

Prevalence and Determinants of Stress Among Medical Students of Universiti Sains Islam Malaysia (USIM)

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Abstract

This paper is to determine the stress level and stressors among medical students. The methods; A cross-sectional study using self-administered questionnaire which consisted of three parts namely socio demographic information, potential stressors and Personal Stress Inventory which gave the stress score. The results; A total of 155 students (83.3%) involved in this study. The prevalence of stress among the respondents was 70.3% (109/155). Prevalence of stress was found to be higher among first year (90.2%) followed by second year (71.4%), third year (67.6%) and fourth year students (42.9%). However One-way ANOVA showed that there was no significant difference of mean stress level between the different years of study, $F(2,109) = 2.404, p = 0.095$. Further analysis (between Stress and No stress group) showed that environment factors ($\chi^2: 24.388, p < 0.05$), and academic ($\chi^2: 4.700, p < 0.05$) experienced by the respondents were significantly associated with stress development. The stressful life event identified were difficulty with study (71.0%), change in sleeping habit (60.0%) and 52.9% claimed too much coursework. The year of study were significantly ($p > 0.05$) associated with stress. Headache was found to be the highest physical stress symptoms presented by the respondents (92.9%) while forgetfulness was the highest psychological stress symptoms (92.9%). In conclusion; Prevalence of stress quite high with two in every three students reported stress symptoms. Prevalence of stress decreased with the progression of year of study. Stress was determined by age, year of study, academic and environment related issues.

Keywords: stress, medical students, student's stressor

INTRODUCTION

Medical education is perceived as being stressful (Firth-Cozens, 2001) and people often said that medical schools offer one of the most stressful courses within the university of any country but the health of medical students has sometimes been neglected. Many factors can be regarded as stressor

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for students including heavy workloads, academic pressures, competitive environment, limitations on time, loss of leisure activities and financial burden (Guthrie et al, 1997). These stressful environments will eventually result in poor academic performance, psychological or emotional impairment during their career life that possible to affect the quality of patient care (Firth-Cozens, 2001; Camp, Hollingworth, Zaccaro, Cariaga-Lo and Richards, 1994; Bramness, Fixdal and Valgum, 1991).

Medical student possess a great challenge throughout their study years. Apart from coping with the stressors of medical education itself, students also need to face other stressors including adaptation to new undergraduate life. Transitioning from secondary school to university is a stressful social and psychological event. Gerdes and Mallinckrodt (1994) found that first-year students often experience stress adjusting to the social life of college, forming a support network, and managing new social freedoms. Study done in United Kingdom reported that first year students were found to have the highest levels of mental distress (Guthrie et al, 1998) and the incidence of poor mental health increasing from 25% to 52% over the course of the first year (Moffat, McConnachie, Ross & Morrison, 2004). Rosal et al (1997) reported that medical students of University of Massachusetts showed increased stress and depression rates in second and fourth year. Saipanish (2003) reported from a study in Thailand that third year students were found to be most stressed.

Other academic factors reported as stressor include frequent examinations, grade competition, large amounts of content to learn in a short time frame (Abouserie, 1994) excessive homework or unclear assignments (Kohn & Frazer, 1986) academic pressure (Steward, Lam, Betson, Wong & Wong, 1999), workload (Guthrie et al, 1995; Wolf, Faucett, Randall & Balson, 1988) and exposure to patients' suffering and deaths (MacLeod, Parkin, Pullon & Robertson, 2003; Wear, 2002). Wolf et al (1988) also mentioned that financial concerns and sleep deprivation contributed to the decline in students' mental health.

With regards to gender, Bramness et al (1991) reported no gender difference in stress. However Camp et al (1994) found that even though there was no difference in stress at the start of medical school but greater increases in distress level among female students were found throughout the course. Wallin and Runeson (2003) also found that female students consulted psychiatric or psychological help more often than males.

Stress symptoms can present in either physical or psychological symptoms. Physical symptoms include headaches, colds, and flu (Zaleski, Levey-Thors

& Schiaffino, 1998). Common psychological symptoms include depression, anxiety, and inability to cope (Grace, 1997). There is also a connection between stress and poor health outcomes or disease (Damush, Hays & DiMatto, 1997).

Prevalence of stress varies in different institutions due to certain reasons. Few studies conducted among medical students in Public Malaysian University reported stress prevalence between 30-50% (Muhamad Saiful Bahri, Ahmad Fuad & Mohd Jamil, 2010; Sherina, Lekhraj & Nadarajan, 2004).

METHODOLOGY

Study was conducted at Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia to determine the stress level and stressors among medical students. The medical course is a six-year programme. The first three years are largely pre-clinical years comprised of learning the basic human sciences in medicine. The subsequent three years are clinical years where students have clinical rotations through the healthcare facilities, i.e. hospitals and polyclinics.

The medical curriculum in this faculty is rather unique compared to other medical school in the country or maybe in the world because of the integration of Islamic related subject with medical core subjects. Teaching methods emphasized on Information Technology (IT) usage. Teaching were mostly delivered via multimedia technology and students were expected to have basic computer skill to assess teaching materials or do project.

Study was conducted among medical students from year one up to year four. All students in these years of study were approached to be the study subject and their written consent was obtained prior to collecting data. Self-administered questionnaire was used as a tool to collect data which consisted of three parts. The first part was on socio demographic characteristics, academic related data and information on computer usage.

The second part enquired on the potential stressful life events experienced by the students in the last six month prior to the study date. Events were categorized into five main issues namely personal, family related, friends related, academic related and environment related issues. Frequency of each life events were calculated individually. For each issue, any “yes” answer for the life event selected will be given score of one mark.

The third part was the Personal Stress Inventory (PSI) to determine stress or non stress episode. PSI consisted of 11 psychological and physiological subscales which add up to 52 items (musculoskeletal system- four items,

gastrointestinal system- six items, other physical system- six items, depression- six items, anxiety- ten items, energy level- three items, diet- five items, activities- three items, relationship- three items and sleep- three items). Measurement for symptoms occurrence during the previous one month was based on a four-point Likert scale (with '3' and '0' bringing the highest and lowest weightage respectively) and raw scores were calculated by summing the item scored. The scores obtained were later regrouped to "Stress" if score of ≥ 36 marks and "No stress" if score of < 36 marks . A validation study of the questionnaire used was conducted by Rokiah (1994) among nurses with 95.1% sensitivity and 77.0% reliability. Her study estimated the reliability of PSI by the alpha Cronbach value of 0.93 (Rokiah, 1994). Statistical analysis was performed using SPSS 15.0 software. Descriptive statistic results were expressed as frequency and percentage while analytical statistics was compared using One-way ANOVA and Chi-square. The p values of less than 0.05 were considered as statistically significant.

RESULTS

Socio Demographic Characteristics

A total of 155 medical students (response rate 83.3%) completed the questionnaires comprised of 43.2% male and 56.8% female. The ages for both genders ranged from 18 to 23 years. Most of the respondents (60.6%) were aged between 21 to 23 years. With regards to year of study, 26.5% were in first year, 31.6% in second year, 23.9% in third year and 18.1% in fourth year. About 97.4% of the students were staying at hostel provided by the university management. About 80.6% of the students had their own personal computer and 92.9% claimed to have good computer skill. Distribution of socio demographic characteristics is well illustrated in Table 1.

Stress and The Contributing Factors

Prevalence of stress among the students was 70.3%. Among the stressed students, majority (90.2%) were in their first year of study followed by 71.4% in second year, 67.6% in third year and 42.9% in fourth year. Among the greatest potential stressful life events reported were difficulties in study (71.0%) followed by change in sleeping habits (60.0%) and too much coursework (52.9%). Distribution of the potential stressful life events experienced by the students is given in Table 2.

With regards to the stress symptoms, headache was found to be the highest (92.9%) physical stress symptoms followed by stomach ache (86.5%) and muscle tension (80.0%) The highest psychological symptoms were forgetfulness (92.9%) followed by overwhelmed by work (89.0%) and unable to complete task (87.1%).

Table 3 shows the relationship between socio demographic factors and stress. Age (χ^2 : 8.505, $p < 0.05$) and year of study (χ^2 : 18.080, $p < 0.05$) were found to be significantly associated with stress. However further analysis with One-way ANOVA showed that there was no significant difference of mean stress level between the different years of study, $F(2, 109) = 2.404$, $p = 0.095$. The prevalence of stress was also higher among the females (76.1%) compared to males (62.7%). However, this difference was not statistically significant (χ^2 : 3.297, $p > 0.05$).

In Table 4, the Environment related issues (χ^2 24.388, $p < 0.05$) and academic related issues (χ^2 : 4.700, $p < 0.05$) were found to be significantly associated with stress.

DISCUSSION

Stress experience during medical training may give impact on the quality of doctors we are producing. Managing stressors during this period is important in preparing the students into absolutely more challenging world of working life as a doctor. However, there are always positive and negative consequences of stress depending on how individual's respond to stress.

Prevalence of Stress

This study found 70.3% prevalence of stress among the medical students. This prevalence corresponds to study done in India with 73% (Supe, 1998) and Saudi Arabia with 71.9% (Sani et al, 2012) and 63.7% (Abdulghani, AlKanhah, Mahmoud, Ponnampuruma & Alfaris, 2011) of stress prevalence among medical students.

Previous studies done in other university in Malaysia reported lower prevalence. Zaid, Chan and Ho (2007) reported prevalence of 41.9% and Sherina, Lekhraj and Nadarajan (2003) reported prevalence of 46.2%. However, both studies determined their stress level by using General Health Questionnaire (GHQ), a different tools used as compared to this study. A study done in Singapore University also revealed around 57% of emotional disorder among their respondents (Ko, Kua & Fones, 1999). Markedly low prevalence of stress was reported in study done in United Kingdom by Firth (1986) which was less than 10%.

Age and Stress

In this study, age was significantly associated with stress with higher prevalence of stress (83.6%) among those in the age group of 18 to 20 year old compared to those in older age group (61.7%). This might be due to lack of maturity among the younger ones in handling stressors allowing them to be more stressful than the other. Apart from that, some students may need more time to adjust themselves from the transition period of secondary school towards university life.

Year of Study and Stress

Year of study had shown significant association with stress whereby the prevalence was highest among first year students and decreased as the year of study progressed. This finding corresponds with study done by other authors (Aktekin et al., 2001; Abdulghani, AlKanhah, Mahmoud, Ponnampereuma and Alfaris, 2011; Guthrie et al., 1998). First year students seemed to be more burdened by the medical curriculum and the perceived stress might be a feature of them adjusting to the medical educational setting.

Another study done in Malaysia contradicted this finding whereby they found that the prevalence of stress was higher among the second and fourth year medical students (Muhamad Saiful Bahri et al, 2010). Medical schools should realize that it is important to identify early sign and symptoms of stress among their students. Those students might be help by referring them to the counsellor in mild cases or psychiatric in more severe cases.

Gender and Stress

Some studies revealed that gender difference had significant association with stress development with female students be more susceptible to stress episode. Camp et al. (1994); Wallin and Runeson (2003); Sidik, Rampal and Kaneson (2003) reported that higher emotional disorders were among females Malaysian medical students. Even though not statistically significant, this study found that 76.1% of female students were stressed compared to 62.7% of male students.

“Related Stressful Events”

“Related stressful events” that associated with stress among students were environment and academic related issues. The environment related issues in this study comprised of first semester in college, change in living condition, change in sleeping habits, change in social activities, change in eating habits and change to new college. The academic related issues were failed important subjects, having difficulties coping with study, too much assignment and contents, poor marks in exam, missed more than one class and absent too many classes. Our finding was in line with Muhamad Saiful Bahri et al. (2010) that reported among the top ten stressors were also related to academic.

With regards to the physical stress symptoms, it was found that headache was the highest reported physical symptoms (92.9%) whilst forgetfulness (92.9%) was the commonest psychological symptoms.

CONCLUSION

The prevalence of stress among medical students was found to be quite high with two in every three students reported stress symptoms. The prevalence was higher among first year medical students and decreased in the subsequent years. The major stress factors were academic and environment related events. Students presented mostly with headache, forgetfulness and overwhelmed by work.

This study recommends early detection of medical student with stress symptoms which is important to initiated stress management. Counsellor should be made involved as early as possible to help students who presented with pathological stress symptoms or difficulty in studying. Orientation program can be used as platform to inform students of medical curriculum, expectation and difficulties commonly encountered. Mentor-mentee system should be initiated and make full use of it to help in stress management. The senior medical students should be involved by sharing their study experience.

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Table 1: Socio Demographic Characteristics of The Respondents (N=155)

Variables	n (%)
Age (Years old)	
18	9 (5.8)
19	31 (20.0)
20	21 (13.6)
21	47 (30.3)
22	27 (17.4)
23	20 (12.9)

Gender	
Male	67 (43.2)
Female	88 (56.8)
Year of study	
1 st year	41 (26.5)
2 nd year	49 (31.6)
3 rd year	37 (23.9)
4 th year	28 (18.1)
Place of stay while studying	
Hostel	151 (97.4)
Own accommodation	4 (2.6)
Availability of personal computer	
Yes	125 (80.6)
No	30 (19.4)
Computer skill	
Good	144 (92.9)
Not good	11 (7.1)

Table 2: Potential Stressor Experienced By The Respondents in The Last Six Months

Stressor	n (%)
Personal issues	
Major personal injury or illness	16 (10.3)
Marriage	7 (4.5)
Pregnancy	3 (1.9)
Car or motorbike trouble	7 (4.5)
Problem with parents	13 (8.4)
Stolen of personal belongings	12 (7.7)
Outstanding personal achievement	30 (19.4)
Serious argument with lecturer	34 (21.9)
Minor traffic violations	21 (13.5)

Family related issues

Death of a close family member	25 (16.1)
Divorce between parents	3 (1.9)
Parents not in Malaysia	38 (24.5)
Parent recently unemployed	1 (0.6)
Change in health of a family member	41 (26.5)
Change in family economic status	30 (19.4)
Change in number of family get-togethers	23 (14.8)

Academic related

Failed important subject	40 (25.8)
Difficulties coping with study	110 (71.0)
Too much assignment or contents	82 (52.9)
Poor result than expected	63 (40.6)
Absent more than one class	24 (15.5)
Too many missed classes	17 (11.0)

Friends related

Death of a close friend	45 (29.0)
Change of friends	39 (25.2)
Serious arguments with close friends	34 (21.9)

Environment related

First semester in college	49 (31.6)
Change in living conditions	64 (41.3)
Change in sleeping habits	93 (60.0)
Change in social activities	67 (43.2)
Change in eating habits	75 (48.4)
Change to new college	10 (6.5)

Table 3: Relationship Between Socio Demographic Factors and Stress

Variables	Frequency (%)		χ^2 value	P value
	Stress n= 109	No stress n= 46		
Age				
18 – 20	51 (83.6)	10 (16.4)	8.505	0.004*
21 – 23	58 (61.7)	36 (38.3)		
Gender				
Male	42 (62.7)	25 (37.3)	3.297	0.069
Female	67 (76.1)	21 (23.9)		
Year of study				
1 st year	37 (90.2)	4 (9.8)	18.080	0.000*
2 nd year	35 (71.4)	14 (28.6)		
3 rd year	25 (67.6)	12 (32.4)		
4 th year	12 (42.9)	16 (57.1)		
Place of stay				
Hostel	106 (70.2)	45 (29.8)	0.000	1.000
Own accommodation	3 (75.0)	1 (25.0)		
Availability of Personal Computer				
Yes	85 (68.0)	40 (32.0)	1.669	0.196
No	24 (80.0)	6 (20.0)		
Computer skill				
Good	101 (70.1)	43 (29.9)	0.000	1.000
Not good	8 (72.7)	3 (27.3)		

*Pearson's χ^2 statistical test, significant when $p < 0.05$

Table 4: Relationship Between Related Stressful Events and Stress

Related Stressful Events	Stress		No stress		χ^2	P value
	n = 109		n = 46			
	(%)		(%)			
Personal issues						
Yes	53	(75.7)	17	(24.3)	1.778	0.182
No	56	(65.9)	29	(34.1)		
Academic related issues						
Yes	102	(73.4)	37	(26.6)	4.700	0.030 **
No	7	(43.8)	9	(56.2)		
Family related issues						
Yes	65	(76.5)	20	(23.5)	3.409	0.065
No	44	(62.9)	26	(37.1)		
Environment related issues						
Yes	99	(79.2)	26	(20.8)	24.388	0.000 *
No	10	(33.3)	20	(66.7)		
Friend related issues						
Yes	64	(76.2)	20	(23.8)	3.025	0.082
No	45	(63.4)	26	(36.6)		

*Pearson's χ^2 statistical test, significant when $p < 0.05$

** χ^2 statistical test with Yates correction, significant when $p < 0.05$

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