

# The Association Between Self-esteem and Academic Stress Among Undergraduate Medical Students

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## Abstract

Academic stress is one of the prevailing issues faced by students nowadays and it could also affect other aspects of students' lives if kept unbothered. There are many factors which contribute to academic stress experienced by undergraduate students. One of these factors is self-esteem which is considered to have an influence in explaining why the students undergo academic stress. The purpose of this cross-sectional study was to assess the level of academic stress and self-esteem in medical students of Melaka Manipal Medical College (MMMC). Undergraduate medical students were invited to participate during the lecture class. Self-administered questionnaire was used to assess socio-demographic data, self-esteem and academic stress. Rosenberg Self Esteem Scale was used to determine self-esteem while Perception of Academic Stress (PAS) scale was used for academic stress. Unpaired t-test, ANOVA and linear regression were used for statistical analysis. A total of 204 clinical year medical students participated. 80.88% of the students were found to have a high level of stress. However, the bivariate analysis shows no association between gender, ethnicity, relationship status, physical activity and academic stress. There was a significant positive association between self-esteem and academic stress (regression coefficient -0.522; P value<0.001), indicating that the higher the self-esteem, the lower the academic stress. Majority of the undergraduate medical students had high academic stress. Interventions to lower academic stress and to increase self-esteem should be carried out so that the learning process of students will be efficient.

## Keywords

Academic Stress, Self-esteem, Medical Student

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## 1. Introduction

Academic stress has been prevalent throughout many decades of students' lives. [1] It is believed that there are two types of stress, a "favourable stress" which could increase productivity and "excessive stress" which could lead to academic decline and familial problems as well as psychological problems such as anxiety and depression. [2] Academic stress is "defined as the body's response to academic-related demands that exceed the adaptive capabilities of students". [3] "Excessive levels of academic

stress can result in an increased prevalence of psychological and physical problems like depression, anxiety, nervousness and stress-related disorders, which in turn can affect their academic results." [4] The prevalence rate of perceived stress among undergraduate students in Malaysia was 37.7%, with females and first-year undergraduate students having the most stress. [5, 6]

Self-esteem can be defined as "the degree of self-respect and an individual's measure of their own worth." Self-esteem also "encompasses one's capabilities, beliefs and emotional states such as joy, sorrow, self-satisfaction as well as humiliation"

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[7]. It is viewed as one of the major influential factors which have an immense effect on medical student's academic stress level as they tend to compare their self-evaluation with actual performance in various aspects [8]. Besides, it is also an integral quality to be inculcated among medical students as having high self-esteem does help in achieving better academic results and enhances the stress-coping mechanism [9]. However, students with low self-esteem easily succumb to depression and engage in unhealthy habits such as smoking and alcohol abuse. These students usually appear demotivated and indulge in self-loathing [10].

Stressors affecting university students can be of different aspects such as financially, academically and time or health-related [8]. Students have been reported to experience academic stress each semester from studying for exams in a small amount of time and unavailability of learning materials [11]. Nowadays, students are also following unhealthy lifestyle which involves tobacco smoking, drug abuse and alcohol consumption as a mode of academic stress reliever. [12] These hazardous habits have negative impacts on students' physical and mental development which results in poor academic performance.

In addition, one of the causes for students experiencing academic stress is parental expectations. The burden of living up to parents' expectations can be a heavy load to carry on and in order to fulfil parents' demands, students need to cope with mental stress and this will, unfortunately, lead to unwanted outcomes like anxiety, depression and sometimes suicide. [13, 14]

It is also a generalized perceived idea that older people tend to be more mature and are to a greater extent better at coping with stress. It has been cited that female students tend to have more academic stress. Support seeking way of coping was seen more in females as shown by the increased use of instrumental support seeking (problem-focused) and emotional support seeking (emotion-focused) in comparison to males." [15]

The relationship between financial capability and academic stress has always been ubiquitous. It is stated that "the more allowance the student has, the more chances that he or she would spend more of his or her time indulging in other activities rather than in academic-related tasks".[16]

Exercise is considered one of the most efficient ways to boost self-esteem among students. Studies reported that students who are more involved in physical activities have lower level of academic stress and depression [17]. An article from the American Psychological Association stated that 53% of students admitted to be feeling good about themselves after exercising while 35% said that performing exercise lifted up their mood [18]. Hence, the academic stress level and anxiety

among students who were involved in physical activities were greatly reduced.

### 1.1. Research Gap

Only a few studies have been conducted on academic stress in Malaysia. Their population of the study mainly focus on the undergraduate student of other disciplines [8, 19-23]. But concisely research on academic stress and self-esteem is not substantial in the Malaysia context. Unlike other studies, our study mainly focuses on academic stress among clinical year medical student, and to analyze the association between self-esteem and academic stress. Besides, this study also serves as a direction to find out the association between academic stress with gender, race, physical activities, relationship status.

### 1.2. Research Question

Does the level of self-esteem has an effect on academic stress experienced by undergraduate medical students in Melaka Manipal Medical College?

### 1.3. Objective

The purpose of this study is to assess the level of academic stress of medical students of Melaka Manipal Medical College and to assess their level of self-esteem. Besides, the study is aimed to analyse the relationship between the academic stress of medical student of Melaka Manipal Medical college with self-esteem, gender, race, physical activities, relationship status.

### 1.4. Hypothesis

It was hypothesized that academic stress provides a significant positive correlation with the level of self-esteem. Medical students with high self-esteem experience less academic stress compared to those with low self-esteem. The hypothesis of this study also emphasizes factors such as gender, ethnicity, physical activities, and relationship status are associated with academic stress experienced among the medical students.

## 2. Methodology

### 2.1. Research Design

The study design adopted for this research was a cross sectional design that investigates factors associated with academic stress among medical students in Melaka Manipal Medical College. Melaka Manipal Medical College constitutes of 3 programmes which are MBBS, BDS, and FIS however in our study, we only collect the data from MBBS programme. The MBBS programme has 2 campuses, with all students totalling up to 750. The duration of our research was

from November 2019 to December 2019.

## 2.2. Sample Size

Epi Info 7 was used in this research to calculate the sample size. Below is the sample size calculation by Epi Info 7.

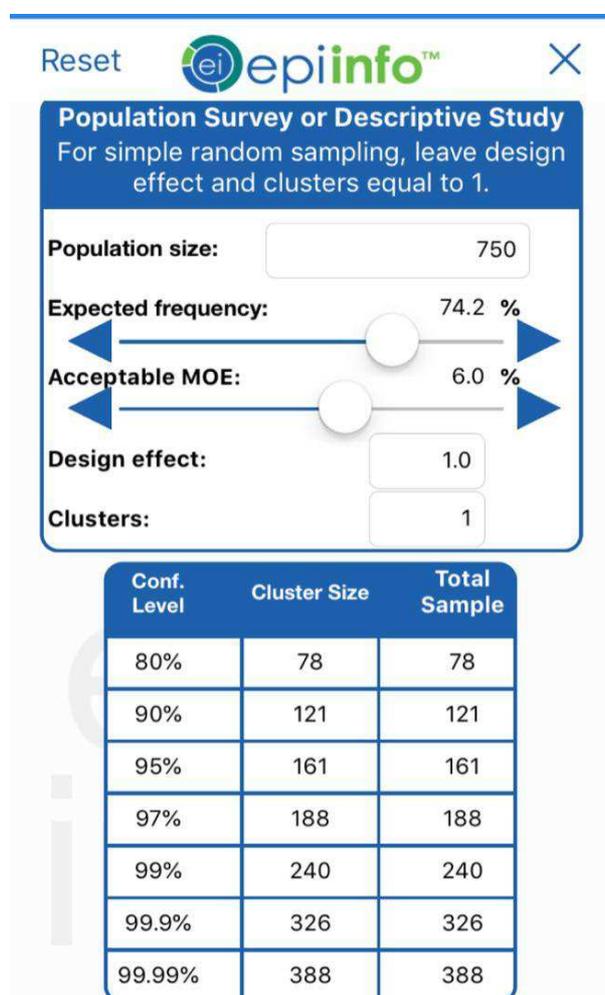


Figure 1. Population survey of student in Melaka Manipal Medical College, Malaysia.

Where;

Population size: 750 students of Melaka Manipal Medical College, Malaysia

Expected frequency: 74.2%, the percentage of participants who have academic stress [19]

Acceptable margin of error: 6%

Therefore, based on the application Epi Info 7, the minimum sample size is 161 with the confidence level of 95%

*Non-response*

Minimum sample size needed: 161

Maximum percentage of non-response allowed was 20%

To allow for non-response, the final sample size was

calculated using the formula below:

$$n_{\text{final}} = n_{\text{calculated}} / (1 - \text{percentage of non response})$$

$$n_{\text{final}} = 161 / 1 - 0.2$$

$$= 201.25$$

Therefore, the final sample size is 202 after rounding off.

## 2.3. Sampling

Purposive sampling was used to recruit students in this research, which is a non probability sampling method. For inclusion criteria, we included clinical year medical students from semester 6 & 7 of Melaka Manipal Medical College, Malaysia. A self-administered questionnaire was distributed to all the students during lecture class and we included students who were present on the day of data collection.

The exclusion criteria in the research were students who did not want to participate in this study since the study was voluntary, students who were not present on that day and students who did not complete the questionnaire. Students whom did not give consent were also excluded from the study.

## 2.4. Data Collection

The questionnaire was distributed to Semester 6 and Semester 7 MBBS students of Melaka Manipal Medical College and returned back in the presence of the researchers. [19] Prior to the distribution, the students were explained about the objectives of the study and briefed on how to fill in the questionnaires in order to avoid incomplete responses. [24] It was a voluntary participation from the students and they were given the option to decline without providing any reasons. The students took approximately 10 to 15 minutes to complete the questionnaire without any difficulties. [25]

The questionnaire consisted of 3 main parts. First part was sociodemographic data which included age, gender, race, religion, relationship status, physical activities, smoking and alcohol consumption. The second part was Rosenberg Self Esteem Scale evaluating self-esteem and third part was Perception of Academic Stress (PAS) scale assessing academic stress. [26]

## 2.5. Instruments

Rosenberg Self-Esteem Scale (RSES) is used to measure the student's self esteem self-esteem. It consisted of a ten-item Likert-type scale with said items answered based on a four-point scale—starting from strongly agree to strongly disagree.” [27] The questionnaires consisted of 5 positive items and 5 negative items. For items 1, 3, 4, 7, 10 (positive items) the lowest score of 0 was given to “Disagree” while highest score of 3 was given “Strongly agree”. While for item 2, 5, 6, 8, 9 (negative items) Lowest score of 0 was given to

“Strongly agree” and highest score of 3 was given to “Strongly Disagree”.[28] It contained a score of 10-40 where anything placed lower than 25 indicates low self-esteem. This scale was useful to assess the level of self esteem faced by clinical year Melaka Manipal Medical students in our study.

Perception of Academic Stress scale (PAS) scale was used to evaluate a student’s academic stress. It is an 18-item scale to measure the perceptions that were related to a person’s academic stress with items answered on a five-point scale from strongly agree to strongly disagree. The questionnaires consisted of 18 items: 15 positive items and 3 negative items (13, 14, 15) and for the scoring, each score were added up together to find the total score.. For positive items, the lowest score of 1 was given to “Strongly Disagree” while the highest score of 5 was given “Strongly Agree”. While for negative items, the lowest score of 5 was given to “Strongly agree” and highest score of 1 was given to “Strongly Disagree”.[2] It contained a score of 18-90. Academic stress was categorised as high stress (54 and above) and low stress (53 and below). PAS scale contained of three main subscales: (1) the academic expectations subscale (four items), (2) workload and examinations subscale (eight items), and (3) students’ academic self-perceptions subscale (six items). [8] This scale was useful to monitor the differences and types of academic stress faced by the clinical year medical students of Melaka Manipal Medical College in this study.

## 2.6. Data Processing and Data Analysis

Data was then fed into Microsoft Excel compiled. Epi info V7.0 was used to statistically analyse the data. For the Qualitative data (age, gender, race, religion, relationship status, monthly allowance, semester, physical activity high risk behaviour, self-esteem, academic stress) frequency and percentage was calculated using Epi info V7.0. Bivariate analyses were carried out to determine the association between gender, race, relationship status, physical activity and the academic stress. Regression coefficient between the self-esteem and academic stress is also calculated. Level of significance was set at 0.05.

**Table 1.** Independant and dependant variables with statistical test.

Independent variable	Dependent variable	Statistical Test
1) Gender	Academic Stress	Unpaired “ t ” test
2) Race	Academic Stress	ANOVA
3) Relationship status	Academic Stress	Unpaired “ t ” test
4) Physical activity	Academic Stress	Unpaired “ t ” test
5) Self-Esteem	Academic Stress	Simple Linear Regression

## 2.7. Ethical Consideration

This research has been approved by the Research Ethics Committee, Faculty of Medicine, Melaka Manipal Medical

College, Malaysia. The participants of this study were informed that their participation was completely voluntary and written informed consent forms of the participants were collected. The participants of this study have been guaranteed that their personal information and responses will be kept strictly confidential.

## 3. Results

**Table 2.** Sociodemographic Characteristics of clinical year Medical Student (n= 204).

Variable	n (%)
Age	
18-20	5 (2.45%)
21-23	186 (91.18%)
>23	13 (6.37%)
Gender	
Female	127 (62.25%)
Male	77 (37.75%)
Race	
Malay	45 (22.06%)
Chinese	57 (27.94%)
Indian	67 (32.84%)
Other	35 (17.16%)
Religion	
Islam	53 (25.98%)
Buddhist	51 (25.00%)
Hindu	60 (29.41%)
Christian	29 (14.22%)
Other	11 (5.39%)
Relationship status	
Single	131 (64.22%)
In a relationship	73 (35.75%)
Monthly Allowance	
< RM499	32 (15.69%)
RM500 - RM 999	107 (52.45%)
RM 1000 - RM1499	46 (22.55%)
RM 1500 - RM 1999	10 (4.90%)
RM2000 - RM 2499	2 (0.98%)
> RM2500	7 (3.43%)
Semester	
6	123 (60.29%)
7	81 (39.71%)
Physical activity	
Yes	140 (68.97)
No	63 (31.03%)
Smoking	
Yes	10 (4.90%)
No	194 (95.10%)
Consuming alcohol	
Yes	51 (25.00%)
No	153 (75.00%)

Table 2 shows the demographic data from 204 respondents. A total of 204 clinical year medical students were involved in the study. 62.25% (127) were female respondents and 37.75% (77) were male students. Most of the participant’s age was between 21 years old to 23 years old (91.18%) and the least was form the age group of 26 years old and above (1.47%) Based on the descriptive study 22.06% were Malay, 27.94% were Chinese, 32.84% were Indian and 17.16%

were from others ethnicity. Besides that, the religion of the participants was also being analysed. For which 25.98% of them were Muslim, 25.00% were Buddhist and 29.41% were Hindu, 14.22% were Christians and 5.39% were from other religions. 64.22% of the participant were single while 35.75% were in a relationship. Other than that monthly allowance was being analyzed Most of the participants were having the allowance range of between RM500 to RM999 (52.45%) while the minimum amount of student was having the allowance between the range of RM 2000 to RM2499

(0.98%). 60.29% of the participants were from semester 6 and 39.71% were from semester 7. For physical activity, 68.97% of the participant apparently did a physical activity while 31.03% did not do physical activity. While for smoking, the only minimum number of students smoked (4.90%) while remaining of 95.10% was a non-smoker. Lastly, for the category of consuming alcohol, 25% of the participants consumed alcohol and 75% of the participants had never consumed alcohol.

**Table 3.** Self-esteem and academic stress in medical students (n=204).

Independent Variables	n (%)
Self-Esteem (10-40)	
High	149 (73.04%)
Low	55 (26.96%)
Mean (SD)	27.1 (4.35)
Min-Max	10-40
Academic Stress (18-90)	
High	165 (80.88%)
Low	39 (19.12%)
Mean (SD)	59.3 (8.33)
Min-Max	18-90
Factor 1: Pressures to perform <sup>a</sup> (5-25)	16.2 (3.17)
Factor 2: Perceptions of workload <sup>a</sup> (4-20)	14.1 (2.88)
Factor 3: Academic self-perceptions <sup>a</sup> (4-20)	13.4 (1.61)
Factor 4: Time restraints <sup>a</sup> (5-25)	15.5 (3.09)

a= Mean (SD)

Most students in Melaka Manipal Medical College have high self-esteem (73.04%), they have a mean score of 27.1 (SD=4.35).

However, a high percentage (80.88%) of students also suffer from a high amount of academic stress with a mean score of 59.3 (SD=8.33). For Factor 1, the mean score 16.2 (SD=3.17) is higher than the cut off point which means that medical students experience stress in Factor 1. Mean score for Factor 2 is 14.1 (SD=2.88) which is also higher than the cut off point which is 12, meaning that students feel stressed in perceptions of workload. Mean score for Factor 3 of 13.4

(SD=1.61) is higher than the cut off indicating high stress. Lastly Factor 4 has a mean score of 15.5 (SD=3.09) slightly above the cut off point indicating that students only slightly stressed due to time restraints.

Overall, medical students have high self esteem however they also have high academic stress.

**Table 4.** Association between gender and academic stress.

Variable	Female Mean (SD)	Male Mean (SD)	Mean Difference (95% CI)	t (df)	P-value
Factor 1: Pressure to perform	16.6 (3.07)	15.7 (3.26)	0.84 (-0.05, 1.74)	1.86 (202)	0.065
Factor 2: Perceptions of workload	14.3 (2.85)	13.8 (2.92)	0.47 (-0.35, 1.29)	1.13 (202)	0.259
Factor 3: Academic self-perceptions	13.3 (1.60)	13.6 (1.62)	-0.27 (-0.73, 0.18)	-1.18 (202)	0.238
Factor 4: Time restraints	15.7 (3.09)	15.2 (3.08)	0.44 (-0.44, 1.32)	0.98 (202)	0.327
Total	59.9 (8.29)	58.4 (8.37)	1.48 (-0.89, 3.85)	1.23 (202)	0.220

Factor 1 (pressure to perform) presents the mean value for male students as 15.7 (SD=3.27) while female students has a mean value of 16.6 (SD=3.07). The mean difference is 0.84. This indicates that female medical students experience more pressure to perform compared to male medical students. The 95% Confidence Interval for this factor ranges from -0.05 to 1.74 thus it is not significant. P-value is found to be 0.065 so it shows non-significance. Hence, there is no association between gender and pressure to perform.

Factor 2 (perceptions of workload) has a mean value of 13.8 (SD=2.92) for male students and 14.3 (SD=2.85) for female

students. This factor carries a mean difference of 0.47 which suggest that female medical students have greater perceptions of workload compared to male students. The 95%

Confidence Interval ranges from -0.35 to 1.29. This indicates that this association is of no significance. The P-value is 0.259 which implies non-significance. Hence, there is no association between gender and perceptions of workload.

Factor 3 (academic self-perceptions) shows a mean value of 13.6 (SD=1.62) for male students and 13.3 (SD=1.60) for female students. The mean difference for this factor is -0.27.

This shows that male medical students have higher academic self-perceptions compared to female students. The 95% Confidence Interval ranges from -0.73 to 0.18. This expresses the non significance of this association. The P-value for this factor is 0.238 so there is no significant association between gender and academic self-perceptions.

Factor 4 (time restraints) displays the mean value for male students as 15.2 (SD=3.08) while the female students holds a mean value of 15.7 (SD=3.09). The mean difference obtained is 0.44. This indicates that female medical students experience more time restraints compared to male students.

The 95% Confidence Interval for this factor ranges from -0.44 to 1.32 therefore this association is not significant. The P-value is 0.327. This demonstrates the non-significant association between gender and time restraints.

The total mean value is 58.4 (SD=8.37) for male students and 59.9 (SD=8.29) for female students. The mean difference sums up to 1.48 while the 95% Confidence Interval ranges from -0.89 to 3.85. This labels the association as not significant. The P-value is found to be 0.220. This points out that there is no significant association between gender and academic stress.

**Table 5.** Association between ethnicity and academic stress.

Variable	Mean (SD)				F (df1, df2)	P-value
	Malay	Chinese	Indian	Others		
Factor 1 Pressure to perform	16.8 (2.79)	15.9 (2.88)	16.1 (3.73)	16.3 (2.92)	0.7 (3, 200)	0.583
Factor 2: Perceptions of workload	13.9 (2.74)	13.8 (2.77)	14.6 (2.87)	14.1 (3.21)	1.1 (3, 200)	0.369
Factor 3: Academic self-perceptions	12.9 (1.44)	13.3 (1.52)	13.7 (1.71)	13.7 (1.58)	3.4 (3, 200)	0.019
Factor 4: Time restraints	14.8 (3.00)	15.4 (2.83)	15.8 (3.23)	16.1 (3.26)	1.4 (3, 200)	0.233
Total	58.3 (8.14)	58.4 (7.51)	60.4 (8.86)	60.2 (8.78)	0.9 (3, 200)	0.420

The Malay population has the highest mean of 16.8 (SD=2.79) for factor 1 (pressures to perform) compared to other races. This indicates Malays experience more pressures to perform compared to other ethnicities. The P-value for factor 1 (pressure to perform) was 0.583 which is found to be not significant. Thus, there is no association between ethnicity and pressures to perform.

For factor 2 which is perceptions of workload, the Indians have the highest mean score of 14.6 (SD=2.87) while the Chinese have the least mean score of 13.8 (SD=2.77). This shows that Indians have greater perceptions of workload while Chinese have the least perceptions of workload. The p-value for perceptions of workload is 0.369 which is not significant. Hence, we can conclude that ethnicity has no association with perceptions of workload.

The highest mean score for academic self perceptions (factor 3) is 13.7 which came from Indian and Others. Indian had a mean of 13.7 (SD=1.71) and others had a mean of 13.7 (SD=1.58). Malays have the least mean score of 12.9 (SD=1.44). This indicates that Indians and Others have the

best academic self perceptions compared to the other two races. The p-value for academic self perceptions is 0.019, which is significant. Thus, there is an association between ethnicity and academic self perceptions.

Others have the highest mean score of 16.1 (SD=3.26) for time restraints while the Malays have the least, which is 14.8 (SD=3.00). This shows that Others have the greatest time restraints compared to other races. The p-value for time restraints is 0.233 which is found to be not significant. Thus, there is no association between ethnicity and time restraints.

The highest total mean value observed was from Indian which was 60.4 (SD=8.86) while the lowest mean value was from Malay which was 58.3 (SD=8.14) with a mean difference of 2.1 between the highest and the lowest. This shows that the ethnicity that experiences academic stress the most was from Indians while Malays experience the least academic stress. The P value was found to be 0.420 which is higher than 0.05. This means that it is not significant and there is no association between ethnicity and academic stress.

**Table 6.** Association between Relationship Status and Academic Stress.

Variables	Single Mean (SD)	In a relationship Mean (SD)	Mean difference (95% CI)	t (df)	P-value
Factor 1: Pressure to perform	16.3 (3.12)	16.2 (3.25)	0.12 (-0.78, 1.03)	0.25 (202)	0.799
Factor 2: Perceptions of workload	14.2 (3.01)	14.1 (2.64)	0.13 (-0.70, 0.96)	0.30 (202)	0.761
Factor 3: Academic self-perceptions	13.4 (1.58)	13.5 (1.66)	-0.19 (-0.65, 0.27)	-0.81 (202)	0.422
Factor 4: Time restraints	15.6 (3.31)	15.4 (2.65)	0.13 (-0.76, 1.02)	0.28 (202)	0.780
Total	59.4 (8.57)	59.2 (7.93)	0.18 (-2.22, 2.59)	0.15 (202)	0.880

Factor 1 (Pressure to perform) presents the mean value for single students as 16.3 (SD=3.12) while students in a relationship has a mean value of 16.2 (SD=3.25). The mean difference is 0.12. This indicates that single students experience more pressure to perform compared to students in a

relationship. The 95% Confidence Interval for this factor ranges from -0.78 to 1.03 where 0 is found within the range thus it is not significant. P-value is found to be 0.799 which is more than 0.05 so it shows no significance. There is no association between relationship status and pressure to perform.

Factor 2 (Perceptions of workload) has the mean value for single students as 14.2 (SD=3.01) while students in a relationship has a mean value of 14.1 (SD=2.64). The mean difference is 0.13. This indicates that single students experience more perceptions of workload compared to students in a relationship. The 95% Confidence Interval for this factor ranges from -0.70 to 0.96 where 0 is found within the range thus it is not significant. P-value is found to be 0.761 which is more than 0.05 so it shows no significance. There is no association between relationship status and perceptions of workload.

Factor 3 (Academic self perceptions) shows the mean value for single students as 13.4 (SD=1.58) while students in a relationship has a mean value of 13.5 (SD=1.66). The mean difference is -0.19. This indicates that single students experience less academic self perceptions compared to students in a relationship. The 95% Confidence Interval for this factor ranges from -0.65 to 0.27 where 0 is found within the range thus it is not significant. P-value is found to be 0.421 which is more than 0.05 so it shows no significance. There is no association between relationship status and

academic self perceptions.

Factor 4 (Time restraints) shows the mean value for single students as 15.6 (SD=3.31) while students in a relationship has a mean value of 15.4 (SD=2.65). The mean difference is 0.13. This indicates that single students experience more pressure to perform compared to students in a relationship. The 95% Confidence Interval for this factor ranges from -0.76 to 1.02 where 0 is found within the range thus it is not significant. P-value is found to be 0.78 which is more than 0.05 so it shows no significance. There is no association between relationship status and time restraints.

The total mean value for single students as 59.4 (SD=8.57) while students in a relationship has a mean value of 59.2 (SD=7.93). The mean difference is 0.18. This indicates that single students experience more pressure to perform compared to students in a relationship. The 95% Confidence Interval for this factor ranges from -2.22 to 2.59 where 0 is found within the range thus it is not significant. P-value is found to be 0.88 which is more than 0.05 so it shows no significance. There is no association between relationship status and total factors.

**Table 7.** Association between academic stress and Physical Activity.

Variables	Without Physical Activity Mean (SD)	With Physical Activity Mean (SD)	Mean Difference (95% CI)	t (df)	P-value
Factor 1: Pressure to perform	16.3 (3.13)	16.2 (3.19)	0.15 (-0.79, 0.80)	0.32 (202)	0.753
Factor 2: Perceptions of workload	14.1 (2.90)	14.2 (2.88)	-0.06 (-0.92, 0.50)	-0.15 (202)	0.884
Factor 3: Academic self-perceptions	13.4 (1.65)	13.4 (1.59)	0.02 (-0.46, 0.5)	0.07 (202)	0.947
Factor 4: Time restraints	15.8 (2.98)	15.4 (3.14)	0.45 (-0.47, 1.37)	0.96 (202)	0.336
Total	59.6 (8.30)	59.2 (8.46)	0.5 (-1.93, 3.03)	0.44 (202)	0.661

Table 7 shows Factor 1 (pressure to perform) presents the mean value for those without physical activity as 16.3 (SD=3.13) while those with physical activity has a mean value of 16.2 (3.19). The mean difference between without physical activity and with physical activity for factor 1 is 0.15. This indicates that the participant who involved themselves in physical activity having less stress as compared to those who are not involved in any physical activity. The 95% Confidence Interval for this factor ranges from -0.79 to 0.80, where its is not significant. P-value is found to be 0.753, so it shows no significance. Therefore there is no association between relationship status and pressure to perform.

Factor 2 (Perception of workload) presents the mean value for those without physical activity as 14.1 (SD=2.90) while those with physical activity has a mean value of 14.2 (2.88). While the mean difference between without physical activity and with physical activity for factor 2 is -0.06. This indicates that the participants who did not involve themselves in physical activity having less stress as compared to those who are involved in physical activity. The 95% Confidence Interval for this factor ranges from -0.92 to 0.50, where its is

not significant. P-value is found to be 0.884, so it shows no significance. Therefore there is no association between relationship status and perception of workload.

Factor 3 (academic self-perception) presents the mean value for those without physical activity as 13.4 (SD=1.65) while those with physical activity has a mean value of 13.4 (1.59) While the mean difference between without physical activity and with physical activity for factor 3 is 0.02. This indicates that the participant who did not involve themselves in physical activity having more stress as compared to those who are involved in physical activity. The 95% Confidence Interval for this factor ranges from -0.46 to 0.50, where it is not significant. P-value is found to be 0.947, so it shows no significance. Therefore there is no association between relationship status and academic self-perception.

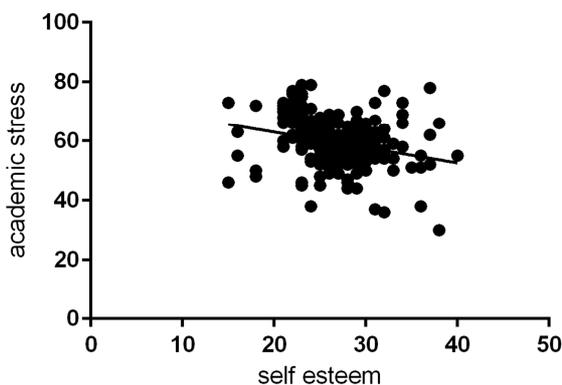
Factor 4 (Time restraints) presents the mean value for those without physical activity as 15.8 (SD=2.98) while those with physical activity has a mean value of 15.4 (3.14) While the mean difference between without physical activity and with physical activity for factor 4 is 0.45. This indicates that the participant who did not involve themselves in physical

activity having more stress as compared to those who are involved in physical activity. The 95% Confidence Interval for this factor ranges from -0.47 to 1.37 where it is not significant. P value is found to be 0.336 so it shows no significance. Therefore there is no association between relationship status and time restraints.

The total mean value for those without physical activity as 58.7 (SD=8.30) while those with physical activity has a mean value of 59.2 (8.46) While the mean difference between without physical activity and with physical activity for a total factor is 0.5. This indicates that the participant who did not involve themselves in physical activity having more stress as compared to those who are involved in physical activity. The 95% Confidence Interval for this factor ranges from -1.93 to 3.03, so its is not significant. P-value is found to be 0.661 which is more than 0.05, so it shows no significance. Therefore there is no association between relationship status and academic stress.

**Table 8.** Association between self-esteem and academic stress.

Variable	Coefficient	Std Error	F-test	P-value
Self Esteem	-0.522	0.130	16.1920	0.000081
Constant	73.462	3.558	426.2329	0.000000



**Figure 2.** Association between self-esteem and academic stress.

The coefficient for this simple linear regression is -0.522 which is in the range of 0.50-0.70, indicating moderate correlation; the negative value in the coefficient states that the higher the self-esteem, the perception of academic stress faced by the student is less. The P-value of the test is 0.000081 which is less than 0.05, which indicates that the association between self-esteem and academic stress is highly significant.

## 4. Discussion

A cross sectional study was conducted among the clinical year medical students in Melaka Manipal Medical College, Malaysia to assess their level of academic stress and self-

esteem. Besides, the study is aimed to analyse the relationship between the academic stress with, self-esteem, gender, race, physical exercise and relationship status. Stress among medical students is a growing concern in our current day and age which may lead to increased psychological, physical stress and eventually further academic decline [1]. Our present study found a significant relationship between medical students' self esteem and academic stress, where 73% of students have high self esteem and 80.9% of medical students experience high academic stress. Previous study was conducted among medical students in Malaysia which was 57% of students having high academic stress [2-29] and as well as nursing students in Nepal which resulted in 22% of students having high self esteem and 74% of students having high academic stress [19].

In this study, there was no significant difference of academic stress between gender although female students were shown to have higher academic stress compared to male students. A study done previously among University Sains Malaysia (USM) medical students to determine the prevalence and sources of stress stated that gender was not a contributing factor for academic stress experienced by the students [2]. Another study conducted in Tanta University Egypt involving third year Psychology class students provided similar results as our study [8]. However, there were also few studies done among undergraduates in a Malaysian university, Community College students and third year medical students which points out that female students obtained significantly higher academic stress score compared to male students [5, 6, 15].

Our study showed that there was no significant association between ethnicity and academic stress. The highest total mean value observed was from Indian while the lowest mean value was from Malay. Therefore, Indians experienced the highest academic stress compared to Malay, Chinese and others. However, there is significant difference of academic stress between ethnicities in academic self perceptions whereby Indians were found to be more inclined to be having better self-perceptions about their academics compared to the other three races. A previous study has been conducted between ethnicity of Italian, Vietnamese and Anglo ethnic groups to measure academic stress by using The Academic Pressure Scale for adolescents which included four significant factors to assess academic stress in adolescents such as peer pressure, parental pressure, the importance of school and fear of failure [30]. The study found that there was no significant association between ethnicity and academic stress. Besides that, a study about prevalence and determinants of perceived stress among undergraduate medical students was carried out in Malaysia by using Perceived Stress Scale (PSS) and Student Stress Survey

(SSS). It was shown that there was no significant association between ethnicity and stress [5]. Similarly, a cross sectional study was conducted in the Faculty of Medicine at a local university in Malaysia and they found that there was no significant association between ethnicity and stress [31].

A study which was done previously in Malaysia determined the association between relationship status and the academic stress. The researchers found that there was no significant association between relationship status and academic stress. This study also found that the students who were single were less likely to have stress than students in a relationship [32].

In this study, there was no significant difference of academic stress between involvement of physical activity although those who did not involve in physical activity had higher academic stress as compared to those who are involved in physical activity. There were a few studies that had been done previously to analyse the association between physical activity and academic stress [33-35]. However, there was no consistency found in those results shown by the previous studies regarding the association between physical activity and academic stress. Similar to our results, a study was done on 275 students who attend college in Puerto Rico (UPR-MSU) showed no significant difference of perceived stress between physical activity but study showed the more vigorous physical activity, the lower the perceived stress [33]. Another study conducted on 407 Swiss adolescents showed no significant difference between academic stress and physical activity [34]. However, contrary to our results, there was a study that had been done on 73,238 Korean adolescents and the study had showed significant difference in the perceived stress between involvement of physical activity although those who did not involved in physical activity which pointed out that those who were physically inactive had higher perceived stress as compared to those who were physically active [35].

Our research shows that there is a significant negative correlation between self esteem and academic stress. This signifies that the higher the self esteem of the student, the less stress they will have. Similar to our findings, the previous study conducted among nursing students in Kathmandu University in Nepal that supports our study however their result was not significant [36]. Another research conducted in Universiti Kebangsaan Malaysia had a weak correlation between self esteem and academic stress [29].

Medical school can be intrinsically stressful and undergoing high levels of stress constantly may affect students' daily activities and studies. Counselling should be done to those who have higher academic stress so that the students will

obtain proper guidance to cope with their stress level. In addition, mentor and mentee programs should be designed to serve the purpose of addressing and overcoming issues affecting students' health and their academic performance. Those who are hesitant to confront a third party can always open up about their problems to friends and family or whoever they confide in to come up with a solution. Moreover, we recommend students to stick with study methods that suit them the best and prepare proper study tables to help them in juggling time as well as managing priorities efficiently [4]. Besides, we propose students to utilise the sports arena in college and indulge in various sports to keep themselves mentally and physically fit. This would assist them in relieving academic stress [6].

One of the limitations was time since study was conducted for only 6 weeks. This is due to time restraint to collect the data from final year clinical students so the results might not reflect the whole population of Melaka Manipal Medical College students. Level of academic stress experienced by final year clinical students and 4th year clinical students might be different. Furthermore, this study was only conducted at one institution so this study could not be generalized to other institutions.

We recommend that future studies should include the final year medical students so that comparison can be made for a better understanding of academic stress among the clinical year students. Besides, we also recommend researchers to figure out why medical students are having high academic stress as well as explore other variables affecting academic stress in their future studies.

## 5. Conclusion

Our present study found a significant relationship between medical students' self esteem and academic stress ( $P$  value  $<0.01$ ). However, most of the medical students in Melaka Manipal Medical College (80.88%) was found to have high academic stress. Therefore, interventions are needed for the clinical year medical students to effectively cope with academic stress and they should be implemented to lower down academic stress level experienced by these vulnerable groups.

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