

ARE FRESH UNDERGRADUATE STUDENTS IN A PUBLIC UNIVERSITY FREE OF PSYCHOLOGICAL PROBLEMS: A PROPOSED STUDY OF DEPRESSION, ANXIETY, STRESS AND THEIR COPING MECHANISMS.

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ABSTRACT

Background: Depression, stress and anxiety are the most reported and studied form of mental illnesses. The burden of these psychological disorders seems to be on the increase among adolescents and young adults in Malaysia. Mental illness may or may not exhibit signs or symptoms at early stages of onset. Apart from the conspicuous nature of symptoms, the lack of awareness regarding the illness and lack of coping mechanisms worsen the problem.

Materials and Method : A cross sectional study design will be used to determine the prevalence of depression, stress and anxiety and its associated factors among 675 participants selected faculties that offer undergraduate programs in Universiti Putra Malaysia (UPM). The Depression, Stress and Anxiety (DASS-21) scale will be used to determine the prevalence of psychological problems (depression, stress and anxiety), the Brief COPE Inventory will be used to assess coping strategy; and the revised Inventory of Parent and Peer Attachment (IPPA) will be used to determine attachment of the undergraduates to their father, mother and peers.

Independent sample t-test and multivariate analysis with MANCOVA will be used to compare linear combination of the dependent variables (depression, stress and anxiety) with the independent categorical variables while controlling for covariates (Brief COPE and IPPA scores) which reduces error terms. Chi-square analyses for determining the association between variables, logistic regression model will be applied to indicate factors that significantly contribute towards stress, anxiety and depression. A multiple linear regression to analyse and “obtain independent effect” of independent variables on the dependent variables.

Conclusion: The findings in this study would help in determining the prevalence of psychological problems (depression, stress and anxiety) among undergraduate students. Through early detection of symptoms, respondents would be able to seek assistance which would help prevent and minimize the exert effect of mental, emotional and physical

Keywords: Depression, Stress, Anxiety, Coping Mechanism.

1.0 Introduction

Mental health is as equally important as physical well-being, it represents a crucial part of an individual's physical and mental state and are deeply interdependent of each other (Ibrahim, 2011). Mental health is defined as a state of well-being in which the individual realizes his or her own capabilities, can cope with the normal stresses of life, can work effectively, successfully and is able to make a contribution to his/her society (Ibrahim, 2011). Mental health and well-being refers to the successful performance of mental function and is characterized by the presence of positive affect (e.g. Optimism, cheerfulness and interest), absence of negative affect, and satisfaction with life through productive activities (e.g. fulfilling relationships, ability to adapt to change and diversity) (Centre for Disease Control and Prevention (CDC), 2011)

Mental health problems are more common than cancer and heart disease combined as stated by (National Alliance on Mental Illness of Chicago (NAMI-GC), 2013)

Mental illness are disturbance of the mind which can affect thinking, feeling and behaviour that may interfere with normal functioning and thus make daily life difficult for individuals (Malaysia Mental Health Association (MMHA), 2013). Mental illness comes in many forms and differ in severity, duration, degree and can affect anyone regardless of age, gender, ethnicity, and socio economic status (WHO, 2013). Mental illness includes diseases with typical psychiatric diagnoses, such as depression, bipolar disorder, and schizophrenia which is characterized by alterations in thinking, mood, or behaviours associated with distress or impaired functioning (CDC, 2011). Mental illness contributes an estimated 16.8% of global disease burden is attributed to mental illnesses, a portion of which can be detected can be partly treated (Andrew, 2013). There is extensive evidence that shows the association between mental illness and chronic diseases, such as cardiovascular disease, diabetes, obesity, asthma, arthritis, epilepsy, and cancer (CDC, 2011). In established economies such as the USA, Canada and Eastern Europe mental illnesses rank first among illnesses that result in disability and they accounts for 15% of the overall burden of diseases which is slightly more than cancer (World Health Organisation (WHO), 2013).

1.1 Mental Health in Malaysia

In Malaysia depression, stress and anxiety are the most commonly diagnosed form of mental illnesses, and neuropsychiatric disorders (MMHA, 2013). A National Health and Morbidity Surveys with relation to mental health have been reported over the past decade (1996, 2006 and 2011) and it is evident that the prevalence of psychiatric morbidity is on the increase among the general Malaysian population. The National Health and Morbidity Survey II (NHMS II) conducted in 1996 reported that the prevalence of psychiatric morbidity was found higher among adults 16 years and above (13%) compared to children and adolescents below 15 years of age (10.6%). There was no data with regards to the prevalence of depression and suicidal behaviour.

The Second National Health and Morbidity Survey (NHMS III) conducted in 2006 reported that psychiatric morbidity of the overall adult population was at a prevalence of 11.2%, with more females (55%) than males (45%) have psychiatric problems. Psychiatric morbidity was reported highest among Chinese (31.1%), urban population (12.6%) and those with no education or primary education (15-16%). The overall prevalence of acute suicidal ideation

was 6.4% the highest reported among teenagers and young adults, aged 16-24 at 11% (MMHA, 2013)

The last National Health and Morbidity Survey (NHMS IV) conducted in 2011 reported adults 16 years and above, 1.7% (0.3 million) have Generalized Anxiety Disorders (GAD), 1.8% (0.3 million) have current depression, 1.7% (0.3 million) has suicidal ideation and 1.1% (0.2 million) reported to have attempted suicide in the past. Children below 16 years of age 20.0 (1 million) have developmental disability, emotional and behavioural disorders (National Health Morbidity Survey (NHMS), 2011). In rural areas traditional beliefs suggest that mental illnesses are caused by supernatural powers due to individual moral weakness, however these beliefs are in the minority and at community-base (MMHA, 2013).

1.2 Mental health among university undergraduates

Studies conducted in different countries have found that the first year undergraduate students experience mental disorders such as depression and anxiety (Adewuya, Ola & Afolabi, 2006; Nerdrum, Rustøen & Rønnestad, 2006; Wong, Cheung, Chan & Tang, 2006, Ovuga, Boardman, & Wasserman, 2006) which supports that this mental disorders occur at an early stage of adolescence and early adulthood.

In Malaysia depression, anxiety and stress have been also reported among medical undergraduate students, and although it may not represent or show the magnitude of psychological problem among the general students of the whole university attention is needed. A study conducted among 4 public and private Malaysian universities reported the prevalence of depression, stress and anxiety to be 29.3%, 21.6% and 55.0% respectively (Gan, Nasir, Mohd Shariff & Abu Saad, 2011).

A high prevalence of stress (50%) have been reported among medical undergraduates by Chen *et al* (Chen, Xiao, Yang, Xiu, Zheng, Yang, Yan & Liang, 2013), which was slightly higher compared to previous study conducted by Mohd Sidik *et al* that reported slightly lower (41.9%) prevalence for stress (Mohd Sidik, Rampal & Kaneson, 2003). The increase in prevalence is attributed to academic burden on medical courses which is believed to be higher compared to other faculties of study, however some studies reported no differences regarding depressive symptoms among different faculties (Education, Art, Science and Economics) (Bostanci, Ozdel, Oguzhanoglu, Ozdel, Ahmet, Nesrin & Filiz, 2005). A low prevalence of stress (3.6%) and depression (1.9%) was reported among prospective medical students in a Malaysian university this was assumed that rate is prior to medical training, In contrast a high prevalence of anxiety (54.5%) was among the prospective students (Yusoff *et al*, 2013)

High prevalence of depression, stress and anxiety exposes students to mild or sometimes severe mental illness which could be minimized or aggravated by the type of coping behaviours adopted (Brougham, Zail, Mendoza & Miller, 2009). Consequences of mental disorders are not only limited to the psychological morbidity of students but, have a deteriorating influence on their families, institutions and other people's lives (Bayram & Bilgel, 2008) and studies show that they increase the risk of getting deadly cardiovascular diseases (WHO, 2013).

Coping mechanisms are methods that individuals can use in dealing with stressors they are also termed reactive coping. There are 2 techniques or strategies of psychological coping

.Each of these strategy is adopted as a reaction towards a which effect the an individual psychological, physical and social functions which leads to the development of some coping strategy that can minimize or worsen the negative consequences of the condition (positive coping) (Baykan & Yargic, 2012). There are 3 types of mechanisms that are divided based on their styles: Problem-oriented coping, emotion-oriented coping and avoidance-oriented coping. Problem-oriented coping attempts to deal with the stressor by increasing the resources available to effectively deal with it (Baykan & Yargic, 2012).

2.0 Associated factors of depression, stress and anxiety among undergraduate students

i. Age: Age is a non-modifiable risk factor and previous studies have shown findings to be inconsistent. A study conducted by Shamsuddin et al showed mean scores were higher among older students of (20-24 years), compared to younger students (18-19) for depression ($t = -0.117$; $p = 0.012$), anxiety ($t = -3.076$; $p = 0.002$) and stress ($t = -2.011$; $p = 0.003$) (Shamsuddin et al 2013). Another study reported the mean score of younger students (17-19 years) as $15.57 (\pm 6.54)$ which was higher compared to older students (20-26 years), score of $14.65 (\pm 6.78)$, ($P = 0.011$). However no significant association was reported between age with depression ($P = 0.615$) and anxiety ($P = 0.103$) (Bayram & Bilgel, 2008).

ii. Gender: Gender is a non-modifiable risk factor and findings regarding the relationship between depression, stress, anxiety and gender have shown to be inconsistent. Some studies of medical students from public university in Malaysia have reported that female students had higher mean scores for stress ($10.21 (\pm 5.84)$) and anxiety ($15.41 (\pm 6.57)$) ($P < 0.05$) compared to male students stress ($9.37 (\pm 6.04)$) and anxiety ($14.29 (\pm 6.83)$) scores. However there was no significant difference between mean scores of depression between male and female, which was similar to another study in a Malaysian public university among prospective medical students (Yusoff et al., 2012) .A similar study of medical students attending private university in Malaysia reported a prevalence of female (52.5%) to be higher the male (35.6%) students which was a significant relationship ($P = 0.001$), however there was no significant relationship between gender and depression (Saravanan, Coumaravelou & Wilks, 2014).

In contrast a study on emotional disorders (depression, stress and anxiety) among medical students in a Public University in Malaysia reported prevalence of females (42.2%) was higher the males (41.4%). However the difference was no statistical significance ($p > 0.05$) (Mohd Sidik, Rampal, & Kaneson, 2003).

iii. Ethnicity: A study by Yusoff et al reported that prospective Malay students showed higher scores for depression ($F(1,743) = 8.47$, $p = 0.004$), anxiety ($F(1,743) = 30.70$, $p = 0.001$) and stress ($F(1,743) = 14.77$, $p = 0.001$) when compared to non-Malay students (Chinese, Indian and others) (Yusoff et al., 2012). Among undergraduate students reported stress scores showed a significant relationship, of which Malay and Chinese reported higher mean scores when compared to other ethnicity (minority) ($F(3,505) = 3.481$; $p = 0.016$) (Shamsuddin et al., 2013) In contrast an earlier conducted study by Mohd Sidik et al. reported the there is a difference in the prevalence of emotional disorders highest among Indian (48.1%), then Malay (42.9%), Chinese (42%) and other ethnicities (18.8 %) this association was not significant ($p > 0.005$) (Mohd Sidik, Rampal, & Kaneson, 2003).

iv. Field of study: In a study among Turkish university students depression scores were reported to be higher among Students of faculty of Political Sciences ($10.45 (\pm 0.03)$) than those

in basic science (biology, physics, chemistry and mathematics) and engineering ($9.70(\pm 6.51)$) or human and veterinary medicine ($9.40 (\pm 6.92)$ $P=0.031$). Anxiety scores were reported higher among students in faculty of political sciences ($10.45(\pm 6.19)$) than basic science and engineering ($9.15(\pm 5.59)$) or human and veterinary medicine ($9.11(\pm 5.56)$ $P=0.001$). Also stress scores were higher among students in faculty of political sciences ($15.4(\pm 6.34)$) more than those in basic science and engineering ($13.57(\pm 6.90)$) or human and veterinary medicine ($15.35(\pm 6.12)$ $P=0.001$) (Bayram, Nuran & Bilgel, 2008). In contrast, a study conducted in Malaysian university reported no difference regarding symptoms of depression among students in the faculties of Education, Art, Sciences and Economics (Bostanci et al., 2005). This findings is also supported by another study in a Malaysian university that showed no significant relationship between course of study and depression, stress and anxiety (Shamsuddin et al., 2013)

v. Accommodation: Type of accommodation (Flat/apartment, terrace/semi-detached/bungalow or squatter/unknown) and living arrangement (living with family, living with friends/in hostels or living with alone/unknown) has been reported to show no significant difference in depression, anxiety and stress mean score (Shamsuddin et al., 2013).

vi. Family Income: Lower socioeconomic status such as family income is a factor has reported to be been associated with higher depression, stress and anxiety levels among undergraduates (Bostanci et al., 2005, Chen et al., 2013). A study among Turkish undergraduates family income was shown to be associated with depression ($F(2, 1616) = 11.509, P=0.001$) and stress ($F(2, 1616) = 3.622, P=0.01$) scores, however no association was shown with anxiety ($P=0.187$) and family income (Bayram et al., 2008). To see if this finding where similar a study was conducted in 4 public Malaysian universities and it was reported that there is a significant association between stress and low and middle- income families ($F(3, 505) = 3.549, p=0.0014$), but no association was shown with depression ($P=0.504$) or anxiety ($P=0.352$) (Shamsuddin et al., 2013).

vii. Parents Education: Parents (father and mother) education level is believed to be an associated factor and possible assumption that parents who are educated will know how to comfort their child because they have gone through the same experience. Previous study among prospective medical students showed mothers educational is associated with level anxiety mean score ($F(2, 743) = 6.28, p=0.002$), but not with depression or stress scores. While father's level of education was shown not to be associated with depression, anxiety and stress scores (Yusoff et al., 2012). However another study reported psychological health did not associate with mother and father education level (Yusoff et al., 2011). This factor is worth following up to see whether parents level of education is associated with psychological health during undergraduate years of students.

viii. Attachment to Parents and Peers: A study conducted among medical students in Malaysia reported the prevalence of emotional disorder were significantly ($p<0.005$) higher among students who have bad relationship with their parents (58.7%), course mates (45.5%) and love relationship with boy/girlfriend (45%) (Mohd Sidik, Rampal, & Kaneson, 2003).

ix. Coping Strategies: A study conducted by Al-Dubai et al reported that medical students used active coping strategy (active coping, religious coping, positive reframing, planning and acceptance) more than avoidant coping strategies (denial, self-blame, alcohol or substance use), among 376 students 6.1% perceived no stress, 47.6% perceived a bit of stress,

37% perceived to have stress and 9.3 % perceived to have too much stress (Al-Dubai et al., 2011)

x. Among age group: older students (more than 21 years and above) used active coping, with score of 6.5(1.2), reframing, 6.3 (1.3) and planning, 6.2 (1.2), more than younger (21 years and below) students who scored 6.0 (1.3), 6.0 (1.4) and 5.9 (1.3) respectively, ($P < 0.05$.) A reason for this might be older students have adopted better to the school environment (Al-Dubai et al., 2011).

xi. Among gender: A study conducted in a Malaysian university has shown that female used religious coping, with score 6.3(± 1.6); self-distraction, 6.1(± 1.4); emotional support, 6.0(± 1.4); instrumental support, 5.9 (± 1.4) and planning, 6.2 (± 1.3) more than males did, with scores 5.7 (± 1.3), 6.0 (± 1.6), 5.4 (± 1.4) and 5.8 (± 1.5) respectively ($P < 0.05$). However more males were reported to use alcohol and substance use, with score of 3.1 (± 1.6), more than females, 2.5 (± 1.4) ($P < 0.05$) (Al-Dubai et al., 2011).

xii. Among religious affiliation: Previous study shows Muslims use religion as a way of coping with perceived stress compared to Hindu or other religious persuasions (Al-Dubai, Al-Naggar, Alshagga and Rampal, 2011). Females (6.3 ± 1.4) have been shown to use religion as a means of coping with distress more than males (6.0 ± 1.6) ($P < 0.05$). Malay (6.5 [± 1.5]) students use religion more as a means coping more than Chinese (5.2 [± 1.6] & $P = 0.001$) and Indians (5.6 (± 1.7) & $P = 0.002$) (Al-Dubai et al., 2011)

Realizing the need to explore the psychological problems (depression, stress and anxiety) among fresh undergraduate of Universiti Putra Malaysia, it is the intention of this paper to determine its prevalence and associated factors including the different types of coping strategies adopted by students when stress is perceived. Assessment of relationship between attachment to parents and peers will be also elaborated, hoping to give a better explanation of the underlying causes of depression, stress and anxiety among undergraduate students. The conceptual framework is displayed in Figure 1.

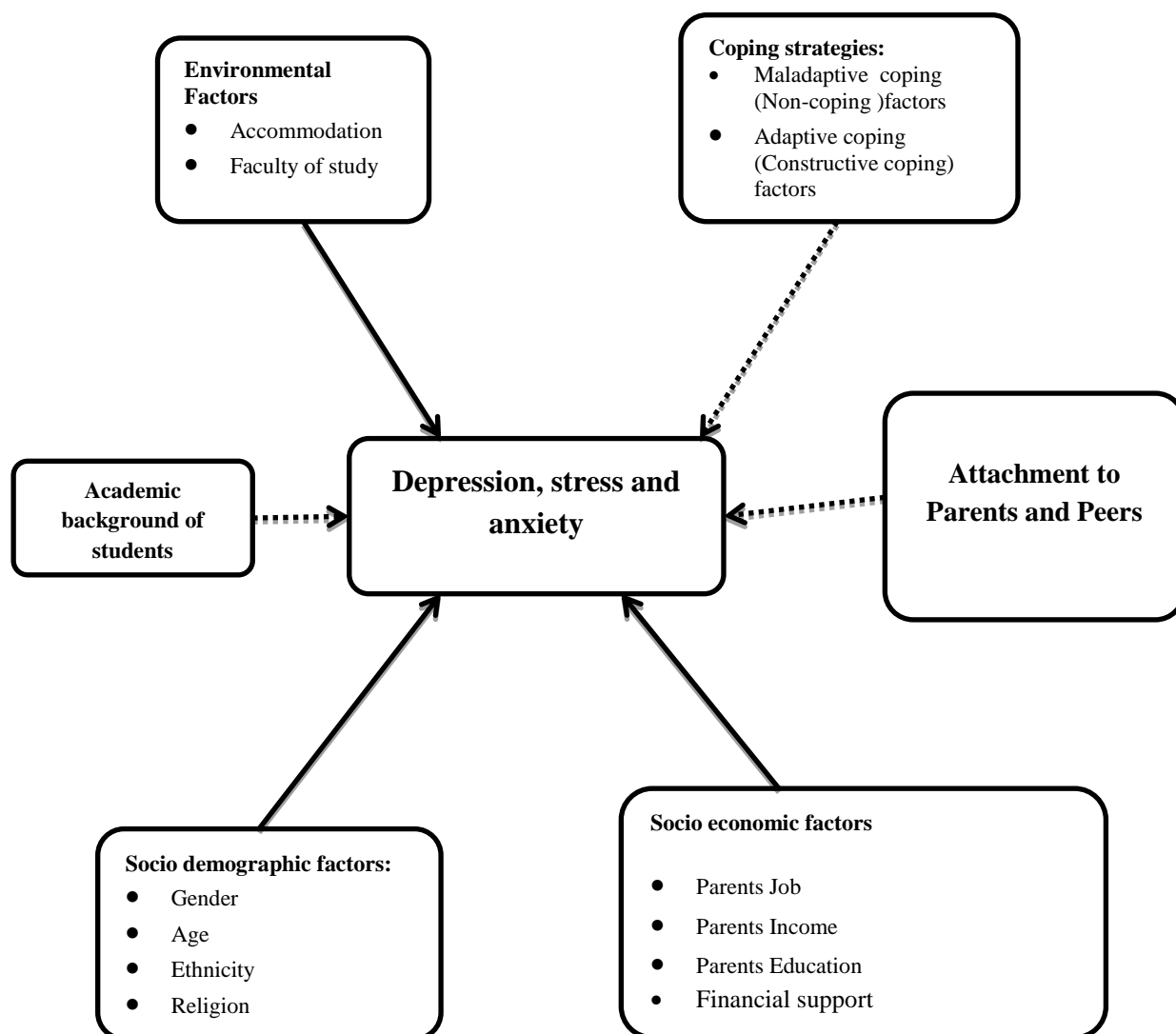


Figure 1: Conceptual framework on associated factors with depression, anxiety and stress

3.0 Methodology

The study is a cross sectional study to be conducted in Universiti Putra Malaysia (UPM) amongst newly registered first year undergraduates of 2014/2015 session of various selected faculties. Students would be in their first semester prior to any assessments, test or exams.

The list of all students in the various selected faculties will be retrieved from their respected administrative offices. All methods and sample collection procedures are to be reviewed by HREC (Human Research and Ethical Committee) of Medicine and Health sciences, Universiti Putra Malaysia. Participation would be voluntary, after explaining the purpose of the study and verbal consent is obtained from participants. Confidentiality of information would be ensured. Each participant would be provided with a self-administered questionnaire with

standardized instructions on how to complete the questionnaires which would be collected after completion and all data forms would be serially numbered.

3.1 Sample size estimation

Sample size is calculated using the prevalence of anxiety between male and female medical undergraduate students by a study conducted by (Saravanan & Wilks, 2014). The sample size for the study will be based on 80% study power, Type I error of 0.05, design effect of 2, a difference of 8% in two groups and a non-response of 20%. The sample size will be calculated using formula for comparing two proportions using Lameshow et al (Lwanga & Lemeshow, 1991) for this analytical study as follows:

$$n = \frac{(z1 - \frac{\alpha}{2} \sqrt{2\bar{P}(1 - \bar{P})} + Z1 - \beta \sqrt{P1(1 - P) + P2(1 - P2)^2}}{(P1 - P2)^2}$$

$Z = Z$ statistic for a level of confidence (95% confidence at a convention, $Z - \frac{\alpha}{2} = 1.96$)

\bar{P} = expected prevalence or proportion

$P1$ = estimated proportion (larger)

$P2$ = estimated proportion (smaller)

d = precision (in proportion at 5%, $d = 0.05$).

$P1=0.525$ ((52.5% prevalence of anxiety among female)

$P2=0.356$ (35.6 % prevalence of anxiety among males) (Saravanan & Wilks, 2014)

$\bar{P} = (p1+p2) \text{ divide by } 2 = \bar{P} = \frac{0.525+0.356}{2} = 0.4405$

$Z1 - \beta = 0.842$ (Using the statistical power of 80%)

$Z1 - \frac{\alpha}{2}$ = standard error associated with 95 % confidence interval (1.96)

$$n = \frac{(1.96 \sqrt{2 \times 0.4405(1 - 0.4405)} + 0.842 \sqrt{0.525(1 - 0.525) + 0.356(1 - 0.356)^2}}{(0.525 - 0.356)^2}$$

$$n = \frac{[1.96 \sqrt{0.493} + 0.842 \sqrt{0.250 + 0.229}]^2}{(0.169)^2}$$

$$n = 134.31 \approx 135$$

Additional adjustments in computing the sample size (Aday & Cornelius, 2011) :

- i. Adjust for the estimated sample effect:
DEFF (Design effect) = 2
Therefore $n = 135 \times 2 = 270$
- ii. Adjust for the estimated response rate:
Response rate = 80%
Therefore $n = 270 \div 0.80 = 337.5$
- iii. Adjust for two sample groups.
Therefore $n = 337.5 \times 2 = 675$

A minimum sample size of **675** is required

3.2 Sampling technique

Sampling will be conducted through a cluster sampling method and the number of clusters will be arrived by the following:

$$\begin{aligned}\text{Number of clusters} &= \frac{\text{Total no of first year undergraduate students in all faculties*}}{\text{Calculated Sample size}} \\ \text{Number of clusters} &= \frac{4461*}{675} \\ \text{Number of clusters} &= 6.61 \approx 7\end{aligned}$$

*Statistics of the total number of full-time active students in year 1 session 2013/2014 was retrieved from the academic division of UPM.

7 faculties are chosen randomly upon calculating the numbers clusters (faculties) required. Selected faculties random selected using a table of random numbers from a total of 15 faculties in Serdang campus offering full time undergraduate courses. The chosen faculties are as follows:

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- i. Faculty of Agriculture
- ii. Faculty of Medicine and health sciences
- iii. Faculty of Food science and technology
- iv. Faculty of Design and Architecture
- v. Faculty of Environmental studies
- vi. Faculty of Educational Studies
- vii. Faculty of Computer science and information technology

3.3 Inclusion criteria and exclusion criteria

3.3.1 Inclusion criteria

Undergraduate students of all faculties in first year of study in the university.

3.3.2 Exclusion criteria

- i. Year 1 undergraduates who don't give consent to conduct the study.
- ii. Year 1 undergraduates absent for 3 times during the period of data collection 3 weeks apart.

3.4 Data Collection

3.4.1 The data collection process would be conducted through two phases:

Data collection would be conducted among the 7 selected faculties randomly chosen using a table random numbers. Letters of approval to conduct study would be sent to the various Deans of the chosen faculties. Upon receiving of letter of approval all students of selected faculties would be approached and participation would be voluntary and verbal consent would be obtained from each participant. Confidentiality of information will be ensured before

participation. A self-administered questionnaire with standardized instructions on how to complete would be provided to each participant and will be collect after completion. All data forms will be anonymous and will consist of 4 parts;

- i. Demographic information of respondents
- ii. Depression, Anxiety and Stress Scale-21 (Integrated English and Melayu version).
- iii. The Brief COPE (Coping Inventory) (Integrated English and Melayu version).
- iv. Inventory of Parents and Peers Attachment (Integrated English and Melayu version).

3.4.2 Quality Control

This entails a test and re-test of the questionnaire which is an integrated Malay and English version of the DASS (Depression, Anxiety and Stress Scale) - 21, Brief COPE (Coping Inventory) and the IPPA (Inventory of Parents and Peers Attachment) questionnaire. The test and re-test will be conducted with a sample of 30 students between intervals of 2 weeks. Comparison analysis would be conducted to test reliability using chi-square analysis to calculate the Cronbach's alpha value.

3.4.3 Study instruments

- i. Demographics of respondents:
 - a. Socio-demographic data: collected through self-report measures, includes the age, ethnicity, Gender and Religion of the respondents.
 - b. Socio economic data: collected through self-report measures, includes the respondent's type of financial support, parents (mother and father), level of formal education, monthly income and occupation.
 - c. Environmental factors data: collected through self-report measures, includes the accommodation status and faculty of study of respondents.
- ii. **The Depression, Stress and Anxiety (DASS-21):** This section contains the Depression-Anxiety-Stress Scale-21 (DASS) is used to asses' psychological distress, it is a 21-item questionnaire with three self-report scales (depression, stress and anxiety). The DASS-21 has been translated into various languages including Malay language, and previously conducted studies have shown the Bahasa Melayu (BM) DASS-21 to be reliable with a Cronbach's alpha value of 0.84, 0.74 and 0.79, respectively for depression, anxiety and stress subscales (Ramli, Fadzil and Zain, 2007) .Validity was confirmed by Confirmatory Factor Analysis (CFA) which yielding good factor loadings values for 17 out of 21 items (0.31 to 0.75)(Salmiah, 2010). The questionnaire is simple and convenient to be administered for clinical (Baykan & Yargic, 2012) and non-clinical populations and although it is not a diagnostic tool it is important to note levels of depression, stress and anxiety symptoms of moderate severity or above can lead to disrupting of normal function and may require attention from health professional. The 21 items in the questionnaire are cultural free which makes it feasible to adapt to any culture (Aidil, 2012).

The depression scale assesses hopelessness, the devaluation of life, self-depreciation, and lack of interest or involvement. The anxiety scale assesses autonomic arousal, situational anxiety, and the subjective experience of anxious affect (Ramli, Rosnani & Aidil Faszrul, 2012). The stress scale is sensitive to levels of chronic non-specific arousal, including difficulty in relaxing, nervous arousal, and being easily upset, agitated, and impatient

(Siu & Chang, 2011). The Depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, and lack of interest/involvement, anhedonia, and inertia. Participants rated experiences of each state over the past week. The DASS questionnaire is designed not merely measure conventionally defines emotional states, but to further the process by understanding, defining, and measuring the present and clinically significant emotional states usually described as 3depression, anxiety and stress (Lovibond, 2013).

Table 1: DASS severity-rating index below

	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	26-23
Extremely Severe	28+	20+	34+

- iii. **The Brief R-COPE (Coping Inventory)** : The Brief COPE is a 40 item which measures broad ranges coping behaviors among adults (Zuckerman & Gagne, 2003) it is the most common used coping measure scale and has been cited by more than 900 articles as of August 2011 (Khan, 2012).

The Brief R-COPE developed by Carver (Carver, 1997) at the University of Miami and is abridged version of the original COPE Inventory and assesses 14 coping types with 28 questions which examine how people react when confronted with difficult situations and each of the scale provides information about coping strategies adopted to cope with stress (Baykan & Yargic, 2012). The ranging from “I haven’t been doing this at all” (Score one) to “I have been doing this a lot” (Score Four), the higher score represents greater coping strategies adopted by the respondents (Carver, 1997). Example of coping types and questions include “active coping” (I have been taking action to try to make the situation better), “religion” (I have been praying or meditating), “venting” (I have been expressing my negative feelings) and “substantial use” (I have been using alcohol or other drugs to make myself feel better). The responses to these questions are measured on 4 categories scale with responses ranging from 1 (“I’ve not done this at all”) to 4 (“I’ve been doing this a lot”). The scores (ranging from 2 to 8) and the means for each coping method are then calculated and a high score obtained from a subscale implies that a particular strategy is used more often (Baykan & Yargic, 2012).

Coping strategies are divided into adaptive and maladaptive which are both dependent on the context and situation. The validated Bahasa Melayu (BM) version of the questionnaire has been found to assess stress coping styles among the adolescent population of Malaysia. The Cronbach’s alpha value of the Malay version of the brief-COPE is 0.83. Most of the coping strategies showed acceptable internal consistency with a Cronbach’s alpha values more than

0.7 and most items loaded nicely with accordance to the following coping strategy (Yusoff, 2010).

- a. Accommodation focuses on strategies an individual uses to come to terms with stressful situations; for example, 'I try to be optimistic in spite of what has happened' or 'I look for something good in what is happening.' (Buch, 2007).
- b. Avoidance measures coping strategies which orient the person away from problem situations; for example, 'I admit to myself that I can't deal with it, and quit trying' or 'I try to forget the whole thing.' Self-punishment measures maladaptive coping strategies such as self-focused rumination and self-blame; for example, 'I blame myself' or 'I just think about my problem constantly.' (Buch, 2007).

- iv. **The Inventory of Parent and Peer Attachment (IPPA) revised version:** This inventory was developed by Armsden and Greenberg (1987). It is an instrument that measures an individual's attachment to three important figures which are the father, mother and peer; in particular how well these figures serve as psychological security. The Theoretical framework is based on the Attachment Theory which was created by Bowl and later expanded by others. The three dimensions assessed are degree of trust, quality of communication and extent of anger and alienation of the respondent (Armsden and Greenberg, 1989). The revised IPPA version consists of three parts which yield three attachment scores. Each part consists of 25 questions to access attachment with father, mother and peer. It is measured using a five-point Likert scale ranging from "almost never or never true" to "almost always or always true". The negative worded items are reverse-scored and summed with the scores with the other response values for each section. Higher score indicates higher attachment with that particular person figure. Some examples of the items for mother figure include "My mother respects my feelings." and "I feel my mother does a good job as a mother." For father figure, some examples of the items are "My father accepts me as I am" and "I like to get my father's point of view on things I'm concerned about." The items for peer include "My friends can tell when I'm upset about something" and "When we discuss things, my friends care about my point of view." The questionnaire internal reliabilities (Cronbach alpha) value calculated for Mother attachment is 0.87, Father attachment is 0.89 and Peer attachment is 0.92 (Armsden, G. C., & Greenberg, 1989)

3.5 Statistical Analysis:

Independent sample t-test and multivariate analysis with MANCOVA will be used to compare the linear combination of the dependent variables (depression, stress and anxiety) with the independent categorical variables while controlling the covariates (Brief COPE and IPPA scores) which reduces the error terms, Chi-square analyses for determining the association between categorical variables, and logistic regression model will be applied to indicate factors that significantly contribute towards stress, anxiety and depression. A multiple linear regression will be computed to analyze and "obtain independent effect" of independent variables on the dependent variables.

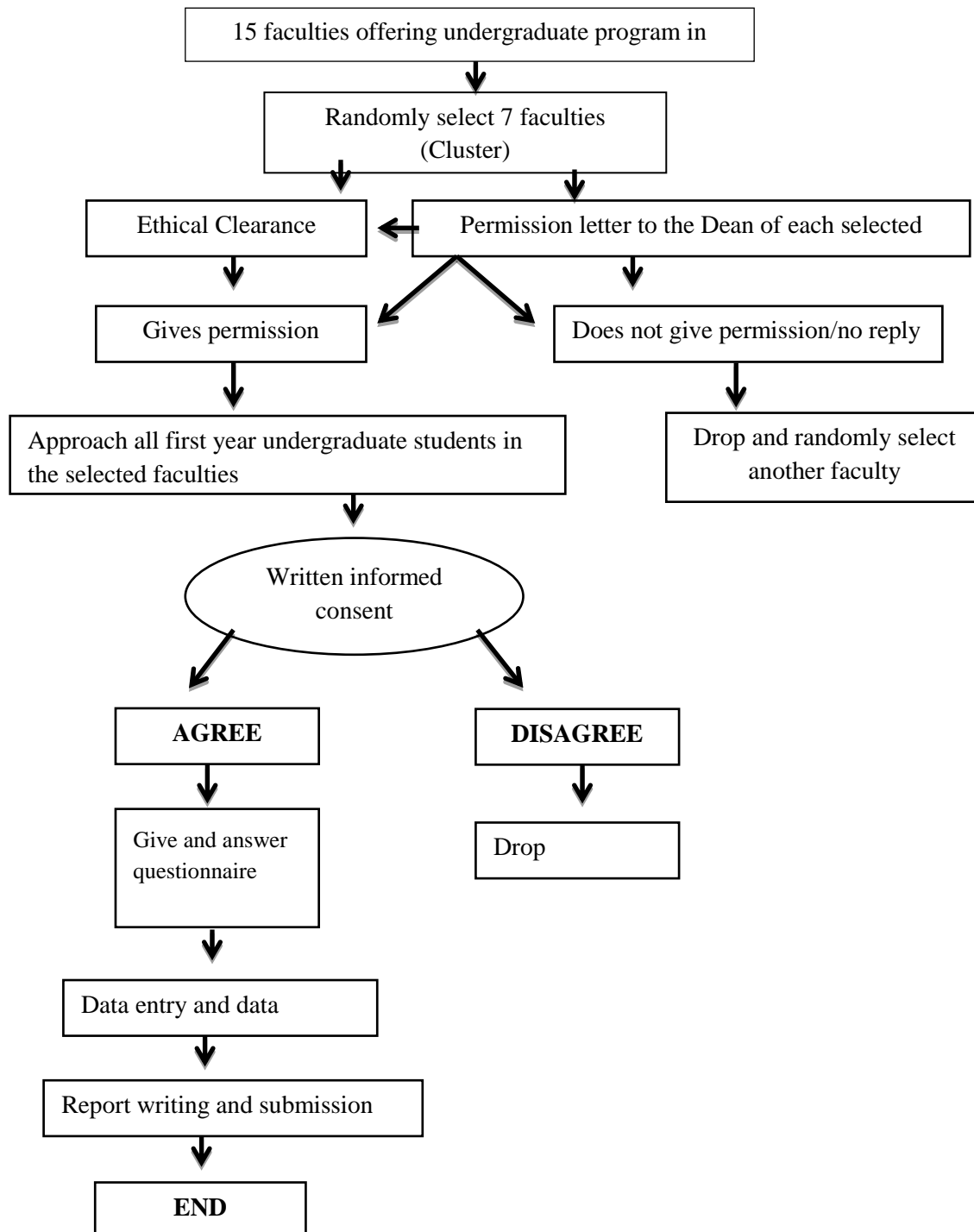


Figure 2: Flow chart of research activities

4.0 Expected outcomes and implication

Transition from pre-university life to university life needs a period of adjustment as it has many challenges and hardships. Through early detection of symptoms, respondents would be able to seek assistance from administrators or university counsellors who could help prevent and minimize the effect of mental, emotional and physical morbidity. The findings in this study would help in determining the prevalence of psychological problems (depression, stress and anxiety) among undergraduate students; know the factors associated with stress and coping mechanisms used by students to deal with it. The relationship between attachment of father, mother, peer and psychological problems will also be determined. It is expected that the findings of this study will aid in ascertaining the mental wellbeing student, which could be used in planning of intervention measures such as effective counselling and training sessions as early as possible during students' academic years.

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