ORIGINAL ARTICLE

STRESS AMONG INTERNATIONAL POSTGRADUATE STUDENTS AT UNIVERSITI KEBANGSAAN MALAYSIA MEDICAL CENTRE (UKMMC)

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ABSTRACT

Being a student, especially postgraduate student, could expose to stress, and being international postgraduate student would exposed to more stress to the student. This study was conducted to assess stress level among international postgraduate students and its associated factors. A cross sectional study was conducted among international postgraduate students registered at UKMMC, Cheras campus, Kuala Lumpur. Questionnaires were distributed to 119 students,. Main international student are Arabs (52.4%). The stress prevalence is 54.8%. Younger age group are more stressful with mean age 33.94 (P=0.004), while shorter duration is associated with stress, P=0.035. Relationship with neighbour and relationship with local colleagues are shown to be associated with stress with P value 0.011 and 0.005 respectively. This study reveals the presence of significant prevalence of stress among international postgraduate students. The student socio-demographic character that has shown to be associated with stress in this study was age. The poor relationships with local colleagues as well as the poor relationships with the neighbours have shown to contribute to the stress among international students.

Keywords: Stress, international postgraduate student.

INTRODUCTION

Stress is one of the important issues in human. At the community level, this mental health problem is also an important public health issue that could affect communities, whether developed or developing. There is no single definition of stress and aaccording to Richard Lazarus, stress is "a state of an anxiety produced when events and responsibilities exceed ones coping abilities"[1]. Most people define stress as "a perceived threat, (real or imagined) to one´s mind, body, spiritual or emotions"[2].

Stress is not always a negative phenomenon. Human need a degree of stress to become motivated, but the capacity to perform would decline if the stress levels raised or become sustained. The eustress or the good stress occurs in motivating situations, which is actually a desired type of stress. The neustress refers to a situation when there is a sensory stimulus but do not lead to a significant effect, either good or bad. While the distress which is considered bad type and frequently referred to as stress rather than distress[1]. One of the populations that have been considered to be vulnerable to stress is the students' population, particularly students who study abroad. Events like, changes in living conditions, changes in residency place and change in food habits are among the forty three most stressful life events[1].

Stress has an impact on the academic performance of students which was significantly related to the lower levels of students' function[4]. The deterioration of student's performance might also occur indirectly as a consequence of disturbance of the student's general health. The stress might have its impact on the student's family as well, and one of its possible consequences is family stress, which can cause tension in the family system or a disturbance of its stability[5].

The experience of studying abroad could be more challenging faced by postgraduate international students as compared to the local students. The stress perception by international postgraduate students could vary among them owing to their variation in the socio-demographic, environmental and economic characters. Therefore, this study was conducted to assess stress level among international postgraduate students and its associated factors,

together with exploring the strategies used by them to buffer their stress. The aim of the study is to identify the level of stress and all its associated factors and to provide appropriate suggestion for stress management.

MATERIAL AND METHOD

This is a cross sectional study, where all international postgraduate student was included in the study. Sampling frame was the list of international postgraduate student, provided by UKMMC. Sample size calculation was done using Kish[6], and the prevalence of 31.6 % was used in the calculation, taken from a study done by Rosenthal et al.[7].

A self administered questionnaire was used as an instrument for data collection which consists of three parts: Part A: covered the intended socio-demographic and economic characters of the international postgraduate students as well as some environmental factors. Part B: The English version of The Kessler Psychological Distress Scale (K10). Part C: is the Brief COPE scale.

The Kessler's psychological distress-10, usually abbreviated as K10, is a 10-item questionnaire. In each question, the participant had to chose one of five choices, these are; all of the time, most of the time, some of the time, a little of the time, and none of the time. The English version (Kessler undated) was chosen to compensate for the multi linguality of international students in UKMMC. The K10 is a simple, short, valid and reliable tool. Among the advantages of K10 is that it combines both a strong psychometric properties and the easier and quick administration, owing to its shortness. Kessler-10 also allows for the assessment of the different levels of stress, as the mild, moderate and severe. Since it comprises only 10 questions it reduces the load of filling a long questionnaire on the participants.

In this study, levels of psychological distress determined with the score of 20 as a cut-off point, below which the student not considered to have stress. Score ranges of (20-24) correspond to mild stress, (25-29) moderate stress and (30-50) severe stress. The choice of 20 as a cut-off point in scoring, could be supported by the findings of Andrews and Slade (2001), as they reported that the sensitivity and specificity for the K10 are highest at two cut-off scores, these are 19 and 20, with sensitivity and specificity at the cut-off score 20 were 66% and 92 % respectively. This cut-off score was adopted to estimate the prevalence of stress by many studies as in the 2001 Victorian Population Health Survey in Australia and in many other studies among student populations[9].

The independent variables in this study include socio-demographic factors (work history, back ground education, problems with the use of English language and the study program), environmental factors (Length of stay in Malaysia, relationship with neighbors, relationship with local colleagues, relationship with other international colleagues and relationship with his or her supervisors) and economic factors (monthly income and source of financial support: Self supported students or Grant holders: Students who are scholarship holders, sponsored by a government, institute or by a second non-relating person)

The sample included all international postgraduate students registered at UKMMC, Cheras Campus, at the time of the study, who agreed to participate in the study and signed an inform consent. This research was conducted on voluntary basis and all respondents were asked to give their written permission using a consent form. All collected information is strictly for this research study purpose and will be kept confidential. Ethical approval to conduct the study was obtained from the research committee in the UKMMC.

A pre test aimed at testing the questionnaire ease of completion and face validity was conducted on 11 postgraduate international students in Kuala Lumpur Campus of the UKM medical centre, as to avoid including them in the main study. The questionnaire was adopted with few modifications. Cronbach's Alpha calculated for Kessler's distress scale-10 was 0 .901

RESULTS

Data collection was carried out in early April 2010. The questionnaires were distributed to all international postgraduates who met the inclusion criteria. Out of 152 distributed questionnaires, 126 were completed and returned, this gave a response rate of 82.89 %. Statistical Package for Social Sciences (SPSS), Version 16.0 was used to analyse the data.

Socio-demographic distribution of the respondents
The mean age of the respondents is 35.20± 5.52 years, with more than the half of them (58.7%) aged between 30 and 39 years. More than the half of the respondents (61.9%) are males, and almost two thirds (73%) were married, with just above the half of them (51.1%) have no children or one child.

Arab students (Yemen, Sudan, Libya, Jordan, Iraq and Egypt) constituted about the half of the respondents (52.4%), while more than one fourth (27.8%) were Iranians. Interestingly, the other Asians (Indonesian, Bangladesh, Pakistan, Vietnam, China, Afghanistan, and Magnolia) represented only 19.8 %. The majority of the participating international postgraduates (95.2%) have history of employment, and approximately half of them (46.8%) had worked for at least five years prior to joining their postgraduate programs, with median working history duration of 4 years (IQR = 2–8). More than two thirds

(78.6%) of the respondents were medical graduates (medical doctors and dentists), while the rest were health science graduates (medical technology, biomedical sciences and public health). Just above the half (50.8%) of the respondents are currently doing clinical degrees (Clinical Masters), while the rest (49.2%) are in non-clinical programs (Masters of Science and Doctorates). About two thirds of the international students (77.8%) perceived that they have no problem in using English language in their study or communications (Table 1).

Environmental characters
The respondents' median duration of stay in Malaysia was 2.13 years (IQR= 1.5–4), with more than the half of the international students (61.9%) have already spent at least two years in Malaysia. The majority (95.2%) of the participants perceived their relationship as good with both, other international colleagues and with their supervisors. Although relatively lower proportion, the majority of the participating students also expressed that they have a good relationship with local colleagues (84.9%), and with their neighbours (79.4%), (Table 2).

Table 1 Socio-demographic distribution of the respondents

Variable (n=126)	Frequency (%)
Age:	
	(35.20 ± 5.52)*
≤ 29	19 (15.1%)
30-39	74 (58.7%)
≥ 40	33 (26.2%)
Gender:	
Male	78(61.9%)
Female	48 (38.1%)
Nationality	66 (52.4%)
Arab	35(27.8%)
Iranian	25(19.8%)
Asian	
Marital status:	
Single	34(27.0%)
Married	92(73.0%)
Number of Children	
(Married Students, n=92)	
< 2	47 (51.1%)
≥ 2	45 (48.9%)
History of work:	
No	6 (4.8%)
Yes	120(95.2%)
Duration of Work History (yrs):	(4 , 2 – 8) **
Not worked before	6(4.8%)
<2 yrs	19(15.1%)
2-4 yrs	42(33.3%)
≥ 5 yrs	59(46.8%)
Educational background:	
Medicine	99 (78.6%)
Health Science	27(21.4%)
Study program:	
Non-Clinical degree	62(49.2%)
Clinical degree	64(50.8%)
Problems with English:	
No	98 (77.8%)
Yes	28(22.2%)

* (mean ± SD), ** (Median, IQR)

Table 2 Distribution of the environmental factors

Variable (n=126)	Frequency (%)
Duration of stay in Malaysia:	(2.13, 1.5-4)*
< 1 yr	15(11.9%)
1-2 yr	33(26.2%)
≥2yrs	78(61.9%)
Relationship with neighbours:	
Poor	26 (20.6%)
Good	100(79.4%)
Relationship with local colleagues:	
Poor	19 (15.1%)
Good	107 (84.9%)
Relationship with other international colleagues:	
Poor	6 (4.8%)
Good	120 (95.2%)
Relationship with supervisors:	
Poor	6 (4.8%)
Good	120 (95.2%)

*(Median, IQR)

Economic characters

The mean monthly income / financial support is RM 3430.73 ±1900.34, with roughly the half of the respondents (48.2%) receive RM 3001 or more per month. Almost two thirds (74.6%) of the students are self sponsored, and about the half of the respondents were (45.2%) unsatisfied with their monthly financial support (Table 3).

Stress prevalence among International postgraduates

The overall prevalence of stress among the students was 54.8%. Among those who scored as to have stress. About 31.8 % scored as having mild, 34.78 % moderate and 33.3 % was severe.

The Association of stress with the socio-demographic variables

As shown in Table 4 none of socio-demographic variables is significant. Only age is statistically significant with p= 0.004 (Table 5). The students with stress in this study have lower mean of age (33.94) than the mean age of students with no stress (36.72 yrs).

The Association of stress with the environmental factors

Concerning the different relationships the students have both within and outside the campus, higher prevalence of stress reported among those who expressed that they have poor relationships, either with their local colleagues (84.2%), or with their neighbours (76.9%). The relationship with neighbors and the relationship with local colleagues, demonstrated a significant association with stress, (x^2 = 6.495, P= 0.011) and (x^2 =7.832, P= 0.005) respectively.

Interestingly, those who respond that they have a good relationship with their supervisors have the reverse condition, as the prevalence of stress among them was higher (55%) than that among their counterpart (50%), however, the

difference in stress prevalence was trivial, and statistically no significant association was observed. Although the prevalence of stress among those who have poor relationship with other international colleagues was the double (100%) of the prevalence of stress among those who have a good relationship (52.5%), the difference was statistically not significant (Table 6).

Table 3 Distribution of the economic factors

Variable (n=126)	Frequency (%)
Source of Financial Support:	
Self sponsored	94 (74.6%)
Grant Holder	32(25.4%)
Satisfaction with the monthly income/support:	
No	57(45.2%)
Yes	69(54.8%)
Monthly Income (RM):	
(n =110)	(3430.73 ± 1900.34)*
≤ 1000	10(9.1%)
1001-2000	29(26.4%)
2001-3000	18(16.3%)
≥ 3001	53(48.2%)

*(mean ± SD)

The students who stayed longer in Malaysia scored to have stress have lower median of the duration of stay in Malaysia compared to the median of the duration of stay of those who have no stress, this difference was statistically significant (Z= 2.107, P= 0.035) (Table 5).

The Association of stress with the economic variables
Unexpectedly, the prevalence of stress among grant holders was higher (68.8%) than the prevalence of stress among self-sponsored students (50%), however, the difference was not large and statistically no significant association was found between stress and source of financial support   Students with stress have higher mean of monthly income/financial support (3562.58) than that of the students with no stress (3260.42), however this difference was statistically not significant (t = .826, p = 0. 411, 95% CI= -1027.412 – 423.084) (Table 5).

The predictors of stress
Only the age, the relationship with local colleagues and the relationship with neighbours have shown to significantly influence stress (Table 7). Age showed to be a protector variable (Odds ratio=0.896, CI 0.828 – 0. 969). A student who has a poor relationship with his/her neighbours, compared to the student who have good relationships with them is 3.2 (CI 1.084 –9.159) times more likely to have stress. A student who have a poor relationship with his/her local colleagues, compared to the student who have good relationships with them is 4.5 (CI= 1.152 – 17.790) times more likely to have stress. Nagelkerke R Square = 0.229, accordingly, this model can explain about 22.9% of the variance in stress.

Table 4 Association stress and the socio-demographic variables

Variable (n=126)	Stress f (%)	No stress f (%)	x^2	P-value
Gender:				
Males	39(50%)	39(50%)	1.874	0.171
Females	30(62.5%)	18(37.5%)		
Nationality:	39(59.1%)	27(40.9%)	2.778	0.249
Arab:	15(42.9%)	20(57.1%)		
Iranian	15(60%)	10(40%)		
Asian				
Marital Status:				
Single	21(61.8%)	13(38.2%)	0.922	0.337
Married	48(52.2%)	44(47.8%)		
Number of Children (Married Students, n=92)				
< 2	27 (57.4%)	20 (42.6%)	1.071	0.301
≥ 2	21(46.7%)	24 (53.3%)		
History of work:				
No	5 (83.3%)	1(16.7%)	1.041[a]	0.307
Yes	64(53.3%)	56(46.7%)		
Education Background:				
Medicine	54 (54.5%)	45(45.5%)	0.009	0.926
Health Science	15(55.6%)	12(44.4%)		
Study Program:				
- Non-Clinical Degree	35(56.5%)	27(43.5%)	0.141	0.708
- Clinical Degree	34(53.1%)	30(46.9 %)		
Problem in Using English:				
No	51(52%)	47(48%)	1.318	0.251
Yes	18(64.3%)	10(35.7%)		

[a] Continuity Correction, *$P < 0.05$

DISCUSSION

The Prevalence of Stress
The overall prevalence of stress reported in this study was 54.8%, with nearly the one-fifth (18.3%) of the total respondents scored as to have severe stress. Such findings support the assumption of the presence of considerable amount of stress among international postgraduates. Being a postgraduate or an international student population, both were among the high risk students' populations as stated in a report by the Student Mental Health Committee[10].

Table 5 Association between stress with work history, length of stay, age and income

	Stress Status (n=126)	Z	t	P
Years of work9(yrs)				
Median (IQR)				
4 (2 –8)	Yes	0.861		0.389
5 (2 –8)	No			
Length of stay(yrs)				
Median (IQR)				
2 (1.45 –3.08)	Yes	2.107		0.035*
3 (1.6 –4)	No			
Age (years)				
Means±SD				
33.94 ± 5.52	Yes		2.894	0.004*
36.72 ± 5.16	No			
Monthly income(RM)				
Means (SD)				
3562.58±1999.71				
3260.42±1769.90	Yes		0.826	0.411
	No			

*P < 0.05, **Z** = Mann-Whitney U test, **t** = t-test

Comparison with the other research among International students

International students' population has been frequently claimed to be a vulnerable population to stress. As the previous research has shown, this seems to be realistic. Finding from several studies reported higher psychiatric morbidity rates among international student[11]. Similarly, Perceived stress level among international students at a British university was higher than that among their local counterpart[12].

Among international students in one Australian university, both undergraduate and graduate studies, only 31.6 % of the students having stress[7]. This is much lower than the prevalence reported in this study. However, the sample in the current study have other characters that might render it to be more vulnerable to stress, as it included only students in postgraduate programs and all in medical and paramedical studies.

Postgraduate students have been frequently explored in different fields to assess the stress levels in graduate programs, and there is the research based evidences that support the claim of that the students in higher education are more vulnerable to stress. In the University of Manchester, a statistically significant difference in stress level was observed between international students in the undergraduate and those in postgraduate programs, with those in postgraduate programs reported higher stress[12].

Table 6 Association of Environmental variables and stress

Variable (n=126)	Stress f (%)	No stress f (%)	x^2	P-value
Relationship with neighbors:				
Poor	20(76.9%)	6(23.1%)	6.495	0.011*
Good	49(49%)	51(51%)		
Relationship with local colleagues:				
Poor	16(84.2%)	3(15.8%)	7.832	0.005*
Good	53(49.5%)	54(50.5%)		
Relationship with Other international colleagues:				
Poor	6(100%)	0(0%)	3.464^a	0.063
Good	63(52.5%)	57(47.5%)		
Relationship with Supervisors:				
Poor	3(50%)	3(50%)	0.000^a	1.000
Good	66(55%)	54(45%)		
Mode of Financial support:				
Self sponsored	47(50%)	47(50%)	3.388	0.066
Grant Holders	22(68.8%)	10(31.2%)		
Satisfaction with the income:				
No	33(57.9%)	24(42.1%)	0.412	0.521
Yes	36(52.2%)	33(47.8%)		

[a] Continuity Correction, * P< 0.05

The respondents in this study, besides being international students, were all in postgraduate programs, and this might add to their vulnerability to stress. However, although the prevalence of stress reported in this study is considerably higher than reported in other studies, even among local postgraduates. For instance, in a study among postgraduate students, Klick (2005) reported that 94% of the respondents were either moderately or severely stressed. However, it's worth mentioning that Klick used a different tool and based on the students rating themselves on a Likert scale attached question of what is their current level of overall stress[13].

The relationship of the different variables with stress

Among the factors of interest in the current study, only four have shown to be significantly associated with stress. These are the age, the relationship with local colleagues, the relationship with neighbours, and the duration of stay, and out of these, only the age, the relationship with local colleagues and the relationship with neighbours have shown to influence stress.

Significant differences in the mean age between the students have stress and those who do have stress were evident in this study. Also age was found to be a protector and the older the age the lower the odds of stress. The lower stress odds among older students could be probably due to reasons like

development and maturity and perhaps having more experience and skills, all of which might help the older students to

manage stress better than the younger students do.

Table 7 Stress predictors

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I
Age	-0.110	0.040	7.568	1	0.006*	0.896	0.828–0.969
Relationship with Neighbours Poor=(1) Good=(0)	1.148	0.544	4.448	1	0.035*	3.152 1	1.084–9.159
Relationship with Local Colleagues Poor=(1) Good=(0)	1.510	0.698	4.675	1	0.031*	4.526 1	1.152–17.790
Duration of Stay	-0.113	0.124	0.825	1	0.364	0.893	0.700–1.140
Constant	3.961	1.380	8.232	1	0.004	52.497	

* P< 0.05

Consistent with these results, in a study among undergraduate students in a Turkish university reported that younger students mean stress scores were higher than that of the older students[14]. Among postgraduate students, observed a significant negative correlation between age and stress[14]. Similarly, in a study among students participating from different universities in Melbourne, both Australians and international students, reported that age was negatively related to stress[15]. However a study conducted in United States showed a contrast finding where the older age was associated with higher levels of anxiety[16].

Concerning the stress that is perceived due to adaptation difficulties facing overseas, by international students in eleven universities in the United States, the age was not a significant predictor of acculturative stress[17]. Similarly, the age was not a significant predictor of their acculturative stress[18].

Duration of stay has been frequently explored for its relationship with stress among overseas and immigrants in

general and among international students. In this study stress was statistically significant with duration of stay. However, the duration of stay was not among the factors that predict the stress. This finding is consistent with the study done among international students in the United States[19]. However, the length of stay in Australia is positively related to stress[15].

The changes in stress perception over time are most probably related to the adaptation to the new environment. As the duration of stay increase, the students' gets closer to the host culture and more integrated in the new environment[20]. Yu-Wen Ying (2005), On exploring the variation in acculturative stressors among Taiwanese international students over two year, a significant reduction in some stressors like home sickness and social isolation was reported[20].

In the current study, higher prevalence of stress reported among those who have poor relationships with local colleagues, with other international colleagues or with neighbours. Furthermore, both the

relationship with local colleagues and the relationship with neighbors were significantly association with stress and also both were found to significantly predictor for stress. Many studies highlighted the importance of having good relationship networks. The relationships like with friends, mentors or supervisors will alleviate stress[14].

Concerning international students making new relationships in the host country is even more crucial, especially because many of those students lack of the social support that they enjoyed at home countries through their families and friends. The loss or the decrease of the natural social support is likely to enhance the perception of stress[21]. In a study conducted at different universities in Melbourne, among the predictors of stress among all students regardless being international or local, loneliness is positively related to stress[15]. Building up relationships in the new host country might be a challenge[22]. The most common concern reported by international students was regarding interpersonal relationships and getting into a new society and they described as an uneasy task.

CONCLUSION

This study confirms the presence of considerable prevalence of stress among international postgraduate students population, which supports the claim of the higher vulnerability of the postgraduate students, especially those study abroad to stress. The reported stress prevalence was comparable to that reported among international students in some other studies.

The student socio-demographic character that has shown to be associated with stress in this study was the age, which also found to significantly contribute to stress. Although the association between any of the economic variables under study with stress was not reported, many environmental factors have shown to be associated with stress; these were the duration of stay, the relationship with local colleagues and with neighbours. Out of these three factors, the relationship with local colleagues as well as the relationships the student build outside the campus with the neighbours have shown to contribute to the stress among international students.

A further study, with larger sample size, including postgraduate student from various higher learning institution in Malaysia is recommended to provide bigger picture and to provide clear factors that may contribute to stress.

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