

Stress and Its Association with the Academic Performance of Undergraduate Fourth Year Medical Students at Universiti Kebangsaan Malaysia

Harlina H Siraj^a, Salam A^a, Roslan R^b, Hasan NA^b, Jin TH^b, Othman MN^b

^aMedical Education Department, UKM Medical Centre, Malaysia

^bSpecial Study Module (SSM) Research Group Students, Medical Education Department, UKM Medical Centre, Malaysia

ABSTRACT

Introduction: Student can be stressed due to different stressors such as academic, financial, health related or loss of close family member or friend, etc. Stress is the bodies' reaction both neurologically and physiologically to adapt to the new condition. Stress has a negative effect on the academic performance of the students. This study was aimed to explore the stress and stressors and also to determine the association between stress levels and the academic performances in terms of cumulative grade point average (CGPA) of undergraduate medical students. **Methods:** It was a cross-sectional study conducted among all 234 year-4 medical students of Universiti Kebangsaan Malaysia (UKM), session 2011-2012. Sample size comprised of 179 students after fulfilling all inclusion and exclusion criteria. A validated Medical Students' Stressor Questionnaire (MSSQ) was used to collect the data. Stress level and its association with CGPA of semester-1 examination were analysed. **Results:** Response rate was 76.49%, where 72% were female and 69% resided in the hostel. Academic Related and Social-related Stressors caused for severe and high stress in 84% and 49% respondents respectively, with insignificant differences between gender and residency. Respondents with a high and severe stress level were observed to have higher CGPA. **Conclusion:** UKM medical students are highly resourceful to manage their stress well and thus denying the negative effect of stress towards their academic performance. Medical schools should train students exposing various personal and professional developmental activities that able to face the everyday challenges and manage stress well and thereby achieve better academic performance.

KEYWORDS: Stress, stressor, well-management, academic performance

INTRODUCTION

Academic performance is one of the most vital considerations among students in higher educational level. The academic performance can be illustrated by grade point average (GPA). Despite living in the millennium area where education is accessible to all, there are still some differences in performance among the students. Several studies identified internal and external factors associated with academic performance. Stress is one of the factors that has negative effect on the mastery of the academic curriculum.¹

Stress is the body's nonspecific response mechanism towards demands or strains made on itself or the environment.^{2,3} It is a process by which we perceive and cope with environmental threats and challenges.⁴ Stress can be defined in Webster new world dictionary⁵ as "a condition typically characterized by symptoms of mental and physical tension or strain, as depression or hypertension, that can result from a reaction to a situation in which a person feels threatened, pressured, etc." An individual can be stressed in daily life in a different way, and stress can be viewed as the bodies' reaction both neurologically and physiologically to adapt to the new condition.^{6,7} A student can be stressed due to different reasons or stressors such as the academic, financial problem, health problem or loss of close family member or friend, etc. It is the persons' ability to face the everyday challenges which will determine whether he/she will be stressed or not. Stress in academic situation can have both positive and negative consequences. Stress can inhibit and suppress learning, which is called 'unfavourable stress' and is associated with inhibition of students' academic performance.⁸ Previous studies have reported a high prevalence of stress in medical students, ranging from 30% to 50%.^{9,10} However, stress management training in medical school is needed to promote learning through coping of stress, which is called 'favourable stresses'.

Corresponding author:

Assoc. Prof. Dr. Harlina Halizah Siraj
Department of Medical Education,
UKM Medical Centre
Jalan Yaacob Latif, Bandar Tun Razak,
56000 Kuala Lumpur, MALAYSIA
Email: harlina@ppukm.ukm.edu.my

MATERIALS AND METHODS

This was a cross sectional, questionnaire survey, conducted on all 234 UKM medical students of year-4, academic session 2011-2012. The survey period was from June 2011 to until May 2012. Participation in this study was voluntary and informed consent was taken from all participants to participate in this study. Students who did not give consent and those who filled the questionnaire incompletely were excluded from this study. As such, the sample size of this study comprised of 179 students.

To collect the data, medical students' stress questionnaire (MSSQ) was used, which was a validated instrument used to identify sources of stress.¹⁸ There were 40 items in MSSQ those represented the possible sources of stress in medical students and were grouped into six main domains. The six domains were: Academic Related Stressor (ARS), Intrapersonal and Interpersonal Related Stressor (IRS), Teaching and Learning Related Stressor (TLRS), Social Related Stressor (SRS), Drive and Desire Related Stressor (DRS), and Group Activities Related Stressor (GARS). The items under each stressor were measured using a rating scale 0-4. Respondents were asked to rate each item as 0 for 'causing no stress at all', 1 for 'causing mild stress', 2 for 'causing moderate stress', 3 for 'causing high stress' and 4 for 'causing severe stress'. The reliability coefficients of the stressor groups ranged from 0.64 to 0.92. The degree or level of stress were classified as: level 0-1.00 'causing nil to mild stress', level 1.01-2.00 'causing mild to moderate stress', level 2.01-3.00 'causing moderate to high stress' and level 3.01-4.00 'causing high to severe stress'.¹⁸ Before administering the questionnaire, a pilot test was conducted among 10 undergraduate students and finalized the questionnaire accordingly.

Academic performance of the medical students was measured by using the grades of all subjects in the first-semester examination of year-4. The cumulative grade point average (CGPA) of semester-1 examination was calculated in a 5.0 scale which was self-expressed by the students. Consent was also taken to disclose their CGPA of the semester-1 examination. All the data regarding CGPA were kept confidential. Data was analyzed using the statistical soft ware package for social sciences (SPSS) 17.0 version.

RESULTS

Out of 234 medical students, 186 students returned the questionnaire from which seven were incomplete and excluded. As such 179 respondents were included in this study giving a response rate of 76.49%. One hundred and twenty nine students (72%) were female and 50 (28%) were male. Regarding the residency of the students, 123 (69%) students were resided in the hostel while 56 (31%) were resided out-campus (Table I).

Table II showed percentage of individual stressor domain. Majority of the respondents (84%) were in severe stress, particularly with the academic related stressors, followed by 57% in group activity related stressor and 56% in intrapersonal and interpersonal stressor domains. Social related stressors also cause high stress among the respondents (49%).

Table III revealed the degree of stress level. A total of 16 (8%) students showed to have a moderate level of stress while 93 (53%) and 70 (39%) have a high (level 2.01-3.00) and severe level (level 3.01-4.00) of stress respectively. It also showed the stress level between male and females.

Academic performance (Mean CGPA) of the respondents in terms of gender and residency has shown in Table IV. There is insignificant relationship between stress and academic performance both in terms of gender and residency. In total 76% respondents opined that stress motivates them for better academic performance while 24% denied.

Table I. Gender and residency data of the respondents, n=179

Variables		Number	Percent
Gender	Male	50	28
	Female	129	72
Reside	Hostel	123	69
	Out campus	56	31

Table II. Stress level among individual stressor domain

Stressor Domain	Level of stress against individual stressor domain			
	Mild (0-1.00)	Moderate (1.01-2.00)	High (2.01-3.00)	Severe (3.01-4.00)
	%	%	%	%
1 ARS	0	0.5	15.5	84
2 IRS	2	15	27	56
3 TLRS	5	21	38	36
4 SRS	2	29	49	20
5 DRS	33	26	23	18
6 GARS	1	7	35	57
Average	7	16	32	45

ARS=Academic Related Stressor, IRS=Intrapersonal and Interpersonal Related Stressor, TLRS=Teaching and Learning Related Stressor, SRS=Social Related Stressor, DRS=Drive and Desire Related Stressor, GARS=Group Activities Related Stressor.

Table III. Distribution of level of stress among the respondents

Gender	Stress level of the respondents								Total	
	Mild (0-1.00)		Moderate (1.01-2.00)		High (2.01-3.00)		Severe (3.01-4.00)		n	%
	n	%	n	%	n	%	n	%		
Male	1	2	2	4	28	56	19	38	50	100
Female	3	2	10	8	65	50	51	40	129	100
Total	4	2	12	6	93	53	70	39	179	100

Table IV. Stress level and academic performance (CGPA) of the respondents in terms of gender and residency

Stress level of respondents			Academic performance		
			CGPA	± SD	p value
Gender	Male (level 3.01-4.00)	50	3.3200	.58693	.417
	Female (level 3.01-4.00)	129	3.2946	.64230	
Residency	Hostel resides	125	3.3440	.59709	.612
	Out campus resides	54	3.2037	.68349	

DISCUSSION

Recently stress has appeared as an emerging issue among the medical students.¹⁹ Majority of the respondents in this study were found stressful where 72% were female and 28% were male (Table I) which actually corresponded to the male-female student ratio of the university.

There were six domains of stress that were studied, which were Academic Related Stressor (ARS), Intrapersonal and Interpersonal Related Stressor (IRS), Teaching and Learning Related Stressor (TLRS), Social Related Stressor (SRS), Drive and Desire Related Stressor (DRS) and Group Activities Related Stressor (GARS). Among these domains, the stress level was severe (84%) in the academic related stressor (ARS) domain (Table II) that specified on the educational, college, universities and student events. Medical students perceived stress, mostly due to academic related factors. Previous study showed a number of academic related stressors that included test and examinations, a big range of content to be learnt, lack of time to do the revision, poor marks, having self-expectations to do well, insufficient skill in medical practice, falling behind in reading schedule, heavy workload, difficulty in understanding the content, and inability to answer teachers' questions.²⁰⁻²³ These findings have similarity with Thomas²⁴ who reported that school examinations, school work and homework were the major stressors. Intra-Interpersonal Related Stressor (IRS) rated severe stress by 49% respondents while Social Related Stressors (SRS) rated high stress by 56% of the respondents. This could be due to besides pursuing knowledge in university; a student also gets to socialize with different kinds of people and undergo psychological development. Students faced a changing of education system, lifestyle and social environment. They now meet people of different ages and backgrounds. Thus interpersonal skills were needed to socialize with the people around them.¹⁸ Thus it was apparent that a number of factors were related to the stress level of the students. Anyway, none of the stress domains significantly affected the academic performance of the students (Table II).

The stress level among the students of this study was found higher. Majorities (53%) were in high level stress (2.01-3.00) and 39% were in severe level (3.01-4.00) stress. Almost equal number of male (56%) and female (50%) respondents experienced high level stress, and 38% and 40% experienced severe level of stress (Table III). In general, it is a common fact that life of a medical student or health profession is stressful. Mild, moderate, high or severe level of stress had been reported among the students of medical and health professions.^{17,25} In India the stress level was found as high as 89.64%.²⁶ Similarly, Muhamad, et al.,⁹ and Miller,¹⁰ had reported a high prevalence of stress in medical students, ranging from 30% to 50%. Medical students are expected to learn and master a huge amount of knowledge, attitudes and skills for which they had to work hard which in turn put them under a lot of stress.²⁷ Knowhow of the management of stress is of up most importance.

Many past researches found a significant correlation between stress and academic achievement¹⁹ in both genders. The most common view of stress towards academic achievement was its negative relationship with academic performance. However, the present study differs; it identified that the higher and severe level stress experienced students achieved higher CGPA (more than 3 in a 5 scale) with insignificant difference between gender (p=.417) and residence (p=.612) of this study (Table IV). This finding has some similarity with Rafidah, et al.,²⁸ where they found that students of moderate degree stress performed to have satisfactory GPAs. They reported that the moderate stress experienced by the students is desirable for attaining good academic performance. Sanders and Lushington,¹⁴ explained in his study that stress gave negative impact on academic performance, but it was poorly related. Elias et al.,¹⁹ also found that there was a significant, but weak and negative relationship between stress and academic achievement. Most importantly, the medical students those can manage the stress level well are associated with higher academic performance.

Students' perception on the impact of stress toward academic performance revealed that 76% respondents considered stress positively and agreed that stress

motivated them for better academic performance. Linn⁷ argued that stress is actually needed for learning process.

Medical students in UKM are exposed with decision making in a tough situation, breaking bad news, team building, managing diversity, spiritual development, reflective skills, interfaith discussion, joint activities with students association, movie watching with reflection, learning style, personality trait, publicly speaking, etc. through a personal and professional development module over the whole five year period. Probably, this is the reason of achieving higher CGPA even though they experienced with the higher and more severe level of stress. The important thing is to learn how to manage stress. Respondent with a high and severe level of stress are able to achieve higher CGPA and able to do well academically when they are capable to manage their stress well. This is supported by Akgun,¹⁶ which explained that the highly resourceful student manages academic stress better thus denying the effect of stress towards their academic performance. Students have to be exposed to the different ideas those meant to facilitate their lives.²⁹

CONCLUSION

A student can be stressed due to so many stressors, such as academic reason, financial problem, health problem or loss of close family member or friend, etc. The main stressor identified in this study was academic related. There was no negative correlation between stress level and academic performances of the students. Higher academic performance can be achieved even with a higher level of stress, if the students are able to manage their stress well. It is the person's ability to face the everyday challenges that will determine whether he/she will be stressed or not. Medical schools should expose the students to various topics such as stress management, decision making in a tough situation, breaking bad news, team building, managing diversity, spiritual development, reflective skills, interfaith discussion, etc. in order to promote and produce stress free holistic confident practitioners. UKM medical students are highly resourceful to manage their academic stress better thus denying the effect of stress towards their academic performance. This paper offers other medical schools and academic planners a window or guideline for a comprehensive use of personal and professional development activities of the students to cope with the academic related matters and also to develop confidence among students for better adjustment in classroom, group and society.

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