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## Research Article

# Relationship between Academic Workload and Stress Level among Biomedical Science Students in Kuala Lumpur

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## Abstract

A cross sectional study done to determine the relationship between academic workloads (credit hours, assignments and study hours) and stress level among biomedical science undergraduates according to gender and year of study. Undergraduates ( $n = 141$ , 14 male and 90 females) of biomedical science were chosen via systematic random sampling, responded on GHQ-30 questionnaires to determine their stress level, demographic data, study hour, credit hour and number of assignment per week. The study found that the mean stress level for male was  $15.86 \pm 6.138$  while, for female was  $15.70 \pm 6.504$ . Stress level between year of study, study hour by year of study, credit hour by year of study and assignments by year of study was compared. The result indicated that there was significant difference ( $p < 0.05$ ) for study hour by year of study and credit hour by year of study. The results showed that there was weak correlation between stress and credit hour ( $r = 0.165$ ), study hours ( $r = 0.062$ ), number of assignment ( $r = 0.158$ ). The conclusion can be drawn that the stress level of biomedical science undergraduates could be contributed by other factors such as personal problems, financial problems, college activities and others rather than academic workload.

**Key words:** Stress level, workload, assignment, study hours, credit hours

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## **INTRODUCTION**

Students have always been perceived as stressed individuals due to the amount of academic workload they bear. This perception is stronger when viewing students studying in medical-related fields. Stress is emotional feelings that make the person feel uncomfortable and unhappy with the situation that he or she has to overcome (Ganesh *et al.*, 2012). Academic related stressors refer to any academic activity such as examination, co-curriculum, lifestyle, merit system (Saat *et al.*, 2011), workload, time management (Wahat *et al.*, 2012) and others. The term workload can be defined as the amount of work that being assigned to a person in a specified time period. In this case, assignment, tutorial, classes, test or examination, quizzes, report and practical are under academic workloads where student, especially university's student need to fulfilled in order to graduate (Yusoff *et al.*, 2010a).

Stress is reaction of the body that need a physical, mental or emotional adjustments or response. Stress can come from the feeling of frustrated, angry, nervous or anxious (Kausar, 2010). Heavy academic workloads can cause feeling of nervous and anxious which cause stress if it persist in a longer period of time. The study done by Yusoff *et al.* (2010b) proved that year of study as the best predictor among medical university student's stress level where the prevalence of stress increase as the year of study increase from first year until fourth year. Previous study by Kausar (2010) among university students in Pakistan showed that there was positive relationship between academic workload and perceived stress among students. Other study by Ganesh *et al.* (2012) on factors contributing to stress among students showed that exam stress has the highest percentage reason of stress which was 63% compared to psychological problems (50%).

Weerasinghe *et al.* (2012) proved that heavy academic workload is the most prominent factor affecting to stress level of undergraduates in Sri Lankan public universities in Colombo region where it dominating 90% of the top 10 stressor. It was found that the test and examination was the top 10 of the stressor in the academic related workload. Exam stress has been observed that students have marked undue stress during pre and examination period (Ganesh *et al.*, 2012). Stress is more prevalent among students due to their hectic and demanding schedule which is important for learning as it interferes with their performances and keeps the task oriented (Ganesh *et al.*, 2012). Misra and McKean (2000) studied the association between academic stress, anxiety, time management and leisure satisfaction among university students. Students were reported to experience anxiety and

they used time management and indulged in leisure activities to deal with academic stress. In semester system, stress-inducing academic demands include grade competition; lack of time and issues relating to time or task management (Macan *et al.*, 1990) they have to adapt to new learning challenging environments. There are many negative consequences of the academic stress such as increasing in body mass index (Saat *et al.*, 2010) and eating behavior (Saat *et al.*, 2014).

This study specifically aimed to explore the relationship between stress level and academic workload among undergraduates. It will also show the contributing factors of stress level such as the demographic data (gender), year of study, credit hours, study hours and also number of assignments done. For instance, the stress level by gender and year of study, also the relationship between stress level and academic workload will be determined and the stress level according to gender and year of study can be compared. Thus, this study was aimed to determine the relationship between stress level and academic workload among Biomedical students in according to gender and year of study.

## **MATERIALS AND METHODS**

A cross sectional study was done using a questionnaire. It was conducted among first, second and third year Biomedical Science students. The complete name lists of the students were taken and the subjects were selected using systematic random sampling with an exclusion criterion of 4th year Biomedical Science undergraduates on the same session.

The sample size required was 104 subjects. A structured questionnaire which contained two parts was used. Section A consisted of subject's demographic data which include gender, year of study and also questions regarding academic workload (total credit hours, number of assignments/week and study hours/week for the last semester). These questions were derived from literature reviews. Section B contained General Health Questionnaire 30-items (GHQ-30). The GHQ-30 is a reliable instrument to detect distressed among medical students (Yusoff *et al.*, 2010a).

A pilot study has been done and the Cronbach alpha value was 0.93 indicating a high internal consistency. In Malaysia, the instrument has been validated in the local population using English and Malay versions. It is a self-reporting questionnaire and it consists of broad symptoms of psychiatric disorders in the general population. The GHQ-30 was used in this study because it contains only 30 items compared to Student Life-Stress Inventory (SLSI) by Gadzella (1991). It was also used because of its popular usage

in the sample of student and young populations in the community. Furthermore it is simple, easy to understand, short and straightforward to answer. The SLSI consists of 51 items listed in 9 sections indicating different type of stressors and reactions to the stressors as perceived by university students.

In this section, the GHQ-30 was further divided into two parts; part 1 and 2. The items of the GHQ-30 were rated under 4 categories of responses, not at all, no more than usual, more than usual and much more than usual for statement 1 to 15 (part 1), whereas for the rest of statements (part 2) the responses were more than usual, no more than usual, less than usual and much less than usual. The examples of part 1 questions/statements were "Able to concentrate on whatever you are doing?" and "Felt that life is entirely hopeless?". In part 2 (statement 1-15) the examples of the statements/questions were "Lost much sleep over worry?" and "Found everything getting on top of you?". The scoring method was either 0 or 1. The maximum score was 30. The cut off point to detect if the student is indicated stress was at least 6 (Yusoff *et al.*, 2010b).

All chosen subjects agreed to participate. The time needed by the subjects to fill in the questionnaire was around 10 min and it was collected on the same day. Data analysis was conducted using Statistical Package for Social Sciences (SPSS) version 20. Types of analysis using descriptive analysis, one-way analysis of variance (ANOVA) and Spearman correlation were used in the current study.

### RESULTS

Table 1 shows the total number of subjects by year of study and gender which consist of 30 first year students, 24 second year students and 50 third year students. The total number of subjects in this study was 104 students (14 male students and 90 female students).

Table 2 shows the means and standard deviations of stress score by year of study and workloads (study h, credit h and assignment). The results for F tests are not significant since the p-values are all greater than 0.05. This implied that the stress score showed no mean difference between year of study, number of workload, credit hours and number of assignment. For example the mean stress score for third year students was the highest. However the result was not significant if compared with first and second year.

According to Table 3, a one-way analysis of variance revealed significant differences between study hours and year of study,  $F(2, 101) = 10.978, p < 0.001$ . *Post hoc* comparisons using the Scheffe test revealed that year 1 students had significantly longer study hours than year 2 and 3 students while year 2 student's study hours did not differ

Table 1: Descriptive data of subjects

Variable	Frequency (%)
<b>Years of study</b>	
1st year	30 (28.8)
2nd year	24 (23.1)
3rd year	50 (48.1)
<b>Sex</b>	
Male	14 (13.5)
Female	90 (86.5)
<b>Race</b>	
Malay	87 (83.7)
Indian	5 (4.8)
Chinese	12 (11.5)
<b>Credit hours</b>	
<16	24 (23.1)
17-20	48 (46.2)
>21	32 (30.8)
<b>Assignments</b>	
<3	26 (25)
4-6	65 (62.5)
>7	13 (12.5)
<b>Study hours</b>	
<6	51 (49)
7-12	36 (34.6)
>13	17 (16.3)
<b>Stress level</b>	
Stress	97 (93.3)
No stress	7 (6.7)

Table 2: Mean of stress score by year of study and workloads (study hours, credit hours and assignment)

	Stress			
	Mean	Standard deviation	F	p-value
<b>Year of study</b>				
1	15.97	5.58	0.076	>0.05
2	16.74	5.19		
3	17.58	6.49		
<b>Workload study hours</b>				
<6	16.83	6.25	0.866	>0.05
7-12	16.48	5.62		
>13	17.88	5.8		
<b>Credit hours</b>				
<16	15.57	5.915	0.568	>0.05
17-20	17.21	6.186		
>21	17.45	5.581		
<b>Assignment</b>				
<3	16.83	5.362	1.171	>0.05
4-6	16.33	6.093		
>7	19.92	5.648		

significantly from year 3 students. Credit hours by year of study revealed that there was significant difference between the groups,  $F(2, 101) = 96.707, p < 0.001$ . *Post hoc* comparisons using the Scheffe test revealed that all three groups (year 1, 2 and 3) had significantly different credit hours. For assignments by year of study, one-way ANOVA yielded no significant difference between year of study in regard to number of assignments per week.  $F(2, 101) = 1, p > 0.05$ .

Table 3: Means and standard deviations of workloads (study hours, credit hours and assignment) according to year of study

Workload	N	Mean	Standard deviation	F	p-value
<b>Study hours</b>					
Year 1	30	11.97	7.449	10.978	<0.001
Year 2	24	7.38	5.815		
Year 3	50	6.04	3.806		
<b>Credit hours</b>					
Year 1	30	16.77	1.654	96.707	<0.001
Year 2	24	22.54	2.000		
Year 3	50	18.62	1.176		
<b>Assignment</b>					
Year 1	30	4.07	1.461	1.570	>0.05
Year 2	24	4.64	1.141		
Year 3	50	5.12	3.491		

Table 4: Pearson correlation coefficient between stress level and credit hours, stress level and assignment and stress level and study hours according to year of study

	First year	Second year	Third year
Credit hours	0.127	0.562**	0.108
Study hours	0.056	-0.183	0.026
Assignments	0.125	-0.103	0.205
N	24	30.0	50

\*p<0.05

In order to know if the student feels that the credit hours, assignment and study hours are stressful the analysis of correlation was done. The result in Table 4 indicated that there was positive correlation between credit hours, study hours, assignment with stress level. However for second year student there was negative relationship between study hours, assignments with stress level. However, it was not significant. Furthermore, there was a positive and good relationship between stress level and academic workload which is credit hours among second year student.

## DISCUSSION

Our result showed that there was no significant difference in the stress score/level between the year of study among biomedical science undergraduates. However, this finding is contrary to the study done by Yusoff *et al.* (2010a) that proved that year of study as the best predictor of university student's stress level. Interestingly, it is predicted earlier that year 3 undergraduates would have higher stress level. One of possible explanations for this result is that stress level among biomedical science students may be contributed by other factors such as personal problems, family problems and others. Other factors that contribute to stress level was life satisfaction. A study among medical students indicated that the workload of the students (outpatient or consult, hospital ward, missing data, research and intensive care unit)

has relationship with burnout. The increase risk of burnout has decrease the satisfaction score among medical student in the study (Dyrbye *et al.*, 2009).

According to USQ Australia (2008), to measure the amount of learning, academic workload can become a useful parameter to achieve learning objective. In our study, academic workload includes total credit hours, number of assignments and study hours per week for the last semester. Ganesh *et al.* (2012) showed that due to busy schedule, stress is more prevalent among students with students reported stress due to academic factors where it can impact their performances. Our analysis showed that total credit hours between year of study was significantly different among biomedical science undergraduate students. Likewise, the data also showed that the time taken for the students for studying over a week significantly differed between the year of study. This is parallel to Macan *et al.* (1990) which stated that in semester system, academic stress such as issues regarding examination results, time and task management. Interestingly however, as stated earlier, no significant differences are found in their stress level and it was year one undergraduates who had the least credit hours but the highest study hours.

There was also no significant difference discovered in the number of assignments per week between the year of study. However, previous study showed that there was positive relationship between academic workload and perceived stress among students (Kausar, 2010). This study paralleled with previous study, which indicated that there was significant correlation between credit hours and stress level among second year student. However, there was no significant correlation between study hour and assignment with stress level for first, second and third year student. Nevertheless, further studies should be conducted to verify the actual relationship between academic workload and stress among biomedical science undergraduates.

The correlation result showed that there was positive and significant correlation between stress level and credit hours among second year student ( $r = 0.562$ ,  $p < 0.05$ ). Meanwhile, there was no significant correlation between number of assignment and study hours with stress level for all first, second and third year student. However, previous study showed that there was positive relationship between academic workload and perceived stress among students (Kausar, 2010). Weerasinghe *et al.* (2012) proved that heavy academic workload is the most prominent factor affecting to stress level of undergraduates in Sri Lankan public universities in Colombo region but in our result, it was not significant and the stress level could be contributed by other factors such as

personal problems, financial problems, college activities and others rather than academic workload except for second year student. Lack of study hour can cause stress to happen as the lack of study can affect the mark of the assignment, test and tutorial, Misra and McKean (2000). However in our result, the weakest correlation was between stress level and study hours and the coefficient of correlation varies between years of study.

### **CONCLUSION**

In conclusion more than 80% of the student in this study has stress. The highest stress level was among third year student. However, there was no significant difference of stress level between years of study. The study hours and credit hours differs significantly between years of study. There was significance correlation between stress level and credit hours for second year student. These results reassure that when there is increase credit hours, the stress level also tend to increase. One of possible explanations for this result is that stress level among biomedical science students may be contributed by other factors such as personal problems, family problems and others.

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