al.*, 1996; Kaufman *et al.*, 1998). While similar stressor may be perceived differently by medical students, depending on their cultural background,

personal traits, experience and coping skills (Yusoff *et. al.*,2010a; Yusoff *et. al.*,2010b).

Subsequently, collective adverse experiences, including negative events and early childhood harsh conditions, together with parental depression and/or non-supportive school or familial environments, place adolescent at risk for developing psychological problems. Stressful life events can be mediated by enhancing life skills and supportive from schools and family environments.

Apparently, school is an important field for social and emotional development; however, it can also be a source of negative events. Poor academic achievement and health beliefs about academic ability, coupled with depression, result in poor school engagement, enhanced perception of school-related stress, and increased problem behaviors (Burns *et al.*, 2002).

2.4 Previous Related Study

Various studies around the world was reported that university students especially in the medical and dental course are subjected to higher psychological disturbances (Waghachavare *et al.*, 2013) in the form of depression, anxiety and stress. According to Chen *et al.*, (2013), university students are a special groups of people that are enduring a critical transitory period from adolescent to adulthood and making many major of life decision. Major depression is an important problem that was highlighted among university students, since depressive symptoms affect academic performance, are related to health and can lead to suicide (Hysenbegasi *et al.*, 2005; Furr *et al.*, 2001).

Several studies suggested that high prevalence of depression, anxiety and stress among university students with the level of overall psychological disturbances were consistent in general population and age match peers. Bayram & Bilgel (2008) reported high prevalence of depression, anxiety and stress was 27.1%, 47.1% and 27% respectively. As compared to the latest study by Abdallah & Gabr (2014), which reported that much higher prevalence of depression, anxiety and stress with 63.6%, 78.4% and 57.8% respectively. While, previous studies in Malaysia by Latiffah *et al.*, (2014) stated that the prevalence of depression, anxiety and stress among undergraduate students was 27.3%, 60.0% and 22.6%.

Various factors such as multiple social, demographic, behavioral and educational factors have been significantly (p value < 0.05) associated with most of the study psychological illnesses, including: gender, residence, perceived socioeconomic standard, feeling loneliness, the inability to share in families' social activities, presence of insomnia and chronic physical illnesses, studying in English language, problem with exams' criteria, lack of communication with staff members, and the organization of lectures' timetables was reported as the factors to psychological distress (Abdallah & Gabr, 2014).

According to Tabassum *et.,al* (2010) among 279 of medical students in Pakistan, the females students were reported have higher depression compared to the male students. While, the study by Bayram & Bilgel (2008) in Turkey found that the female students was significantly association with anxiety and stress. It was supported by Noorbala *et al.*, (2001), who reported that social difficulties, psychological factors, and stress caused by the environment are important risk for mental disorder among the

woman. The females were more likely to report stress due to higher self-expectations and a feeling of lack competence (Shamsuddin *et al.*, 2014).

According to Keller *et al.*, (2012), the study among nationality of America which related to stress, the higher level of stress were associated with an increasing likelihood of reporting poor health. Similar with previous study by Miller *et al.* (2000), the study in America also reported that, people who have stress had high probability to experience hypertension, extreme anxiety, depression or obesity (Keller *et al.*, 2000).

Radeef *et al.*, (2014) reported 50.5% of the students had subclinical (severe and extremely severe) depression while 13.9% of students had clinically (moderate and mild) depression. In addition, in their study by using Mann-Whitney U test for non-parametric data, the students who ages below 21, had significantly depression with p value = 0.005 (p value < 0.05) and significant stress with p value = 0.029 (p value < 0.05). The caused were determined by the time management problems, feeling incompetence, lack motivation to learn and difficulty of class work. In their study also, Kruskal-Wallis test was revealed that it was significant association of depression among Year 1 students compared to other year of students with p value = 0.028 (p value < 0.05).

A study of stress in India among students of professional colleges from urban area, by Waghachavare *et al.*, (2013), found that 6.8% of the students had severe stress, 7.6% of students had moderate stress and 10.0% of students had mild stress. While, according to the student's field of education, dental students were reported had high percentage of stress (28.7%) followed by the medical students (25.1%) and engineering students (25.1%). It was different with study by Bayram & Bilgel (2008)

which reported that the depression, anxiety and stress scores were higher among students in social and political sciences compared to the major study area of basic sciences, engineering or medicine.

Stewart *et al.*, (1997) was suggested that the rates of depression and anxiety are highest among first year students. Regardless of this, many studies have discovered that students' performance in school, college and university are affected by symptoms of depression (Stark & Brookman, 1994), anxiety (Anson *et al.*, 1984) and stress (Dusselier *et al.*, 2005), which may spoil their academic achievement (Stewart-Brown *et al.*, 2000). In addition, it also lead to declined in relationships (Ali *et al.*, 2002), problems with marital and affect future employment (Eisenberg *et al.*, 2007).

Besides, there were many causes or sources of mental health problem among students. For example, some researchers found that increased workload, assignment papers, mid-term tests, and projects caused depression (Pabiton, 2007; Pabiton, 2004) which is the sources of stress from academic factors.

In addition, there were also risk factor that may contributed to the depression, anxiety and stress which may come from the socio-demographic background. For example, the study among Malaysian university students by Shamsuddin *et al.*, (2013) found that age, ethnicity, family monthly income and place of birth were had associated either with depression, anxiety and stress. The result was show a little different with study by Chen *et al.*, (2013) which found that among Chinese students in China, the ethnicity were not related with depression.

Andrews & Wilding (2004) suggested that the added element of financial susceptibility further impairs depression, anxiety and stress. For example a previous study conducted on students in United States found that the students was positive screening for anxiety disorders among those with current financial fights (Eisenberg *et al.*, 2007).

University students who originate from rural area were reported to score higher in depression, anxiety and stress scale compared to students living in urban areas in Turkey (Bayram & Bilgel, 2008). This was explained by an economic situations where the students living in rural areas were reported as poorer family in economic situations (Bayram & Bilgel, 2008).

CHAPTER 3

METHODOLOGY

The methodology that was applied by this study had been chose in order to get the acquire information about the prevalence of depression, anxiety and stress and the sources of stressors among first year students in School of Medical Sciences, School of Dental Sciences and School of Health Sciences, Health Campus Universiti Sains Malaysia, Kelantan.

3.1 Study Flowchart

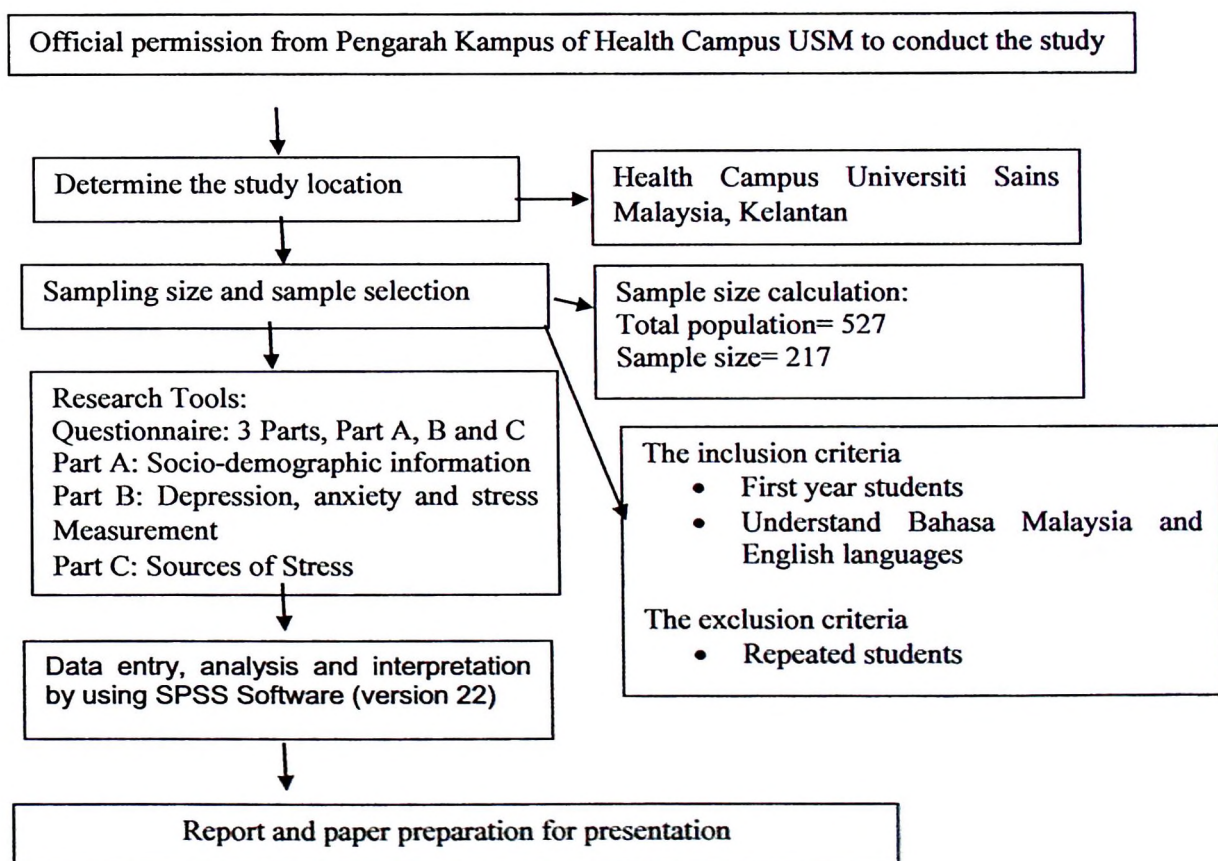


Figure 3.1 Study Flowchart

Figure 3.1 showed the flowchart for overall of this study. This study flowchart consisted of the first action which was applied for the permission to conduct the study from Pengarah Kampus of Health Campus USM until to the end process of report and presentation.

3.2 Research Design

This study was categorized as a descriptive cross-sectional study. Kate (2006) stated that cross-sectional study is a studies carried out at one time point or over a short of period and it was usually conducted to estimate the prevalence of the outcome of interest for a given population. Thus, this study was carried out for a while (December 2014 to May 2015). It was used to determine the prevalence of depression, anxiety, stress and the sources of stress among first year students at School of Medical Sciences, School of Dental Sciences, and School of Health Sciences, Health Campus Universiti Sains Malaysia, Kelantan.

3.3 Scope of Study

The study was focused toward the mental health problem or psychological disturbances in the form of depression, anxiety and stress and also the sources of stressors among first year students at School of Medical Sciences, School of Dental Sciences and School of Health Sciences, Health Campus Universiti Sains Malaysia, Kelantan.

3.4 Study Location

This study was conducted at Health Campus Universiti Sains Malaysia, Kelantan.

3.5 Study Population

Target population of this study was the first year students at School of Medical Sciences, School of Dental Sciences and School Health Sciences, Health Campus Universiti Sains Malaysia, Kelantan. The first years students was choose because they are in the early adulthood and more vulnerable to get psychological distress (Dyrbye *et al.*, 2006).

3.6 Sampling Method

This study was involved stratified random sampling. Stratified random sample was a random sample in which members of the population were divided into strata accordingly then, were randomly selected to be a part of the sample (Yolanda, 2014). Stratified random sampling or procedure was used in this study because the sampling errors was less compare to other sampling procedure (Chua, 2006). Moreover, the aim of this sampling method was used because to observe existing relationships between two or more subgroups (first year students between schools). In this study, three schools were involved; School of Medical Science, School of Dental Science and School of Health Sciences. The population size from School of Medical Science was 130, School of Dental Science was 48 and School of Health Sciences was 349.

3.7 Sample Size Calculation

The overall population size for first year students at those three schools was 527. Based on calculation from Krejcie & Morgan, (1970) formula (refer Table 3.1), 217 of respondents were selected to answer of this questionnaire (Appendix A and B).

Table 3.1 Table for Determining Sample Size for a Given Population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	373
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	225	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

(Source: Krejcie & Morgan, 1970)

Note: “N” is population size, “S” is sample size

Proportionate stratification approach was used to calculate the sample size. With this approach, the sample size of each stratum (first year students at three schools) was proportionate to the population size of stratum. Strata sample sizes were determined by the following equation:

$$n_h = (N_h / N) \times n$$

(Source: Stat Trek, 2015)

Where,

h = as first year students

n_h = Sample size for stratum h

N_h = Population size for stratum h

N = Total population size

n = total sample size

Proportion calculation:

School of Medical Sciences: $130 / 527 \times 217 = 54$

School of Dental Sciences: $48 / 527 \times 217 = 20$

School of Health Sciences: $349 / 527 \times 217 = 144$

Total population sizes: $53 + 20 + 144 = 217$

Then, in the same proportions between members of the subgroup were randomly selected as a respondents of the study. The name of respondents from each subgroup were listed and given code number to represent them.

Number 1 to 527 was written on paper strips. The paper were folded and put in a container. After shaking the container, the paper strip was picked by the researcher. The person presented by the code number on the picked paper was chose as a respondents.

3.7.1 Inclusion and Exclusion Criteria

Before the respondents were selected, there are a few criteria need to fulfill (refer Table 3.2).

Table 3.2 Inclusion and Exclusion Criteria

Inclusion criteria	Exclusion criteria
a) First year students	a) Repeated students
b) The students must understand Bahasa Malaysia and English languages	

3.8 Data Collection Tool

3.8.1 Questionnaires

The questionnaire consisted of three parts with 89 questions in total. The first part was seven questions about socio-demographic information, the second part was divided into depression, anxiety and stress measurement in 42 questions, while the third part was consisted 40 question about student stress (refer Appendix A and B).

3.8.2 Depression, Anxiety and Stress Scale (DASS)

The Depression, Anxiety and Stress Scale (DASS) was used to measure the levels of the negative emotional of depression, anxiety and stress. Each of the three DASS scales contains 14 items, divided into subscales of 2-5 items with similar content (refer Table 3.3). The Depression Scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, and lack of interest/involvement, anhedonia, and inertia. The Anxiety Scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect.

The Stress Scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/over-reactive and impatient. 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 summing the scores for the relevant items (Lovibond & Lovibond, 1995).

Table 3.3 DASS Scoring

	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+

3.8.3 The Student Stress Survey

The Student Stress Survey (Insel *et al.*, 1985) were used to measure the stressors. This questionnaires consists of 40 items which divided into 4 categories of potential sources of stress; 6 items representing interpersonal sources of stress, 16 items representing intrapersonal sources of stress, 8 items representing academic sources of stress, and 10 representing environmental of stress. Interpersonal sources result from interactions with other people, such as fight with friend, roommate’s conflict or trouble with parents; intrapersonal sources result from internal sources, such as, financial difficulties, changes in eating or sleeping habits. Academic sources arise from school-related activities and issues, such as, increased class workload or transferred schools. Finally, environmental sources result from problem in the environments, outside of academic, such as, computer problems or crowded traffic. Respondents provided a “Yes” or “No” answer to each item they had experienced during the current school year.

3.8.4 Translation Process

The translation process of DASS-42 to Bahasa Melayu was done by Ramli *et al.*, (2007) with forward and backward translation. In addition, the sources of stress questionnaires were translated by the expert from the Unit Language, USM.

3.9 Reliability and Validity

The pilot study was conducted among 30 other first year students at Health Campus USM, Kelantan. Reliability of a study were determined by its internal consistency by looking at Cronbach's alpha (reliability coefficients) values. Cronbach's alpha is a measure of internal consistency, which is, how closely related a set of items are as a group (Institute for Digital Research and Education (IDRE), 2015). A reliability coefficient of 0.70 or higher is considered "acceptable" (IDRE, 2015). The item in DASS was tested and the Cronbach's alpha value for depression, anxiety and stress in this study were 0.827, 0.714 and 0.743, respectively.

3.10 Data Collection Procedures

The questionnaire was distributed to the respondents in the lecture hall in early March to early April 2015. Consent was obtained from the students. The study was conducted in the middle of the course before the examination period so as to minimize the extra stress symptoms. The students also given to choose to answer the questionnaires at that time or give back after two days.