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Coping with Depression, Anxiety, And Stress: A Cross-Sectional Study Among Malaysian Students in A Public University

Hassan Mohammed [1],Hayati K.S[2] and M.S. Salmiah [3]
[1]*Msc Student (Epidemiology And Biostatistics), Department Of Community Health, Faculty Of Medicine And Health Sciences, Universiti Putra Malaysia, Malaysia.*
[2]*Department Of Community Health, Faculty Of Medicine And Health Sciences, Universiti Putra Malaysia, Malaysia.*
[3]*Department Of Community Health, Faculty Of Medicine And Health Sciences, Universiti Putra Malaysia, Malaysia.*

Abstract: *Depression, anxiety, and stress start at an early developmental stage of anadolescent. They increase the vulnerability of students, increase thesusceptibilityto minor and sometimes severe mental illnesses. The aim of this study is to determine the prevalence of depression, anxiety, and stress, coping strategies and other factors among first-year undergraduates. A cross-sectional study was conducted among 675 students of Universiti Putra Malaysia (UPM) using cluster sampling method. A self-administered questionnaire was used consisting of socio-demographic, environmental and socio-economic questions, DASS-21 and Brief-COPE inventory. The Majority of respondents were female, aged 20-21, Malay and Muslim. The majority of respondent's parents had a diploma/university education, worked in government, father earned RM 2,500 or less and mothers had no monthly income. The prevalence of depression, anxiety, and stress was 32.1%, 64.6%,and 29.2% respectively. Factors associated with depression were gender, age, study major, parent's education and occupation. Anxiety was associated with study major and parent's education. Stress was associated with mother's income, parent's education and occupation. Mental illnesseshave implications on psychological morbidity and effect student's health, development, education attainment and quality of life. More attention is needed in developing more support services, intervention strategies, screening and creating more awareness.*

Keywords: *Anxiety, Depression, Stress, Coping, Undergraduates*

I. Introduction

Depression, anxiety, and stress are mental illnesses that increase the vulnerability of students and increases thesusceptibilityto minor and sometimes severe mental illnesses. They are the most common psychological illnesses among thestudentpopulation, and they consequently reduce mental health (1). Depression, anxiety, and stress can be reduced or worsen by the coping strategy adopted by an individual(2). Students have been reported to encounter a lot of stressors (3)which can lead to psychological problems, especially during their academic work. This is usually coupled with other factors of transition of developmental from a stage of early adolescent to a stage of adulthood(4).

Depression is the most common type of mental disorder,a chronic disease (5) it begins early in life (the mid to late 20s) (6) and is two times more prevalent among women than men. Studies have reported that emerging adults from the ages of 18 to 25 years have the highest prevalence of depression among any age group. Depression symptomsare common among students in higher education institutions, and it is believed the one out of seven students may suffer from this condition in their course of studies (7). Itremains unclear whether depression is the result of an unhealthy behaviour or depression causes negative behavioural patterns, such as smoking, alcohol use, physical inactivity and sleep disruption. What remains clear is that students canutilise several coping skills, that some will aid in refraining and manage stressors while others heighten the symptoms of psychological disorder.

Every individual is susceptible to experiencing anxiety at some point in their life (7) and, it's one of the various negative effects of stress and a variation of other emotional behaviour disorders(8). Anxiety is associated with poor academic performance in students; itis negatively correlated with alearning experience, a predictor low academic performance and interferes with quality life(9). Although depression and anxiety share similar symptoms, many have been shown to suffer from bothdisorders (10).

Stress occurs when an individual perceives a stressor as a threat to their well-being that exceeds their coping capacity and is labelled as being harmful (11). Stress threatens the mental, physical, emotional and spiritual wellbeing of an individual. Chronic Stress has been associated with mental health problems such as depression, Post Traumatic Stress Disorder (PTSD), pathologic ageing(12) and, also associated with the progress of 70% to 80% of all diseases and illness, particularly Coronary Heart Diseases (CHD) and cancer.

Coping is the method of managing demands that are considered as difficult or exceeding an individual's resources. This process consists of mental (cognitive) and behavioural (action-oriented) struggles (13). Coping strategies are skills that are behavioural and psychological, there purpose is to manage, withstand or lessen the burden of stress in situations or events that individuals might feel vulnerable or threatened in. Processes of coping have been studied under various labels, including self-regulation, behavioural, emotion, attention, and action regulation, ego-control, self-control, compliance, and volition (14). The response towards a stressor leads to the development of some approach to cope that can minimise or worsen the consequences of the condition (15). There are hundreds of strategies, and each can adopt to be utilised towards an individual stressor, but often various types of coping strategies are used collectively for effective defence against an observed or perceived threat (3).

Previous studies have stated that depression, anxiety, and stress are prevalent among undergraduate students in both private and public universities. More attention is needed to be placedon the undergraduate student's populace. This study is primarily focused on first-year undergraduate students, as it is a known fact that they represent the young andhighly educated population, and studies have shown that they undergo great pressures academically (16)(17)(9)(18).

The aim of this study is to determine the prevalence levels of depression, anxiety, and stress, coping strategies and other factors associated with first-year undergraduate students. This study is focused on first year university students as it has been reported that emotional disorders are greater among first year students compared to another level of study (19); It has been suggested that other students in different higher level of study can better cope with stressors and thereforecanpositively cope with certain stressors (5) which in turn promotes their psychological well-being.

II. Methods

2.1 Samples

This cross-sectional study was conductedamong undergraduate students of Universiti Putra Malaysia. About 860 students participated in the study but, theanalysiswas conducted on 675 students who provided complete data on the variables of interest of the study.

2.2 Procedure

Data was collected using cluster sampling method from November 2014 to March 2015. Before obtaining approval from the institutions Ethical Committee for Research. Faculties within the institution were randomly selected into clusters. Once selected all undergraduate students were approached to voluntary take part in the study.Students who consented and fit the inclusion criteria (undergraduate students in their first year)were recruited. Those who didn't give consent and were absent during data collection were excluded. Students were asked to complete aself-administered questionnaire and asked to return the completed questionnaire.

2.3 Materials

The questionnaire was developed in English and Bahasa Melayu; it containedthreesections;the first section was on socio-demographic information, age, gender, ethnicity, faculty, accommodation, and parent's level of education level, and parent's occupation, mothers, and fathers monthly income. Coping strategies were assessed using the Brief-Coping Orientation of Problem Experienced (COPE) inventoryscale developed byCarver (20). The Brief-COPE is a revised version of the original COPE Inventory (18) and it was used to assess a broad range of coping behaviours among adults with or without clinical conditions (18). The inventory consists of 28 items, and each item is rated on a 4-point Likert scale ranging from "I have not been doing this at all (score 1)" to "I have been doing this a lot (score 4)". Higher scores indicate greater coping by the respondents. The items are scored to produce 16 dimensions, each reflecting the use of a coping strategy: active coping, planning, acceptance, denial, self-distraction, use of substance, use of emotional support, use of instrumental support, behavioral disengagement, venting, positive reframing, humour, religion, and self-blame (18).TheBrief-COPE has good reliability coefficients (Cronbach's alpha)value that ranged from 0.50–0.90, with only three coping strategies falling below 0.60. While the Bahasa Malay version of the Brief COPE has a Cronbach's alpha valueof 0.83 (21).

Depression, anxiety, and stress were assessed using the21-item Depression, Anxiety and Stress Scale (DASS-21).It is a shorter version of the original 42-item DASS-42 questionnaire created by Lovibond (1995). The 21 items in the questionnaire are culture-free, making it feasible to adapt to any culture(22). The questionnaire contains seven items of the scales divided into subscales of 2 to 5 items with similar content. Items are rated on a 4-point severity/frequency scale, rating from "did not apply to me at all (0)", "Applied to me to some degree, or some of the time (1)", "applied to me to a considerable degree, or a good part of the time (2)", and "applied to me very much, or most of the time (3)". No items are reversely scored, and the final score for each state is multiplied by two. Each participant is classified into different categories of being normal, mild,

moderate, severe and extremely severe about stress, anxiety or depression scores. The minimum and maximum score of depression are 0 to 9 and, 28 and above respectively; the minimum and maximum score of anxiety are, 0 to 7 and, 34 and above respectively, while, the minimum and maximum score of stress are, 0 to 14 and, 34 and above respectively. The Bahasa Malaysia (BM) version of DASS-21 has good reliability coefficients (Cronbach's alpha) values of 0.84, 0.74 and 0.79 for depression, anxiety and stress subscales respectively (23).

2.4 Data Analysis

Data was analysed using IBM-SPSS (International Business Machine Statistical Package for the Social Science) software version 21. Data cleaning was carried out to detect missing values, coding errors or any illogical data values. Qualitative variables which included age group, gender, ethnicity, study major, accommodation status and, parents' monthly income, occupation and level of education were presented in numbers and frequency. Coping strategieswere presented as means and standard deviation (SD). While, the outcome variables depression, anxiety, and stress were presented as numbers and frequencies. Chi-square tests were used to test for association between depression, anxiety, and stress with age group, gender, ethnicity, study major, accommodation status, and, parents' monthly income, occupation and level of education. While,independent t-test and Mann-Whitney U test were used to test the difference in mean and median scores of coping strategies bydepression, anxiety, and stress.

III. Results

1.1 Prevalence of depression, anxiety and stress

Table 1: Prevalence of levels of depression, anxiety, and stress. Prevalence levels were further divided into two categories (presence or absence of an ailment). No depression, anxiety or stress werecategorised from "normal" to "mild" levels scores. While, some level of depression, anxiety, and stress were ranged from "moderate," "severe" to "extremely severe." The prevalence of somedepression, anxiety, and stress was reported as 32.1%, 64.6% and 29.2% respectively.

Table 1: Prevalence of levels of depression, anxiety, and stress

Subscale		**n (%)**
Depression	Normal	353 (52.3)
	Mild	105 (15.6)
	Moderate	133 (19.7)
	Severe	44 (6.5)
	Extremely severe	40 (5.9)
Anxiety	Normal	185 (27.4)
	Mild	55 (8.1)
	Moderate	182 (27.0)
	Severe	90 (13.3)
	Extremely severe	163 (24.1)
Stress	Normal	371 (55.0)
	Mild	107 (15.9)
	Moderate	109 (16.1)
	Severe	80 (11.9)
	Extremely severe	8(1.2)

3.2 Adaptive and maladaptive coping strategies of respondents

Table 2 shows the distribution of the mean scores of adaptive coping strategies ranked from highest to lowest mean scores. The top three active copingstrategies reported by respondentswere religious coping with a score (SD) of 6.02 (1.65); positive reframing, 5.75 (1.62); planning 5.66 (1.63); active coping, 5.62 (1.64).

Table 3 shows the distribution of the mean scores of maladaptive coping strategies ranked from highest to lowest score. The top 3 avoidant strategies reported by respondents were self-distraction with a score (SD) of 5.51 (1.55), venting, 4.75 (1.60) and self-blame, 4.62 (1.67). Students in this study used active (adaptive) coping strategies more than avoidant strategies.

3.4 Socio-demographic, environmental and socioeconomic characteristics of respondents

Out of 675 students, 28.9%, of the participants were males (n=195) and 71.1% were females (n=480).The participants were between the ages of 18 to 25 years. The majority were in the age group 20-21 years (55%), while others were in the age group of 18-19 years (35.1%) and 22 years and above (9.9%). Their mean age was 20.8 (SD ± 1.142). Distribution of ethnic groups wasas follows; 81.5% Malays, 11% Chinese, 2.5% Indians and 5% reported their ethnicity as "Others." With regards to religion, majority practised Islam (84.4%), followed by Christianity (7.9%), Buddhism (4.4%) and Hinduism (3.3%). Among those who participated in the study, the majority were in Faculty of Medicine and Health Sciences (30.2%), followed by

those in Education (23.3%), Agriculture (20.1%), Environmental (15.9%) and Architecture (10.5%). Almost all respondents resided in school dormitories (99.1%) and only a few resided with their parents (0.9%).

3.5 Socio-economic characteristics of respondent's parents

With regards to parent's education level, 48.1% had Diploma or University education, 40.9% had Secondary school education, and 11% had no education or primary school level of education. For parent's occupation, 26.6% worked in Government sector, 23.8% worked in private sector, and 19.1 % stated their occupation as "others, 15.4% worked in businesses, 13.7 were retired, and 1% were unemployed. About 61.3% indicated that their father earned a monthly income less than RM2500 while, 38.7% indicated their father earned a monthly income of more than RM2500. Whereas, 59.4% of respondents indicated their mother earned no monthly income while 40.6% indicated their mother earned a monthly income.

Table 2: Adaptive and maladaptive coping strategies ranked by mean score (n=675)

Rank	Adaptive coping strategies	Mean (SD)	95% CI
1	**Religion**	6.02 (1.65)	5.89 - 6.14
	I've been trying to find comfort in my religion or spiritual belief I've been praying or meditating		
2	**Positive reframing**	5.76 (1.62)	5.64 - 5.88
	I've been trying to see it in a different light, to make it seem more positive. I've been looking for something good in what is happening.		
3	**Planning**	5.66 (1.64	5.54 - 5.79
	I've been trying to come up with a strategy about what to do. I've been thinking hard about what steps to take		
4	**Active Coping**	5.62 (1.49)	5.51 - 5.73
	I've been concentrating my efforts on doing something about the situation I'm in. I've been taking action to try to make the situation better.		
5	**Acceptance**	5.60 (1.47)	5.49 - 5.72
	I've been accepting the reality of the fact that it has happened I've been learning to live with it.		
6	**Instrumental Support**	5.51 (1.61)	5.39 - 5.63
	I've been getting help & advice from other people. I've been trying to get advice or help from other people about what to do		
7	**Emotional Support**	5.29 (1.64)	5.16 - 5.41
	I've been getting emotional support from others I've been getting comfort & understanding from someone.		
8	**Humour**	4.13 (1.64)	4.01 - 4.25
	I've been making jokes about it I've been making fun of the situation		
Rank	**Maladaptive Coping Strategy**	**Mean (SD)**	**95% CI**
1	**Self-Distraction**	5.51 (1.55)	5.39 - 5.63
	I've been turning to work or other activities to take my mind off things. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping		
2	**Venting**	4.75 (1.60)	4.63 - 4.87
	I've been saying things to let my unpleasant feelings escape. I've been expressing my negative feeling.		
3	**Self-Blame**	4.62 (1.67)	4.49 - 4.74
	I've been criticising myself. I've been blaming myself for things that happened.		
4	**Denial**	3.65 (1.46)	3.54 - 3.76
	I've been saying to myself "this isn't real." I've been refusing to believe that it happened.		
5	**Behavioral Disengagement**	3.41 (1.57)	3.29 - 3.53

	I've been giving up trying to deal with it. I've been giving up to attempt to cope.		
6	**Substance Use**	2.52 (1.22)	2.43 - 2.62
	I've been using alcohol or other drugs to make myself feel better I've been using alcohol or other drugs to help me get through it		

Minimum score was 2, and maximum score was 8 Mean score interpretation was as below
2.00= I never do this,
4.01 to 6.00 = Usually I do this
6.01 to 8.00 = I always do this

3.6 Association between socio-demographic, environmental and socio-economic characteristics of respondent's with depression.

Table 3 shows the association between the socio-demographic, environmental and socio-economic factors of respondents with depression. The findings reveal gender was significantly associated with depression. Depression was significantly higher among males (39%) compared to females (29.4%), (χ^2= 5.86, p=0.02, df =1). Age group was shown to be significantly associated with depression (χ^2= 6.55, p=0.038, df =2). Depression was higher among respondents in the ages of 22 years and above (41.8%), followed 18 to 20 years (35.4%) and those in the ages 20 to 21 years (28.3%). Depression was found to be associated with ethnicity and religion. Faculty of thestudy was shown to be significantly associated with depression (χ^2= 12.336, p=0.015, df =4). The prevalence of depression was highest among respondents studying at Faculty of Architecture (38%), followed by Education (36.9 %), Agriculture (35.3%), Medicine and Health Sciences (31.4%) and Environmental (18.7%). No significant association was shown between depression and accommodation status of respondents.

The results from Table 3 indicateasignificant association between parents education and depression (χ^2= 10.482, p=0.05, df=2). Higher levels of depression were reported among students who indicated their parents had no education or primary school (48.6 %), followed by secondary school education (30.8%) and diploma or university degree education (29.5%). Furthermore, a significant association was shown between parents' occupation and depression (χ^2= 14.125, p=0.015, df =5). Higher level depression was shown among students whose parents were unemployed (70%), followed by 'others' (37.8%), retired (35.5%), business (35%), government sector (29.6%) and private (24.5%). Depression was not found to be associated with father's and mother's income.

3.7 Association between socio-demographic, environmental and socio-economic characteristics of respondent's with anxiety

Table 4 shows the association between socio-demographic, environmental and socio-economic factors of respondents with anxiety. Anxiety was shown to be significantly associated with thefaculty of study (χ^2= 11.272, p=0.024, df =4). Anxiety levels were highest among respondents studying in Faculty of Education (73.2%), followed by Architecture (67.6%), Agriculture (66.2%), Environmental (61.7%) and Medicine and Health Sciences (56.9%). No significant association was shown between anxiety and gender, age, ethnicity, religion and accommodation.

The findings also indicate parents education was significantly associated with anxiety (χ^2= 7.283, p=0.026, df =2). Higher levels of anxiety were reported among students who indicated their parents had no education or primary school (78.4%), followed by secondary school education (63.8%) and diploma or university degree education (61.8%). In contrast, no association was found between anxiety and parent's occupation, father and mother's monthly income

3.8 Association between socio-demographic, environmental and socio-economic characteristics of respondent's and stress

Table 5 shows the association between socio-demographic, environmental and socio-economic factors and stress. No association was shown between gender, age, faculty of study, ethnicity, religion and accommodation status of respondents and stress.

Further findings revealed a significant association between stress and parents education (χ^2= 8.285, p=0. 016, df=2). Higher levels of stress were revealed among those who indicated their parents had no education or primary school (43.2%), followed by secondary school education (28.6%) and diploma or university degree education (26.5%). Furthermore, a significant association was shown between parents' occupation and stress (χ^2= 14.835, p=0. 011, DF =5). Higher level stress was shown to students whose parents were unemployed (80%), followed by those who started to work in "other" type of occupations (31.5%), those retired (31.2%), private sector (29.4%), government sector (25.7%) and business (25.2%).Stress was shown to be not associated with father's monthly income. However, stress was found to be associated with mother income (χ^2 = 7.579, p=0.006, df =5) wherestudents whose mothers do not earn a monthly income showed higher stress levels (33.2%) compared to those whose mother earned a monthly income.

Table 3: Association between socio-demographic, environmental and socio-economic factors of depression (n=675)

Factors	**No depression**	**□² (df)**	**p-value**
	n (%)		
Gender			
Male	119 (61.0)	5.86 (1)	**0.02***
Female	339 (70.6)		
Age			
18 - 19	153 (64.6)	6.55 (2)	**0.038***
20 - 21	266 (71.7)		
22 >	39 (58.2)		
Ethnicity			
Malay	379 (68.9)	1.71 (3)	0.64
Chinese	47 (63.5)		
Indian	10 (58.8)		
Others	22 (64.7)		
Religion			
Islam	393 (68.9)	2.1 (3)	0.55
Christianity	18 (60.0)		
Buddha	33 (62.3)		
Hindu	14 (63.6)		
Faculty			
Agriculture	88 (64.7)	12.34 (4)	**0.015***
Architecture	44 (62.0)		
Medicine & Health Sciences	140 (68.6)		
Environmental	87 (81.3)		
Education	99 (63.1)		
Accommodation			
Staying in dormitory	455 (68.0)	0.88 (1)	0.392
Staying with parents	3 (50.0)		
Parents' education			
No education / Primary	36 (48.6)	10.482 (2)	**0.005***
Secondary school	85 (30.8)		
Diploma / University	96 (29.5)		
Parents occupation			
Unemployed	7 (70.0)	14.125 (5)	**0.015***
Government	53 (29.6)		
Private	40 (24.5)		
Business	36 (35.0)		
Retired	33 (35.5)		
Others	48 (37.8)		
Father's monthly income (RM)			
≤ 2500	133 (32.1)	0.001 (1)	0.987
> 2500	84 (32.2)		
Mother's monthly income			
No income	136 (33.9)	1.414 (1)	0.234
Income	81 (29.6)		

Note (*****) significant level at <0.05

Table 4: Association between socio-demographic, environmental and socio-economic factors and anxiety (n=675)

Variables	**All participants**	**Anxiety**	**No anxiety**	**□² (df)**	**p-value**
	n (%)	**n (%)**	**n (%)**		
Gender					
Male	195 (28.9)	115 (59.0)	80 (41.0)	3.581 (1)	**0.05***
Female	480 (71.1)	320 (66.7)	160 (33.3)		
Age					

18 - 19	237 (35.1)	153 (64.6)	84 (35.4)	0.632 (2)	0.729
20 - 21	371 (55.0)	236 (63.6)	135(36.4)		
22 >	67 (9.9)	46 (68.7)	21 (31.3)		
Ethnicity					
Malay	550 (81.5)	360 (65.5)	190 (34.5)	2.540 (3)	0.468
Chinese	74 (11.0)	42 (56.8)	32 (43.2)		
Indian	17 (2.5)	12 (70.6)	5 (29.4)		
Others	34 (5.0)	21 (61.8)	13 (38.2)		
Religion					
Islam	570 (84.4)	372 (65.3)	198 (34.7)	1.252 (3)	0.741
Christianity	53 (7.9)	18 (60.0)	12 (40.0)		
Buddha	30 (4.4)	31 (58.5)	22 (41.5)		
Hindu	22 (3.3)	14 (63.6)	8 (36.4)		
Faculty					
Agriculture	136 (20.1)	90 (66.2)	46 (33.8)	11.272 (4)	**0.024 ***
Architecture	71 (10.5)	48 (67.6)	23 (32.4)		
Medicine & Health Science	204 (30.2)	116 (56.9)	88 (43.1)		
Environmental	107 (15.9)	66 (61.7)	41 (38.3)		
Education	157 (23.3)	115 (73.2)	42 (26.8)		
Accommodation					
Staying in dormitory	669 (99.1)	431 (64.4)	238 (35.6)	0.013 (1)	1.00
Staying with parents	6.0 (0.9)	4 (66.7)	2 (33.8)		
Parents' education					
No education / Primary	74 (11.0)	58 (78.4)	16 (21.6)	7.283 (2)	**0.026 ***
Secondary school	276 (40.9)	176 (63.8)	100 (36.2)		
Diploma / University	325 (48.1)	201 (61.8)	124 (38.2)		
Parents occupation					
Unemployed	10 (1.0)	9 (90.0)	1 (10.0)	3.308 (5)	0.653
Government	179 (26.6)	115 (64.2)	64 (35.8)		
Private	163 (23.8)	102 (62.6)	61 (37.4)		
Business	103 (15.4)	66 (64.1)	37 (35.9)		
Retired	93 (13.7)	59 (63.4)	34 (36.6)		
Others	127 (19.1)	84 (66.1)	43 (33.9)		
Father's monthly income (RM)					
≤ 2500	414 (61.3)	272 (65.7)	142 (34.3)	0.737 (1)	0.391
> 2500	261 (38.7)	163 (62.5)	98 (37.5)		
Mother's monthly income					
No income	401 (59.4)	260 (64.8)	141 (35.2)	0.067 (1)	0.796
Income	274 (40.6)	175 (63.9)	99 (36.1)		

Note (*****) significant level at <0.05

Table 5: Association between socio-demographic, environmental and socio-economic factors and stress (n=675)

Variables	**All participants**	**Stress**	**No stress**	**□² (df)**	**p-value**
	n (%)	**n (%)**			
Gender					
Male	195 (28.9)	141 (71.6)	0.064 (1)		0.80
Female	480 (71.1)	341 (70.6)			
Age					
18 - 19	237 (35.1)	162 (68.4)	0.632 (2)		0.729
20 - 21	371 (55.0)	269 (72.5)			
22 >	67 (9.9)	47 (70.1)			
Faculty					

Agriculture	136 (20.1)	91 (66.9)	3.975 (4)		0.409
Architecture	71 (10.5)	47 (66.2)			
Medicine & Health Science	204 (30.2)	149 (73.0)			
Environmental	107 (15.9)	83 (77.6)			
Education	157 (23.3)	108 (68.8)			
Ethnicity					
Malay	550 (81.5)	162 (70.5)	0.187 (3)		0.983
Chinese	74 (11.0)	54 (73.0)			
Indian	17 (2.5)	12 (70.6)			
Others	34 (5.0)	24 (70.6)			
Religion					
Islam	570 (84.4)	404 (70.9)	0.193 (3)		0.975
Christianity	53 (7.9)	22 (73.3)			
Buddha	30 (4.4)	37 (69.8)			
Hindu	22 (3.3)	15 (68.2)			
Accommodation					
Staying in dormitory	669 (99.1)	474 (70.9)	0.050 (1)		1.00
Staying with parents	6.0 (0.9)	4 (66.7)			
Parents' education					
No education / Primary	74 (11.0)	32 (43.2)	42 (56.8)	8.285 (2)	**0.016***
Secondary school	276 (40.9)	79 (28.6)	197 (71.4)		
Diploma / University	325 (48.1)	86 (26.5)	239 (73.5)		
Parents occupation					
Unemployed	10 (1.0)	8 (80.0)	2 (20.0)	14.835 (5)	**0.011***
Government	179 (26.6)	46 (25.7)	133 (74.3)		
Private	163 (23.8)	48 (29.4)	115 (70.6)		
Business	103 (15.4)	26 (25.2)	77 (74.8)		
Retired	93 (13.7)	29 (31.2)	64 (68.8)		
Others	127 (19.1)	40 (31.5)	87 (18.2)		
Father's monthly income (RM)					
≤ 2500	414 (61.3)	123 (29.7)	291 (70.3)	0.143 (1)	0.706
> 2500	261 (38.7)	74 (28.4)	187 (71.6)		
Mother's monthly income					
No income	401 (59.4)	133 (33.2)	268 (66.8)	7.579 (1)	**0.006***
Income	274 (40.6)	64 (23.4)	210 (76.6)		

Note (*****) significant level at <0.05

2.5.8 Association Between Coping Strategies And Depression

Table 6 shows the association between adaptive (positive) coping, maladaptive (negative) coping and depression. The findings showed among adaptive coping strategies, a significant association was shown between depression and religion (U = 44,600, z = - 2.207, p = 0.027, r = -.09). Data on humour was transformed using log10 therefore, for the purpose of interpretation of result the data was reversed back to normal. No significant association was shown between active coping, emotional support, acceptance, instrumental support, positive reframing, planning, and depression.

Comparatively, among maladaptive coping strategies a significant association was shown between depression and venting (M = 4.96, SD = 1.52, p= 0.005), humour (M =3.69, SD =1.513, p= 0.004), denial (U = 59,498, z = 4.26, p= 0.001, r = 0.16), substance abuse (U = 58, 724, z = 5.57, p= 0.001, r = 0.21) and behavioral disengagement (U = 61,657, z = 5.34, p= 0.001, r = 0.205).While, self-distraction and self-blame were not significantly associated with depression.

Table 6: Association between coping strategies and depression (n=675)

Variable	**Mean±SD**		**Median (IQR)**		**Test**	**95% (CI)**	***p* value**
	Depression	**No Depression**	**Depression**	**No Depression**			
Adaptive							
Active Coping	5.54 ± 1.51	5.66 ± 1.48			[a]0.872	-0.12 – 0.35	0.791
Emotional Support	5.16 ± 1.61	5.35 ± 1.65			[a]1.413	-0.74 – 0.46	0.372
Planning	5.58 ± 1.51	5.71 ± 1.70			[a]0.957	-0.14 – 0.39	0.058
Positive	5.67 ± 1.56	5.81 ± 1.65			[a]1.02	-0.13 –	0.579

reframing					9	0.40	
Acceptance	5.63 ± 1.37	5.59 ± 1.51			[a]-0.328	-0.28 – 0.20	0.223
Instrumental Support	5.35 ± 1.62	5.59 ± 1.59			[a]1.830	-0.18 – 0.50	0.697
Religion			6 (2)	6 (3)	[b]-2.207	-	**0.027***
Maladaptive							
Self-Distraction	5.43 ± 1.56	5.55 ± 1.55			[a]0.916	- 0.13 – 0.37	0.984
Venting	4.96 ± 1.52	4.65 ± 1.62			[a]-2.382	- 0.57 – -0.06	**0.005***
Humour	4.07 ± 1.68	3.69 ± 1.51			[a]-2.930	- 0.85 – -0.97	**0.004***
Denial			4 (2)	3 (2)	[b]-4.225	-	**0.001***
Substance Use			2 (2)	2 (0)	[b]-5.565	-	**0.001***
Behavioral Disengagement			4 (2)	3 (2)	[b]-5.339	-	**0.001***
Self-blame			4 (2)	4 (2)	[b]-0.622	-	0.534

Note (*****) significant level at <0.05, a= Independent t-test, b = Mann-Whitney U test

3.9 Association between coping strategies and anxiety

Table 7 shows the association between adaptive (positive) and maladaptive (negative) coping strategies and anxiety. Among the adaptive coping strategies, no significant association was shown between positive coping (active coping, emotional support, acceptance, instrumental support, positive reframing, planning, religion) and anxiety.Data on humour was transformed using log10, so for the purpose of interpretation of theresult, the data was reversed back to normal.

Amongst the maladaptive coping strategies, a significant association was shown between humour (*M* = 3.65, *SD* = 1.488, p= 0.026), substance abuse (U = 55, 632, z= 2.064, p= 0.039, r = 0.08), behavioral disengagement (U = 59,949, z= 3.374, p= 0.001, r = 0.001) and anxiety. While, self-distraction, venting, denial and self-blame were not shown to have a significant association with anxiety.

Table 7: Association between coping strategies and anxiety (n=675)

Variable	**Mean±SD**		**Median (IQR)**		**t-test**	**95% CI**	***p*-value**
	Anxiety	**No Anxiety**	**Anxiety**	**No Anxiety**			
Adaptive							
Active Coping	5.64 ± 1.406	5.59 ± 1.634			[a]0.078	-2.582 – 2.795	0.938
Emotional Support	5.36 ± 1.622	5.15 ± 1.658			[a]-1.555	-0.463 – 0.054	0.120
Positive reframing	5.81± 1.552	5.68± 1.738			[a]-0.572	-3.823 – 2.100	0.568
Planning	5.68± 1.568	5.64± 1.761			[a]-0.170	-2.619 – 3.114	0.248
Acceptance	5.46± 1.503	5.68± 1.443			[a]-1.870	-0.452 – 0.011	0.460
Instrumental Support	5.54 ± 1.598	5.45 ± 1.620			[a]-0.767	-0.353 – 0.155	0.640
Religion			6 (3)	6 (2)	[b]-1.117	-	0.642
Maladaptive							
Self-Distraction	5.34 ± 1.611	5.60 ± 1.514			[a]-2.070	-0.503 – 0.014	0.264
Venting	4.83 ± 1.579	4.59 ± 1.618			[a]-1.877	-0.492 – 0.011	0.061
Humour	3.90 ± 1.490	3.65 ± 1.520			[a]-2.060	-0.060 – -0.997	**0.026***
Denial			4 (3)	3 (2)	[b]-1.767	-	0.077
Substance Use			2 (0)	2 (0)	[b]-2.064	-	**0.039***
Behavioral Disengagement			4 (2)	2 (2)	[b]-3.374	-	**0.001***
Self-Blame			4(2)	4 (3)	[b]-1.000	-	0.317

Note (*****) significant level at <0.05, a= Independent t-test, b = Mann-Whitney U test

3.10 Association between coping strategies and stress

Table 8 shows the association between adaptive (positive) coping, maladaptive (negative) coping strategies and stress. Among adaptive coping strategies, instrumental support was significantly associated with stress (U = 52, 304, z= 2.319, p= 0.020, r = 0.09). While, no significant association was found between active coping, emotional support, acceptance, positive reframing, planning, religion and perceived stress.Data on humour was transformed using log10, so for the purpose of interpretation of theresult, the data was reversed back to normal.

Amongst maladaptive coping strategies venting, (*M* = 5.21, *SD* = 1.513, p= 0.001), humour (*M* = 4.37, *SD* = 1.53, p= 0.002), denial (U = 53, 878, z= 3.029, p= 0.002, r = 0.12),substance abuse (U = 50, 681, z= 2.278, p= 0.023, r = 0.09) and behavioral disengagement (U = 53, 812, z= 3.085, p= 0.020, r = 0.002), were significantly associated with stress. While, self-distraction, self-blame were not significantly associated with stress.

Table 8: Association between coping strategies and stress (n=675)

Variable	Mean±SD		Median (IQR)		T-test	95% CI	*p*-value
	Stress	No Stress	Stress	No Stress			
Adaptive							
Active Coping	5.67 ± 1.39	5.60 ± 1.53			[a]0.556	-0.30 – 2.45	0.831
Emotional Support	5.44 ± 1.53	5.22 ± 1.68			[a]-1.589	-0.49 – 0.52	0.110
Positive reframing	5.83 ± 1.51	5.73 ± 1.67			[a]-0.372	-3.51 – 2.39	0.710
Planning	5.71 ± 1.48	5.65 ± 1.70			[a]-0.015	-2.88 – 2.92	0.988
Acceptance	5.57± 1.51	5.49± 1.36			[a]-0.919	-0.36 – -0.13	0.098
Instrumental Support	5.54 ± 1.46	5.41 ± 1.65			[a]-2.467	-0.60 – -0.07	**0.020***
Religion			6 (2)	6 (3)	[b]-0.367	-	0.713
Maladaptive							
Self-Distraction	5.62 ± 1.48	5.46 ± 1.58			[a]0.991	-0.42 – 1.39	0.322
Venting	5.12 ± 1.53	4.59 ± 1.60			[a]1.990	-0.79 – 0.27	**0.001***
Humour	4.10 ± 1.44	3.70 ± 1.52			[b]-2.967	-0.85 – -0.97	**0.001***
Denial			4 (2)	3 (2)	[b]-3.029	-	**0.002***
Substance Use			2 (0)	2 (0)	[b]-2.278	-	**0.023***
Behavioral Disengagement			4 (3)	3 (2)	[b]-3.085	-	**0.002***
Self-Blame			4(2)	4 (3)	[b]-1.579	-	0.114

Note (*****) significant level at <0.05, a= Independent t-test, b = Mann-Whitney U test

IV. Discussion

The prevalence of depression, anxiety and stress among the group studied was found to be 32.1%, 64.6% and 29.2% respectively. This finding was higher when compared to other studies using similar instruments among undergraduate students in Malaysian public and private universities (17,18,24). Additionally, the prevalence of depression, anxiety, and stress was shown to be higher compared to other studies conducted amongst first-year undergraduate students in Hong Kong (25) and Turkey (26). These variations in findings compared to the present study may be as a result of the difference in theperiod of data collection or population. Furthermore, it has been reported that students in thefirst semester of year one are confronted with a number challenges which include, adapting to a new school environment and academic workload. This is important as data was collected some weeks before exam study week and therefore students might be under duress trying to finish classes, assignments and prepare for examinations. Even though DASS-21 questionnaire is not a diagnostic instrument, the levels of depression, anxiety, and stress found in this study highlight the need for assessment by health care professionals and related authorities of the institution.

This study a significant association was shown between gender and depressive symptoms. Where male was found to be more depressed when compared to female first undergraduates.It is noteworthy to mention that findings have shown that among thecommunity and institutional based studies males were shown to be more depressed compared to females. The WHO have stated that mental health can be determined by multiple social factors. Thus, this result may be due to different factors encountered by each gender.

Furthermore, the prevalence of depression was higher among respondents who were in the age group of 22 years and above followed by, 18 to 19 years and 20 to 21 years.Similarly, in a study which was not limited to first-year undergraduates supports the findings which showed older students demonstrating higher levels of depression compared to younger students(18). These findingsare further supported by a similar study conducted among undergraduate students in China (27). On the contrary, other studies have reported depression was higher among students of younger age groups compared to older age groups (26). While other studies in Malaysia found no association between age groups and depression (28).

The level of depression was higher among students whose parents had primary school education or less, followed by secondary school and tertiary education. From these findings, it could be understood that the higher the parental level of education the lower the level of depression, and a potential explanation for this observed trend is that parents who have higher levels of education can pay attention to the student's psychological condition and actively communicate with the students better than parents with lower levels of education (no education or primary school).This finding was consistent with a previous study conducted in China whichthat revealed that that lower parental education was associated with depression were lower education levels for both mother and father was significantly associated with symptoms of depression (27). On the contrary, in similar Malaysian study, it was stated that there is no significant association between parents' educational level and depression (28).

In this study, depressive symptoms were shown to be significantly associated with coping strategies. Findings revealed students used avoidant coping strategies namely, venting, humour, denial, substance abuse

and behavioural disengagement. While, only religion was the only active coping strategy found to be significantly associated with depressive symptoms. These findingsare supported by a study conducted in the USA among adolescences where, substance abuse, denial, and behavioural disengagement were shown to be positively correlated with depression(29). Male respondents were observed to use substances more as a means of coping compared to females. It is presumed that male students were greatly more mobile and independent compared to their female counterparts and therefore, allowed them to have more access to substances and opportunities for them to use them.

According to the result of this study, thefacultywas shown to be significantly associated with anxiety. Whereby, first year undergraduate in the Faculty of Medicine and Health Sciencesreported lower anxiety levels compared to other faculties. This finding was line with a study among Turkish undergraduates which revealed that anxiety was higher among students who were not studying Medicine or any other science major (26). On the contrary, other studiesamong Malaysian undergraduates showed no significant association between faculty of study and anxiety levels(16,22, 18).

Furthermore in this study gender was shown to besignificantly associated with anxiety, where female respondents showed more anxiety symptoms compared to males. It is proposed that female students with regards to academics are more competitive, tend to be concerned about working harder, are more concerned about their performance and exaggerate their sadness. With regards to mental health, female adolescents are reported to develop mental health problems more than males. Mental health problems in females are associated with lack of self-confidence attributed to changes during puberty, concern with body image and physical attractiveness, and interpersonal relationships (30).This finding is consistent with a previous study by Saravanan and Wilks(32) which, revealed that genderwas significantly associated with anxiety, where it was revealed that females showedhigher anxiety symptoms compared to males.A similar study among Turkish undergraduate students reported anxiety levels were significantly higher among females compared to males(33). On the contrary, findings of this study were not inline with studies among Malaysian undergraduates wheregender was not shown to be significantly associated with anxiety(24, 28,18).

In this research, a parent's level of education was shown to be significantly associated withstress. The level of anxiety was highest among students whose parents had primary school education or less, followed by secondary school and tertiary education. It is postulated that academic achievements of parents reduced the level of anxiety and finding indicated that the higher the academic achievement of parent's the lesser symptoms of anxiety of students. A possible explanation is when a parent has a tertiary education they would able to be better at comforting and supporting the students as they may have gone through similar experiences, and lessen their children's anxiety levels. Looking at previous studies; a similar study found mother's educational level was significantly associated with levels of anxiety. Students whose mothers had tertiary education showed lowerlevels of anxiety compared to other groups. A possible explanation was, an educated mother was better in comforting students during academic work as they might have gone through similar experiences.Nonetheless, father's educational level was notshown to be significantly associated with anxiety (28).

Also, in this study a significant association was found between anxiety and coping strategies, which in turn suggested that the way students cope with anxiety might affect their perception towards symptoms of anxiety. Findings indicate respondents significantly use avoidant strategies namely, humour, substance abuse, and behavioural disengagement.

Findings of this study revealed a significant association between parents education and stress. The symptoms of stress were higheramong students whose parents were unemployed when compared to those whose parents were employed. Bayram &Bilgel(26) also found family income was significantly associatedwith stress. Whereby when a student from a family with little or no income is susceptible to higher levels of stress compared to other students of different family income status. These findingsserve to add to the body of evidence which suggests that student's frompoorfamilies have higher stress symptoms compared to those from wealthier families.

In this study, results showed stress was significantly higher among students whose parents were unemployed compared those whose parents were employed. Although this study is among a few that looks at the association between stress and parents' occupation which affects a family's financial strength, other studies have reported that students that come from poorfamilies have higher stress symptoms than those from wealthier families (26).

Furthermore, it was revealed that stress was significantly associated with a mother's monthly earnings. Whereby students whose mother have monthly earnings had lower levels of stress compared to students whose mother do not earn anymonthly income. Although the findings of this study were among a few studies that looked at the association between mother's income and stress, it is presumed that mother's income significantly contributes towards the socioeconomic status as this would help in fulfilling the family financial needs while, a family a low socioeconomic status had an increased vulnerability in developing symptoms of stress. Similarly, a study by Shamsuddin et al.,(18), found a significant association between stress and family income groups. Findings reported that students from lower family income showed significantly higher levels of stress compared

to those from middle, high income and other/unknown income groups. In another study among Malaysian undergraduates however not completely in line with the present study found that lower income doubled a student chances of demonstrating stress symptomscompared to students that came from families with higher income(17). On the contrary, other studies among Malaysian undergraduates reported no significant association between family income and stress(34)(28).

In this study, a significant relationship was shown between and coping strategies, this in turns suggest that the way students cope with stress might affect their perception towards symptoms of stress. Results showed students used significantly used avoidant coping strategies namely, venting, humour, denial, substance abuse and behavioural disengagement.

These findings are by a similar study conducted among undergraduates in Saudi Arabia. It was reported that denial and behavioural disengagement as significantly associated with stress(35). On the contrary, a previous study conducted among Malaysian undergraduates reported students used more active coping strategies rather than avoidant coping strategies (36). From these findings, a potential explanation for this could be that the respondents experienced more avoidant coping or were more honest in their reporting without considering either if their responses were socially undesirable. For instance, if the study was a qualitative study focus group discussion, some studies have revealed that students tend to not report undesirable coping strategies and hesitate to discuss culturally unacceptable behaviours especially among their peers and focus group leaders.

V. Conclusion

In conclusion, the prevalence of anxiety was found to be higher than either depression or stress. The high rates of depression, anxiety, and stress among university students have major implications on psychological morbidity which in turn will have adverse effects on student's health, development, education attainment and quality of life. Consequently, this would deteriorate the student's general well-being and consequently affect individual's families and the society as a whole. Students used more active coping strategies compared to avoidant coping strategies. However, it cannot be ignored that some engaged in avoidant coping strategies that are considered risk factors for adverse responses to depression, anxiety, and stress.

Limitations of this study include the use of self-report means for assessing symptoms of depression, anxiety, and stress. Which may lead to variations in the outcome that is attributed to inconsistencies in result comparability because of different social factors present in the study. Furthermore, the findings of this study were not fully representative of the entire undergraduates at different study levels. There is a tendency of reporting bias as a lot of information gathered depended on the truthfulness of respondents responses. Furthermore, data was collected using DASS-21 and Brief COPE questionnaires which both rely on self-reporting measures and as a result, there maybe theoccurrence of recall bias, which could be due to forgetfulness. Additionally, the low response rate of the study may affect the external validity of findings. While this study did not assess temporal relationship which could have helped in instituting intervention strategies.

Taking a look at these study findings, preliminary may suggest that students studying in the Faculty of Medicine and Health Sciences may have adapted better to the structure of the course and have developed bettercoping strategies to deal with expectations. More so, students from other faculties may have a less academic burden but, may not be equipped with certain skills to enable them to cope with certain symptoms of depression, anxiety, and stress. An in-depth look at this dimension may serve to shed light on how to help students studying in other faculties to cope better.

Although it is difficult to generalise these results because of methodological issues, limit interpretation and different assessment instruments, depression, anxiety, and stress remain prevalent in the student population. It is, therefore, paramount that a well-balanced academic environment is maintained for all students regardless of their study major also, minor signs should not be neglected, and attention is given by health care professionals and administrative staff of universities to develop support services. More attention is required to foster needs and challenges can aid in averting short and long harmful effects of depression, anxiety, and stress on health and academic performance. Intervention strategies and screening exercises during orientation can be an effective strategy for early prevention of mental health by creating awareness and also, improve the knowledge and attitude, and their coping strategies towards depression, anxiety, and stress. This study emphasises the need for further study, preferably a longitudinal follow-up. Furthermore, results of this study should be interpreted with caution because of the low response rate.

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