Research Article

SOURCE OF STRESSORS AND EMOTIONAL DISTURBANCES AMONG UNDERGRADUATE SCIENCE STUDENTS IN MALAYSIA

*Ali Sabri Radeef[1], Ghasak Ghazi Faisal[2], Syed Masroor Ali[1], Maung Ko Hajee Mohamed Ismail[1]

[1]Department of Psychiatry, Kulliyyah of Medicine, International Islamic University Malaysia
[2]Department of Basic Medical Science, Kulliyyah of Dentistry, International Islamic University Malaysia

*Corresponding author email: alisabri1973@yahoo.com

ABSTRACT

Introduction: Higher education is considered as a stressful period in students' life which they have to cope with since they are facing a variety of demands such as living away from their families, a heavily loaded curriculum, and inefficiency in both mentor- mentee and health education programs. This will make them more vulnerable to emotional disturbances such as stress, anxiety and depression. **Methodology:** A total of 194 undergraduate students from Kulliyyah (Faculty) of Science, International Islamic University Malaysia participated in questionnaire-based study using the Depression Anxiety, Stress Scale (DASS-21) to assess the severity of emotional disturbances **Results:** The overall prevalence of depression, anxiety and stress was 64.4%, 84.5% and 56.7% respectively. Regarding the severity of the symptoms, it was found that 13.9%, 51.5 % and 12.9% of the students have clinically significant depression, anxiety and stress respectively. Young students aged 21 years and below had a statistically significant association with depression, anxiety and stress. While first year students had significant association with depression. Regarding the source of stressors, the top ten stressors decided by the students were mainly academic and personal factors. **Conclusion:** Emotional disturbances in the form of depression, anxiety and stress are existing in high rate among undergraduate science students that require early intervention. Factors including feeling of incompetence, lack of motivation to learn and difficulty of class work can be considered as source of stressors that may precipitate for depression anxiety and stress.

Keywords: Depression, anxiety, stress, DASS-21, Science students, Malaysia

INTRODUCTION

Higher education is considered as a stressful period in students' life which they have to cope with since they are facing a variety of demands such as living away from their families, a heavily loaded curriculum, inefficiency in both mentor- mentee and health education programs. This will make them more vulnerable to emotional disturbances such as stress, anxiety and depression.[1]

A mentally healthy student is the one who thinks clearly and logically, able to initiate proper social relationships, eager to learn with substantial ambition to implement his/her plans in the future. However, since the students are at a crucial stage of development, being in the transition from adolescence to adult, they are more subjected to experience mental illnesses.[2]

Major depression is a mood disorder that is defined by the American Psychiatric Association in the Diagnostic and Statistical Manual of Mental Disorders –Text Revision (DSM-IV-TR) as a disorder

that is characterized by either a depressed mood or markedly diminished interest in pleasure activity in addition to at least four other symptoms within a duration of at least two weeks, these symptoms include, impaired appetite, disturbed sleep, poor concentration, loss of energy, psychomotor agitation or retardation, feeling of worthlessness or inappropriate guilt, thoughts of death or recurrent suicidal ideation.[3]

Although the onset of depression can be at any stage of life, the prevalence of major depression is increasing during adolescence and young adulthood.[4,][5]In a study conducted in United States of America, the prevalence of depression among undergraduate student was found to be 23%.[6]

Anxiety is a condition that is characterized by intense feeling of dread, accompanied by somatic symptoms that indicate a hyperactive autonomic nervous system such as tachycardia, sweating, dry mouth, frequent or urgent micturition and diarrhea. Anxiety impairs cognition and may produce distortions of perception.[7]Since college students are subjected to various stressors such as academic, social or time management problems that may provoke anxiety symptoms which may affect their performance, it is vital for the educators and mental health providers to have interventions to reduce anxiety and improve the quality of mental health education.[8]

Stress is defined as the body's non-specific response to demands placed on it, related to disturbing events in the environment.[9,][10]Stress during education can lead to mental distress and have a negative impact on cognitive functioning and learning[11]. The potential negative effects of emotional distress on students include impairment of functioning in classroom performance and clinical practice, stress-induced disorders and deteriorating performance.[12, 13]

Studies on emotional disturbances such as stress, depression and anxiety among students have found that these disorders are under diagnosed which may lead to increase probability of mental disorders which may have serious effects on their careers and social live.[14,15]Therefore, this study aimed to determine the prevalence of emotional disturbances in the form of depression, anxiety and stress among undergraduate Science students throughout the different stages of their study and to identify the sources of stressors and their relationship with emotional disturbances.

MATERIALS AND METHODS

A cross sectional, questionnaire-based study was conducted among undergraduate science students from Kulliyyah(faculty) of Science, International Islamic University Malaysia (IIUM) during the period from March 2013 to June, 2013.

A research grant sponsored by the Research Management Centre, International Islamic University Malaysia was obtained for conducting this research and ethical approval was obtained from International Islamic University Malaysia Research Ethical Committee prior to conducting the study. The participation was entirely on a voluntary basis; the researchers introduced themselves to the students in each grade and informed them about the aims of the study, guarantees of anonymity and confidentiality. Consent was obtained from the students. The study was conducted in middle of the course before the examination period so as to minimize the extra stress symptoms.

The inclusion criteria were agreed to participate in the study and the students should be registered as undergraduate science students of IIUM, while students who fail to give consent, and those who were not conversant in English were excluded from the study.

The socio-demographic characteristics of the participants were obtained; the gathered information was about the nationality, age, marital status, gender, year of study, accommodation during study and household income.

Research Questionnaires:

1) The Depression Anxiety, Stress Scale (DASS-21): It is a short version, self-rated questionnaire that is designed to assess the severity of the symptoms of depression, anxiety and stress; it consists of statements referring to the past week. Each item is scored on a 4-point scale (0 = Did not apply to me at all, to 3 = Applied to me very much or most of the time)[16].

Subjects were 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. Each subscale was categorized into normal, mild, moderate, severe and extremely severe. In this study, we classified further those who have severe and

extremely severe symptoms as **'clinically significant'** and those with mild and moderate as **'subclinical'.**

2) The source of stressors: The students were given a list of the most possible source of stressors which were chosen depending on previous studies.[17-21] The list was composed of a variety of stressors that are related to living and accommodation, personal, academic, environmental and social factors. The respondents were asked to check each item throughout the list and tick "yes" for the item that they considered as the most stressful factor which they experienced during the current academic year.

Statistical Analysis

We used the statistical package for social science program, version 20.0 (SPSS 20.0) for analyzing the data. The analysis of qualitative variables such as age group, gender, nationality, monthly household income, marital status, year of study and type of accommodation were presented in number and percentage. Mann-Whitney U test and Kruskal-Wallis test were used to determine the effects of the socio-demographic characteristics on the emotional disturbances among undergraduate science students. The association between the ten stressor factors and the emotional disturbances were evaluated using Pearson Chi-squared test followed by Fisher's exact test. A *P*-value of less than 0.05 was considered statistically significant and the results were reported as odds ratios (OR) with 95% confidence interval (CI).

RESULTS

The total response rate in this study was 58.3% (194 out of 333 science students).The female students represent the majority of the sample (71.1%). Regarding the age of the students, more than half of the students (57.2%) were aged 21 years and below. For the year of the study of the students, about half of the sample (51.5%) represented the second year of the study followed by the third (30.9%) and first year (17.5%) respectively. About 44.8 % of the students in this study had a monthly household income of (RM 1501-5000 per month).Almost all of the students in this study were of Malaysian nationality, single, and living in the hostel.

The overall prevalence of depression was found to be 64.4 % and anxiety was 84.5%, while the overall prevalence of stress was 56.7%. Regarding the severity of depression, stress and anxiety symptoms among science students, it was found that 50.5% (n=98) of the students had subclinical depression while 13.9% (n=27) were having clinically significant depression. For anxiety, it was found that 33% (n=64) of the student had subclinical anxiety while 51.5 % (n=100) of them with clinically significant anxiety. Regarding stress, it was found that 43.3% (n=85) had subclinical stress while 12.9% (n=25) were had clinically significant stress (table 1).

Table 1: The severity of emotional disturbances:

	Depression (N %)	Anxiety (N %)	Stress (N %)
Subclinical	98 (50.5)	64 (33.0)	85 (43.8)
Clinically significant	27(13.9)	100 (51.5)	25 (12.9)
No. of affected students	125 (64.4)	164 (84.5)	110 (56.7)
Grand Total	194	194	194

In studying the association between gender and the presence of emotional disturbances among the participants, although the male students showed higher mean scores in all three parameters (depression, anxiety and stress) than female students, however, the results were statistically not significant. Age wise, it was found that the mean scores for depression, anxiety and stress were significantly higher among younger students group (21years).

When comparing the emotional disturbances between different stages of the study, it was found that year one students had significantly higher mean score in depression than year two and three students. Although year two students showed the highest mean score for anxiety and stress but it was statically not significant when compared with year one and three students. Other factors such as household income and family support did not have significant impact on the emotional disturbances among the students (table 2).

Concerning the source of stressors (Table 3), the top ten among a list of stressors that have identified by the students as the most stressful factors they faced during the current academic year were fear of failing 91.2% (n=177) followed by 87.1% (n=169) for examination and grades, then study pressure and obligation was found to be 81.4% (n=158) followed by time management problems to be the fourth factor

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with 80.4% (n=156). The fifth factor was the fear of employment /unemployment after graduation as 77.8% (n=151) of the students stated to be. Feeling of incompetence was the sixth factor stated by 75.8% (n=147) of the students, this was followed by the academic overload factor with a rate of 75.3% (n=146), then followed by the factor of amount of assigned class work to be the eight factors by 74.7% (n=145) of the students. The ninth factor was lack of motivation which was rated by 71.6% (n=139) of the students then the tenth factor was difficulty of class work to learn with a rate of 71.1 %(no=138).

In assessing the association between the top ten stressor factors and depression, the following stressor factors namely, time management problems, feeling of incompetence, lack of motivation to learn and difficulty of class work have statistically significant association with depression (Table 4).While in assessing the association between the top ten stressor factors and anxiety, the following stressor factors namely, feeling of incompetence, time management problems, lack of motivation to learn, fear of failing, amount of assigned class work, study pressure, obligation and difficulty of class work and difficulty of class work have statistically significant association with anxiety (Table 5,6).

Table 2: List of top 10 factors which are considered stressors by the students:

Stressor	N (%)
Fear of failing	177 (91.2)
Examination and grades	169 (87.1)
Study pressure and obligation	158 (81.4)
Time management problems	156 (80.4)
Fear of employment after graduation or unemployment	151 (77.8)
Feeling of incompetence	147 (75.8)
Academic overload	146 (75.3)
Amount of assigned class work	145 (74.7)
Lack of motivation to learn	139 (71.6)
Difficulty of class work	138 (71.1)

Table 3: Factors determining significant emotional disturbances among undergraduate science students

	No.	Mean Depressive Level	P Value	Mean Anxiety Level.	P Value	Mean Stress Level	P Value
Gender							
Male	56	14.36	0.127*	16.18	0.902 *	16.75	0.750 *
Female	138	11.83		15.81		16.65	
Age							
21	111	14.00	0.005*	16.86	0.047 *	17.62	0.029 *
>21	83	10.63		14.65		15.42	
Household income							
RM1500	63	12.92	0.354**	16.51	0.599 **	15.94	0.411 **
RM 1501-5000	87	11.89		15.33		16.55	
>RM 5000	44	13.36		16.23		18.00	
Year of study							
Year 1	34	14.71	0.028*	15.41	0.243 **	16.76	0.209 **
Year 2	100	13.28		16.84		17.34	
Year 3	60	10.13		14.67		15.53	
Family support							
No	81	12.99	0.667 *	16.47	0.483 *	16.64	0.995 *
Yes	113	12.25		15.52		16.71	

* Mann-Whitney U test (for two independent samples).** Kruskal-Wallis test (for several independent samples).
Significant, Highly significant ,

Table 4: Association of the top ten stressors with depression

Stressors	Depression(N= 194)		P value*	OR	95% CI	
	Abnormal (N=125)	Normal (N=69)			Lower	Upper
Time management problems						
Yes	108 (86.4)	48 (69.6)	0.005	2.78	1.35	5.73
No	17 (13.6)	21 (30.4)				
Feeling of incompetence						
Yes	107 (85.6)	40 (58.0)	0.000	4.31	2.16	8.60
No	18 (14.4)	29 (42.0)				
Lack of motivation to learn						
Yes	101 (80.0)	38 (55.1)	0.000	3.43	1.79	6.58
No	24 (19.2)	31 (44.9)				
Examination and grades						
Yes	111 (88.8)	58 (84.1)	0.345	1.50	0.64	3.52
No	14 (11.2)	11 (15.9)				
Fear of failing						
Yes	115 (92.0)	62 (89.9)	0.613	1.29	0.47	3.58
No	10 (8.0)	7 (10.1)				
Fear of employment after graduation or unemployment						
Yes	99 (79.2)	52 (75.4)	0.538	1.25	0.62	2.51
No	26 (20.8)	17 (24.6)				
Amount of assigned class work						
Yes	94 (75.2)	51 (73.9)	0.843	1.07	0.55	2.09
No	31 (24.8)	18 (26.1)				
Academic overload						
Yes	95 (76.0)	51 (73.9)	0.747	1.12	0.57	2.19
No	30 (24.0)	18 (26.1)				
Study pressure and obligation						
Yes	104 (83.2)	54 (78.3)	0.397	1.38	0.66	0.89
No	21 (16.8)	15 (21.7)				
Difficulty of class work						
Yes	95 (76.0)	43 (62.3)	0.044	1.92	1.01	3.62
No	30 (24.0)	26 (37.7)				

* Pearson Chi-Square test followed by Fisher's Exact test, OR: odd ratio, CI: confidence interval

   Significant,   Highly significant,   Extremely significant

Table 5: Association of the top ten stressors with Anxiety

Stressors	Anxiety (N= 194)		P value*	OR	95% CI	
	Abnormal(N= 164)	Normal N=30			Lower	Upper
Time management problems						
Yes	134 (81.70)	22 (73.3)	0.288	1.62	0.66	3.99
No	30 (18.3)	8 (26.7)				
Feeling of incompetence						
Yes	133 (81.1)	14 (46.7)	0.000	4.90	2.17	11.09
No	31 (18.9)	16 (53.3)				
Lack of motivation to learn						
Yes	124 (75.6)	15 (50.0)	0.004	3.10	1.39	6.89
No	40 (24.4)	15 (50.0)				
Examination and grades						
Yes	143 (87.2)	26 (86.7)	1.000	1.05	0.33	3.30
No	21 (12.8)	4 (13.3)				
Fear of failing						
Yes	153 (93.3)	24 (80.0)	0.030	3.48	1.18	10.28
No	11 (6.7)	6 (20.0)				

Stressors	Anxiety (N= 194)		P value*	OR	95% CI	
	Abnormal (N= 164)	Normal N=30)			Lower	Upper
Fear of employment after graduation or unemployment						
Yes	129 (78.7)	22 (73.3)	0.519	1.34	0.55	3.27
No	35 (21.3)	8 (26.7)				
Amount of assigned class work						
Yes	126 (76.8)	19 (63.3)	0.118	1.92	0.84	4.39
No	38 (23.2)	11 (36.7)				
Academic overload						
Yes	125 (76.2)	21 (70.0)	0.468	1.37	0.58	3.25
No	39 (23.8)	9 (30.0)				
Study pressure and obligation						
Yes	136 (82.9)	22 (73.7)	0.214	1.77	0.71	4.37
No	28 (17.1)	8 (26.7)				
Difficulty of class work						
Yes	122 (74.4)	16 (53.3)	0.019	2.54	1.14	5.65
No	42 (25.6)	14 (46.7)				

* Pearson Chi-Square test followed by Fisher's Exact test. OR: odd ratio, CI: confidence interval
 Significant, Highly significant , Extremely significant

Table 6: Association of the top ten stressors with Stress

Stressors	Stress (N= 194)		P value*	OR	95% CI	
	Abnormal (N=110)	Normal (N=84)			Lower	Upper
Time management problems						
Yes	97 (88.2)	59 (70.2)	0.002	3.16	1.50	6.66
No	13 (11.8)	25 (29.8)				
Feeling of incompetence						
Yes	97 (88.2)	50 (59.2)	0.000	5.07	2.46	10.47
No	13 (11.8)	34 (40.5)				
Lack of motivation to learn						
Yes	88 (80.0)	51 (60.7)	0.003	2.56	1.36	4.91
No	22 (20.0)	33(39.3)				
Examination and grades						
Yes	100 (90.9)	69 (82.1)	0.071	2.17	0.92	5.12
No	10 (9.1)	15 (17.9)				
Fear of failing						
Yes	106 (96.4)	71 (84.5)	0.004	4.85	1.52	15.48
No	4 (3.6)	13 (15.5)				
Fear of employment after graduation or unemployment						
Yes	87 (79.1)	64 (76.2)	0.630	1.18	0.59	2.34
No	23 (20.9)	20 (23.8)				
Amount of assigned class work						
Yes	90 (81.8)	55 (65.5)	0.009	2.37	1.23	4.59
No	20 (18.2)	29 (34.5)				
Academic overload						
Yes	88 (80.0)	58 (69.0)	0.080	1.79	0.93	3.46
No	22 (20.0)	26 (31.0)				
Study pressure and obligation						
Yes	98 (89.1)	60 (71.4)	0.002	3.27	1.52	7.01
No	12 (10.9)	24 (28.6)				
Difficulty of class work						
Yes	88 (80.0)	50 (59.5)	0.002	2.72	1.44	5.15
No	22 (20.0)	34 (40.5)				

* Pearson Chi-Square test followed by Fisher's Exact test. OR: odd ratio, CI: confidence interval,
 Significant, Highly significant, Extremely significant

DISCUSSION

In this study, the overall prevalence of depression, anxiety and stress was found to be 64.4%, 84.5% and 56.7% respectively. The rate of depression in this study is higher than other previous studies in Malaysia that reported it to be 37.2% and 41.8 respectively.[22, 23] This rate is also higher than similar studies in other countries such as a study done by Beck and Young in 1978 reported that 25% of student population has symptoms of depression at any given time.[24]Kumaraswamyreported that 31% of medical students had anxiety and depression[25]however, the rate of depression in this study is close to a study done in Pakistan which stated it to be 60%.[26]

Regarding the severity of depression, it was found that 50.5% (n=98) of the students had subclinical depression while 13.9% (n=27) were having clinically significant depression. This result is lower than a study done by Lowe GA which revealed that 40% of university students were clinically depressed.[27]This difference in the rate of clinical depression may be due to use different assessment tool, cultural differences, type of course studied.

Regarding anxiety, the prevalence is also higher than other studies done in Malaysia and India that reported a rate of 60% and 63% and 46% respectively[22,23, 28].While a study done in Brunei found a slightly lower rate of 79%[29].Despite this high overall rate of anxiety, its clinically significant in 51.5% only.

The reasons behind getting higher rates of depression and anxiety may be due to the use of different assessment tools, type of course studied, difficulty in curriculum and cultural differences

The rate of stress is comparable to other studies done in Singapore and Brunei [14,29]but it is higher than a previous study in Malaysia that reported it to be 37.3%[23]. On the other hand, other studies gave a higher stress rate of 63% and 70.1% respectively[30, 31]. Only 12.9% of the participating students had clinically significant anxiety.

This high rate of emotional disturbances among undergraduate students require attention from health care providers to provide proper psychoeducation for both students and academic staff in order to increase awareness about symptoms of depression, anxiety and stress, also about the importance of early consultations and follow-up. A study done by Vredenburg K *et al* have found that college-student depression, though mild in severity but considered as a serious problem.[32]

In assessing some of the factors that determine the emotional disturbances among undergraduate science students, we found that younger students aged 21years and below were experiencing significantly higher rates of depression, anxiety and stress. The reasons behind these results may be due to younger students have less experience, changes in life style, time management problems, inability to adjust to the new environment and academic overloads. This finding is similar to previous studies concerning stress and anxiety among college students.[30, 33,34]However, the result of our study concerning depression is inconsistent with previous studies as they found that depression is more common among older students.[22, 35, 36]while other study had revealed that there is no significant association between age and depression among college students.[37,38] Depression is significantly higher among year one students in our study which is consistent with other studies, [26, 37, 39]while another study had shown no significant association between depression and year of study.[40]Theses differences in findings may be due to implementing different diagnostic tools, sample size, or course studied. Other factors have been assessed like gender, household monthly income and family support. However, they did not show any significant association with depression, anxiety and stress.

Academic and personal factors played an important role as source of stressors since most of the top ten stressors chosen by the students were related to them. This finding is comparable with other studies in which the academic related factors were considered as the main sources of stressors.[17, 19, 41, 42]

In assessing the association between the top ten stressor and depression, the result had revealed that four stressors have significant association with depression namely, time management problems, feeling of incompetence, lack of motivation to learn and difficulty of class work. While the four stressors that have significant association with anxiety are feeling of incompetence, lack of motivation to learn, fear of failing and difficulty of class work.

For stress, this study has found there is significant association between stress and the following stressors

namely, time management problems, feeling of incompetence, lack of motivation to learn, fear of failing, amount of assigned class work, study pressure and obligation and difficulty of class work.

Overall, three stressors that are related to academic and personal factors which are lack of self-efficacy, lack of motivation to learn and difficulty of class work can be considered as determinants for emotional disturbances as these three stressor factors have statistically significant association with all three subscales (depression, anxiety and stress).

CONCLUSION

We conclude that emotional disturbances in the form of depression, anxiety and stress are existing in high rate among undergraduate science students that require early intervention. Factors including feeling of incompetence, lack of motivation to learn and difficulty of class work can be considered as sources of stressors that may precipitate for depression anxiety and stress.

One of the ways to help the students to overcome these difficulties in their academic life is to enhance the mentor/mentee programs and implement them on regular basis and aim to discuss thoroughly the students' problems which will help them to release the pressure applied on them and motivate them to put a better effort in their study. Another important aspect to be considered is the frequency and difficulty of the assignments that are given to students so that the students will not be overloaded which will exhaust them physically and mentally.

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