

The Relationship Between Self-esteem and Academic Performance Among Undergraduate Medical Students

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Abstract

Background: Academic performance is the measurement of student achievement across various academic subjects. Teachers and education officials typically measure achievement using classroom performance, graduation rates and results from standardized tests. Academic concerns happen to be a rife faced by students nowadays as it could affect students' lives if kept unperturbed. Hence, there are many factors which contribute to academic performance experienced by undergraduate students which are gender, stress and self-esteem. However, there was a significant correlation of self-esteem with academic performance which is considered to have a correlation as to why students with low self-esteem do not perform as well as students with higher self-esteem. The purpose of this cross-sectional study was to assess the level of academic performance which were assessed based on motivation, communication skills, learning skills, creativity, positive attitude and study skills with the self-esteem, stress, academic year and gender among medical students of Melaka Manipal Medical College (MMMC), Malaysia. **Method:** Undergraduate medical students were invited to participate via an online questionnaire distributed on google forms and sent through a link. The online questionnaire was used to assess socio-demographic data, self-esteem, stress, academic year and academic performance. Rosenberg Self Esteem Scale was used to determine self-esteem and the Perception of Academic Stress (PAS) scale for stress levels whereas an Academic Performance Questionnaire measuring motivation, learning skills, communication skills, creativity, positive attitude and study skills used to assess the academic performance of the students. Unpaired t-test and ANOVA were used for statistical analysis. **Results:** A total of 135 clinical year medical students participated. The bivariate analysis shows no association between gender, academic year, perceived stress and academic performance. There was a significant positive association between self-esteem and academic performance (P value < 0.001), indicating that the higher the self-esteem, the better the academic performance. **Conclusion:** Majority of the undergraduate medical students with high self-esteem had high academic performance. Hence, interventions to approach students with lower self-esteem should be carried out and advised to the students in order for them to excel better in their academics. There was no correlation between gender, academic year and stress with the academic performance of the undergraduate students.

Keywords

Academic Performance, Self-esteem, Medical Student, Gender, Academic Year, Stress

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1. Introduction

Self-esteem has long been considered an essential component of good mental health. It is said to be an internal belief

system that an individual possesses about one's self. The term refers to an individual's overall sense of self-value or worth, to the extent to which affects one's value, approval, appreciation, prizes, or self-love [1]. It is rather a form of

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perception than reality. Thus, to demonstrate that people's beliefs about themselves have important consequences regardless of what the underlying realities are, the classic study of the *Pygmalion Effect in the Classroom*, by Rosenthal and Jacobson (1968) was made [2]. It showed that teachers' false, unfounded beliefs about their students later became objective, verifiable realities in the performance of those students. Simultaneously, it is quite plausible that either high or low self-esteem, even if initially false, may bring about changes in the objective reality of the self and achievement goals. Self-evaluation is a pivotal key to behavior, which affects the analytical processes, emotions, desires, values, and eventually achievement goals. Therefore, the relationship between self-esteem and academic achievement has been well documented and studied thoroughly in this literature.

Several different studies have concluded that academic achievement and self-esteem are positively correlated—[3]. West, Fish, and Stevens (1980) cited a correlation ranging from 0.18 to 0.50 between general self-esteem and academic achievement [4]. He concluded that there is continuous interaction and correlation between self-esteem and academic achievement. Moreover, according to a meta-analysis done by Gentile *et al*, the self-esteem differences between men and women in academic performances show no significant correlation [6]. However, Espenshade *et al.* reported that stress has a negative but insignificant association with grades and no relationship with college credits [7]. The thinking process, emotions, desires, values and goals in a person is in fact affected by self-esteem [8], developed when there is a sense of acceptance from society and their personal and group contributions are recognized and celebrated. Especially in this challenging world that is full of diversity, it is a key ingredient that affects the level of proficiency in all fields of endeavor [9]. The core idea of Self-Esteem Theory is that self-esteem can be increased by praises and be built when the positive reinforcement in the form of praise were given for real achievement. In other words, self-esteem can also be evolved by achieving great successes and it can be maintained by avoiding failures. Despite this, there was only a modest correlation discovered between self-esteem and academic performance mentioned in previous studies many of which concluded that academic achievement and self-esteem are positively correlated ($p < 0.01$) [10]; though Pullmann & Allik proved the relationship between total self-esteem and academic achievement was not statistically significant, and low self-esteem does not necessarily signal a poor academic performance [11].

It is undeniable that academic performance play a vital role especially in medical students as they are expected at every level of their medical education to scale hurdles ranging from post-course assessments, various professional examinations,

and clinical assessments in the form of actual patient encounters, objective structured clinical examination (OSCE), and oral clinical examination. [13] Achievement of this ultimate status largely depends on the academic performance of the student at every examination during their medical training. Failure to consistently achieve good academic grades, unfortunately leads to ultimate dismissal from medical school. [14] Good academic achievement undoubtedly became a topic of conversation by educational psychologists. [15] In their attempt to investigate what determines academic outcomes of learners, researchers have come with more questions than answers. [16] Although students with high intellectual capacity are selected to study medicine, their academic performance varies widely. [17] Therefore, identifying factors affecting students' performance in this course and determining the size of these effects can be critically important in helping students improve their academic achievement. [18] Recently, literature has shown that learning outcomes, academic achievement and academic performance of students could be determined by such variables as: family, school, society, and motivation [12]. Only a few studies have been conducted, analyzing the relationship between self-esteem and academic performance. [19, 20] Their studies were focused on self-esteem of students in their own respective universities, primarily on gender body image satisfaction, BMI, type of faculty, anxiety level as well other factors affecting academic performance like age, anxiety and different parenting styles.

Unlike other studies done in Malaysia, our study mainly focuses amongst MBBS students of Melaka Manipal Medical College and a deeper insight of the self-esteem of students using Rosenberg's scale and perceived stress level of medical students, on how they affect student's academic performances. Identification of the factors that promote academic performance is of importance in the success rate of medical students.

Thus, the purpose of the present study was mainly to understand the relationship between self-esteem and the academic achievement among the undergraduates of Melaka-Manipal Medical College. For instance, it will further prove the variables affecting students' self-esteem, like the (gender) and the stress level. Nonetheless, the result of this study will be used as inputs to further improve the learning programs of MMMC in order to enhance the students' academic performance.

2. Methodology

2.1. Study Design, Study Population and Study Setting

The study design adopted for this research was a cross-sectional study on the relationship between self-esteem and academic performance of medical students of Melaka

Manipal Medical College (MMMC), in both Melaka and Muar campus in Malaysia. MMMC constitutes of 3 programs which includes, Foundation in Science (FIS), Bachelor of Dental Surgery (BDS) and Bachelor of Medicine and Bachelor of Surgery (MBBS). This study was carried out mainly on MBBS students from Semester 6 and 7 (in Muar campus), as well as Semester 8, 9 and 10 (in Melaka campus), which consist of a total estimation of 690 students.

The duration of this study was from June 2020 to July 2020.

2.2. Sample Size

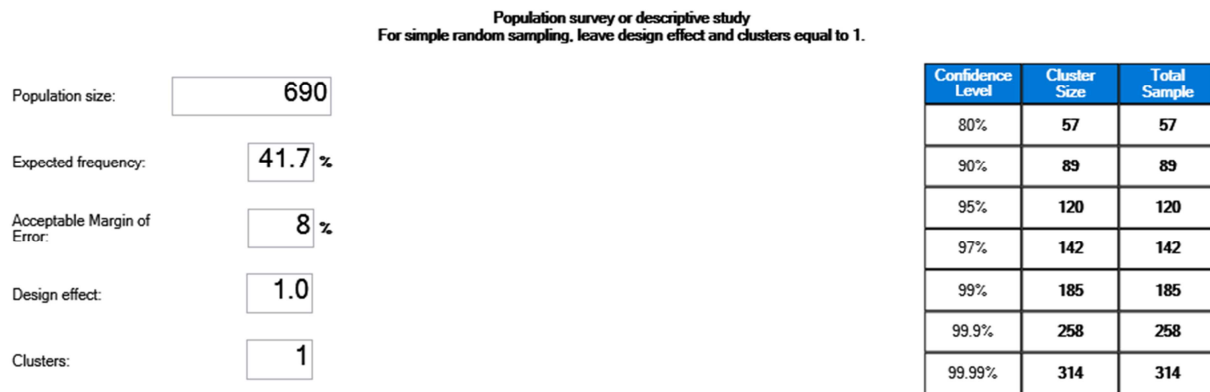


Figure 1. Calculation of Sample Size via epi info.

We also allowed a non-response of 20% and calculation is as below:

$$\begin{aligned} n_{\text{final}} &= n_{\text{calculated}} / (1 - \text{non response (\%)}) \\ &= 120 / (1 - 0.2) \text{ (20\%)} \\ &= 150 \end{aligned}$$

2.3. Sampling Method

Purposive sampling was used to recruit MBBS students in this research, which is a non-probability sampling method. Samples were selected specifically for this research, based on their eligibility criteria which were the inclusion and exclusion criteria. For inclusion criteria, we included clinical year medical students from Semester 6, 7, 8, 9 and 10 of Melaka Manipal Medical College, Malaysia. A questionnaire was widely distributed to all the students from Semester 6 to 10, online via Google Docs with a time frame of 7 days given for the data collection. Thus, only students who responded to the questionnaire were included. The exclusion criteria in the research were students who did not want to participate in this study, as the study is voluntary.

2.4. Data Collection

This questionnaire was distributed online through Google Forms to eligible undergraduate students in semester 6, 7, 8,

9 and 10 of MBBS students in Melaka Manipal Medical College (MMMC). Students were advised to spend approximately 10 to 20 minutes to complete this questionnaire by following the instructions provided and selecting the best response suited to them. All participation were voluntary and not forced to participate in this research. Students were ensured that all information provided will be strictly confidential and used purposefully for this research only.

In a previous research that was conducted on medical students at Karolinska Institute, a university in Sweden, high performance-based self-esteem was present in 41.7% of the respondents, from which this was taken as an estimated proportion. In this research, we have calculated the sample size using the sample size calculator, "Epi Info" version 7.0. It was utilized using a population size of 690, an expected frequency of 41.7% and an acceptable margin of error of 8% and therefore with 95% of confidence level, we concluded that the sample size is 120.

This research is aimed to investigate the association between the independent and dependent variables. The independent variables consist of age, gender, ethnicity, self-esteem and stress whereas the dependent variable comprising of academic performance. The data was then collected using an online administered questionnaire consisting of open ended, close ended and scale based questions. The questionnaire scales were used based on previously published articles.

The questionnaire was divided into three main parts. The first part was the sociodemographic data of the students which included the age, gender, ethnicity, nationality, religion and their current semester in the MBBS program. The second part of this questionnaire was aimed to evaluate the self-esteem of the students and for this The Rosenberg Self Esteem Scale was used. [21] Students were given a total of 10 statements dealing with general feelings about themselves and asked to

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respond using a 4-point Likert scale consisting of: Strongly Disagree (1), Disagree (2), Agree (3), Strongly Agree (4); depending on the personal extent to which they agree on the questions provided. 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". [27] It contained a score of 10-40 where anything placed between 15 to 25 indicates normal self-esteem and lower than 15 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.

The third part of the questionnaire was to evaluate the effect of stress as part of self-esteem on the academic performance. For this, the Perceived Stress Scale was used. [13]. There was a total of 10 questions that were purposefully used to evaluate the feelings and thoughts during the last month in which they were asked to indicate by choosing how often they felt or thought a certain way using a scale of 0-4 consisting of;

0=Never 1=Almost Never 2=Sometimes 3=Fairly Often 4=Very Often. Individual scores on the PSS can range from 0-40 with higher scores indicating higher perceived stress. Scores ranging from 0-13 would be considered as low stress levels, 14-26 as moderate stress and 27-40 as high perceived stress.

The final part of the questionnaire was to determine the academic performance of the students using an Academic Performance Questionnaire. [23] This questionnaire consists of 38 questions which were divided into 6 parts in correlation to indicators of academic performance. This questionnaire was aimed to evaluate the Motivation (question 1-6), Communication skills (question 7-12), Learning Skills (question 13-18), Creativity (question 19-24), Positive Attitude (question 25-32) and Study Skills (question 33-38) of the students as part of their academic performance.

2.5. Data Processing and Data Analysis

The data collected from the distributed questionnaires were processed with Microsoft Excel 2016. All the processed data were analysed by using Epi Info version 7.2.2.6 from the Centres for Disease Control and Prevention website (CDC). Independent variables that we used in this cross-sectional study were gender, ethnicity, age, self-esteem and stress. The dependent variable used in the study was academic performance. The statistical tests used to find out the association between the independent variables and dependent

variables were shown in table 2 below. Level of significance was set at 0.05.

Table 1. Independent and dependent variables with statistical test.

Independent variable	Dependent variable	Statistical Test
1. Self esteem	Academic performance	ANOVA
2. Gender	Academic performance	Unpaired "t" test
3. Stress	Academic performance	ANOVA
4. (Academic year)	Academic performance	ANOVA

2.6. Ethical Consideration

Participation by the participants of this study was completely voluntary and consent forms were provided prior to participating in this online questionnaire. None of the participants were persuaded or forced to participate in our study. Personal information and responses of the participants of this study were guaranteed to be kept strictly confidential. This research was approved by Research Ethics Committee, Faculty of Medicine, Melaka Manipal Medical College, Malaysia.

3. Results

Table 2. Socio-demographic profile of undergraduate medical students.

Variables	Frequency (n)	Percentage (%)
Age		
21-22	53	39.26
23-26	82	60.74
Mean (SD)	22.93 (1.10)	
Minimum-Maximum	21-26	
Gender		
Male	56	41.48
Female	79	58.52
Nationality		
Malaysian	119	88.15
Non-Malaysian	16	11.85
Academic Year		
Year 4	69	51.11
Year 5	66	48.89

Table 2 shows the demographic data of 135 respondents. An online questionnaire via Google Docs were distributed among 135 clinical year medical students of Year 4 and 5 in Melaka Manipal Medical College. A total of 135 responses were received, with 51.11% of the responses were from Year 4 students, followed by Year 5 students which contributed 48.89%. Additionally, 41.48% (56) made up of male respondents and 58.52% (79) were females. From the total participants, 60.74% (82) were from the age group of 23-26, whereas 39.26% (53) were from age group 21-22. Besides that, majority of the responses came from Malaysians (88.15%) and the remaining 11.85% were non-Malaysians.

Table 3. Self-esteem and Academic performance among undergraduate medical students.

Variables	n(%)	Mean(SD)	Minimum-Maximum
Self-esteem (0-30)			
High (>25)	5 (3.7%)		
Normal (15-25)	106 (78.52%)	17.53 (4.53)	4,29
Low (<15)	24 (17.78%)		
Perceived stress (0-40)			
High (27-40)	14 (10.37%)		
Moderate (14-26)	117 (86.67%)	21.44 (4.09)	7,33
Low (0-13)	4 (2.96%)		
Academic performance			
Motivation	-	22.77 (2.94)	9,30
Communication skill	-	20.58 (3.36)	11,29
Learning skill	-	21.76 (3.99)	6,30
Creativity	-	19.63 (2.92)	10,27
Positive attitude	-	24.74 (3.07)	15,32
Study skills	-	19.38 (4.23)	10,30

Table 3 shows that most of the clinical year students in Melaka Manipal Medical College have normal self-esteem with a mean score of 17.53 (SD=4.53). Only 5 students who have high self-esteem with the maximum score of 29 and there are 24 students have low self-esteem with minimum score of 4.

Besides that, 117 out of 135 students(86.67%) have moderate perceived stress with a mean score of 21.44 (SD=4.09). 10.37% of students (14) have high perceived stress with maximum score of 33 and only 2.96% of students (4) have

low perceived stress with minimum score of 7.

However, the mean score for motivation is 22.77 (SD=2.94) with the minimum and maximum score of 9 and 30. For communication skill of students, they have a mean score of 20.58 (SD=3.36) with the maximum score of 11 and minimum score of 29. Mean score for learning skill and creativity are 21.76 (SD=3.99) and 19.63 (SD=2.92). Mean score for positive attitude is 24.74 (SD=3.07) whereas mean score for study skills is 19.38 (SD=4.23).

Table 4. Association between gender and academic performance.

	Male Mean (SD)	Female Mean (SD)	Mean difference (95% CI)	P value
Academic performance				
Motivation	22.7 (2.7)	22.9 (3.1)	0.2 (-0.8, 1.2)	0.697
Communication skill	21.0 (3.2)	20.3 (3.5)	-0.7 (-1.9, 0.5)	0.230
Learning skill	21.4 (4.0)	22.0 (4.0)	0.7 (-0.7, 2.0)	0.344
Creativity	19.6 (2.9)	19.6 (3.0)	-0.01 (-1.03, 1.01)	0.985
Positive attitude	25.3 (2.3)	24.4 (3.4)	-0.9 (-1.9, 0.2)	0.094
Study skills	19.2 (3.8)	19.5 (4.6)	0.3 (-1.2, 1.8)	0.695

Table 4 is an overview of the results obtained to study the relationship between gender and academic performance. Factor one (motivation) presents the mean value for male students as 22.7 (SD=2.6) while female students have a mean value of 22.9 (SD=3.1). The mean difference is 0.2. This indicates that female students are more motivated to academically perform than male students who took part in this study. The 95% confidence interval for this factor ranges from -0.8 to 1.2 where 0 is found within the range thus is not significant. P-value is found to be 0.697 which is more than 0.05 so it shows no significance. Hence there is no association between gender and motivation.

Factor two (communication skill) presents the mean value for male students as 21.0 (SD=3.2) while female students have a mean value of 20.3 (SD=3.5). The mean difference is -0.7 which indicates that male students exhibit better communication skills in comparison to the female students

who took part in this study. The 95% confidence interval for this factor ranges from -1.9 to 0.5 where 0 is found within the range thus is not significant. P-value is found to be 0.230 which is more than 0.05 so it shows no significance. Hence there is no association between gender and communication skills.

Factor three (learning skill) presents the mean value for male students as 21.4 (SD=4.0) while female students have a mean value of 22.0 (SD=4.0). The mean difference is 0.7 which indicates that female students seem to have more learning skill in comparison to the male students who took part in this study. The 95% confidence interval for this factor ranges from -0.7 to 2.0 thus it is not significant. P-value is found to be 0.344 which is more than 0.05 so it shows no significance. Hence there is no association between gender and learning skill.

Factor four (creativity) presents the mean value for male

students as 19.6 (SD=2.9) while female students have a mean value of 19.6 (SD=3.0). The mean difference is -0.01. This indicates that both female and male students who took part in this study have no difference in creativity. The 95% confidence interval for this factor ranges from -1.03 to 1.01 thus it is not significant. P-value is found to be 0.985 which is more than 0.05 so it shows no significance. Hence there is no association between gender and creativity.

Factor five (positive attitude) presents the mean value for male students as 25.3 (SD=2.3) while female students have a mean value of 24.4 (SD=3.4). The mean difference is -0.9. This indicates that male students have a more positive attitude in comparison to female students who took part in this study. The 95% confidence interval for this factor ranges from -1.9 to 0.2 thus is not significant. P-value is found to be 0.094 which is more than 0.05 so it shows no significance. Hence there is no association between gender and positive attitude.

Factor six (study skills) presents the mean value for male students as 19.2 (SD=3.8) while female students have a mean

value of 19.5 (SD=4.6). The mean difference is at 0.3. This indicates that female students have more study skills in comparison to the male students who took part in this study. The 95% confidence interval for this factor ranges from -1.2 to 1.8 thus is not significant. P-value is found to be 0.695 which is more than 0.05 so it shows no significance. Hence there is no association between gender and study skills.

The total mean value for male students figured to a total of 129.2 (SD=18.9) while the mean value of female students figured to a total of 128.7 (SD=21.6). The mean difference obtained is -0.41. This indicates that male students who participated in this study seem to show overall a better academic performance in comparison to the female students. The 95% Confidence Interval for this factor ranges from -7.53 to 6.71 thus making it insignificant. Mean P-value is found to be 0.508 which is more than 0.05 so it shows no significance. Hence it can be concluded that there is no association between the academic performance of the student and their gender based on the interpretations.

Table 5. Association between academic year and academic performance.

	Year 4 Mean (SD)	Year 5 Mean (SD)	Mean difference (95% CI)	P value
Academic performance				
Motivation	23.0 (3.3)	22.5 (2.5)	0.5 (-0.5, 1.5)	0.371
Communication skill	20.4 (3.5)	20.7 (3.2)	-0.3 (-1.4, 0.9)	0.634
Learning skill	21.6 (4.5)	21.9 (3.4)	-0.3 (-1.7, 1.0)	0.617
Creativity	19.1 (3.0)	20.2 (2.7)	-1.1 (-2.0,-0.1)	0.034
Positive attitude	24.5 (3.0)	25.0 (3.0)	-0.5 (-1.5, 0.5)	0.347
Study skills	18.6 (4.4)	20.2 (3.9)	-1.6 (-3.0,-0.2)	0.029

Table 5 is an overview of the results obtained to study the relationship between academic year and academic performance. The first factor (Motivation) obtained a mean value of 23.0 (3.3) for students in their fourth year while students in their final year of the MBBS course obtained a mean value of 22.5 (2.5). The mean difference summed up to 0.5. This indicates that Year 4 students have higher motivation as compared to students in their final year. The 95% Confidence Interval for this ranges from -0.5 to 1.5) where 0 is found within the range thus it is not significant. P-value is found to be 0.371 which is more than 0.05 so it shows no significance. There is no association between motivation and academic year.

The second factor (Communication skills) has a mean value for students in their penultimate year as 20.4 (3.5) while final year students have a mean value of 20.7 (3.2). The mean difference is -0.3. This indicates that final year students have better communication skills compared to students in their penultimate year. The 95% Confidence Interval for this factor ranges from -1.4 to 0.9 where 0 is found within the range thus it is not significant. P-value is found to be 0.634 which is more than 0.05 so it shows no significance. There is no

association between communication skills and academic year.

The third factor (learning skills) has a mean value of 21.6 (4.5) for year 4 students whereas students in their fifth (final year) have summed a total mean of 21.9 (3.4). The mean difference is -0.3. This indicates that final year students have better learning skills compared to fourth year students. The 95% Confidence Interval for this factor ranges from -1.7 to 1.0 where 0 is found within the range thus it is not significant. P-value is found to be 0.617 which is more than 0.05 therefore showing no significance. There is no association between learning skills and the academic year of the students.

The fourth factor (Creativity) shows the mean value for students in their fourth year to be 19.1 (3.0) while final year students obtained a mean value of 20.2 (2.7). The mean difference is -1.1. This indicates that final year students were more prevalent with creativity as compared to fourth year students. The 95% Confidence Interval for this factor ranges from -2.0 to 0.1 where 0 is found within the range thus it is not significant. P-value was calculated to be 0.034 which is less than 0.05 so it shows significance between creativity

associating with academic performance and academic year. There is an association between creativity and academic year.

The fifth factor which is positive attitude shows the mean value for students in their fourth year to be 24.5 (3.0) while final year students obtained a mean value of 25.0 (3.0). The mean difference scored up to -0.5. This indicates that final year students had a slightly more positive attitude as compared to fourth year students. The 95% Confidence Interval for this factor ranges from -1.5 to 0.5 where 0 is found within the range thus it is not significant. P-value was calculated to be 0.347 which is less than 0.05 so it shows no significance between a positive attitude and the academic year of the student. There is no association between a

positive attitude and the academic year.

The last factor involved was the study skills of each student taking part. Fourth year students obtained a mean value of 18.6 (4.4) whereas students final year students summed a total mean of 20.2 (3.9). The mean difference figured was -1.6. This strongly suggests that once again final year students have better study skills as well compared to fourth year students. The 95% Confidence Interval for this factor ranges from -3.0 to -0.2 where 0 is found within the range thus making it insignificant. P-value is found to be 0.029 which is lesser than 0.05 therefore showing significance. In conclusion, there is some association between study skills with the academic year of the student.

Table 6. Association between self-esteem and academic performance.

	Self-esteem			P value
	High Mean (SD)	Normal Mean (SD)	Low Mean (SD)	
Academic performance				
Motivation	25.6 (3.5)	22.9 (2.9)	21.8 (2.7)	0.024
Communication skill	24.0 (1.9)	21.0 (9.8)	18.1 (3.4)	<0.001
Learning skill	25.6 (3.2)	22.0 (3.9)	20.0 (4.0)	0.008
Creativity	21.0 (2.9)	19.7 (2.8)	19.0 (3.4)	0.266
Positive attitude	27.0 (1.4)	25.2 (2.6)	22.3 (3.7)	<0.001
Study skills	25.0 (5.4)	19.6 (4.0)	17.5 (3.8)	<0.001

Table 6 is an overview of association between self-esteem and academic performance of clinical year medical students of Year 4 and 5 in Melaka Manipal Medical College (MMMC). Based on the findings, the students with high self-esteem has the highest mean value of 25.6 (3.5) for motivation compared to students with normal and low self-esteem, with a mean value of 22.9 (2.9) and 21.8 (2.7) respectively. This indicates that students with high self-esteem tend to have more motivation in performing well academically as compared to students with a moderate and low self-esteem. This shows the results of p value shows that 0.024 which shows that there is significance between self-esteem and motivation. There is an association between self-esteem and motivation.

For the second factor (Communication skills), results show that students with high self-esteem has the highest mean value of 24.0 (1.9) for communication skills compared to students normal and low self-esteem, with a mean value of 21.9 (9.8) and 18.1 (3.4). Thus, this shows that students with a high self-esteem tend to have higher communication skills. The results of p value of <0.001 which is significant which shows that there is significance between self-esteem and communication skills. There is an association between self-esteem and communication skills.

Moreover, the third factor (Learning skills) presents the highest mean value of 25.6 (3.2) with high self-esteem followed by student with normal 22.0 (3.9) and low 20.0 (4.0) respectively. This indicates that students with high self-

esteem has the tendency to have higher learning skills. Moreover, the p value shows 0.008 which shows it is significant. Therefore, there is an association between self-esteem and learning skills.

The fourth factor (Creativity) shows the mean value of 21.0 (2.9) for students for high self-esteem followed by normal 19.7 (2.8) and then by low self-esteem as 19.0 (3.4). This highly shows that students with higher self-esteem tend to present themselves with higher creativity. Nevertheless, the p value is shows that it is 0.266 which indicates it is not significant. Thus, there is no association between self-esteem and creativity.

Besides that, the fifth factor (Positive attitude) shows the highest mean value of 27.0 (1.4) in students with high self-esteem followed by students with normal 25.2 (2.6) and then by low self-esteem which is 22.3 (3.7) respectively. Therefore, this clearly shows that students with high self-esteem strive to have higher positive attitude. Whereas, for the p value it is <0.001 which indicates a string significance. Therefore, there is an association between self-esteem and positive attitude.

The sixth factor (Study Skills) shows the highest mean value of 25.0 (5.4) in students with high self-esteem followed by students with normal 19.6 (4.0) and then by low self-esteem which is 17.5 (3.8). This highly shows that the students with high self-esteem strive to have higher study skills. Besides, the p value also shows its significance which is <0.001. Thus, there is an association between self-esteem and study skills.

Table 7. Association between perceived stress and academic performance.

	Perceived stress			P value
	High Mean (SD)	Moderate Mean (SD)	Low Mean (SD)	
Academic performance				
Motivation	23.7 (3.07)	22.7 (2.94)	22.5 (2.38)	0.453
Communication skill	19.1 (3.61)	20.7 (3.28)	23.3 (3.77)	0.076
Learning skill	22.6 (4.76)	21.7 (3.94)	20.0 (2.00)	0.509
Creativity	20.4 (3.08)	19.6 (2.93)	18.3 (1.89)	0.379
Positive attitude	23.7 (3.75)	24.8 (2.89)	27.6 (2.87)	0.061
Study skills	19.6 (3.93)	19.3 (4.31)	21.8 (2.5)	0.505

Table 7 shows an overview of the results for the association between perceived stress and academic performance of clinical year medical students of Year 4 and 5 in Melaka Manipal Medical College (MMMC). Based on the findings, the students with High perceived stress has the highest mean value of 23.7 (3.07) for motivation compared to students with moderate and low perceived stress, with a mean value of 22.7 (2.94) and 22.5 (2.38) respectively. This indicates that students with a high perceived stress tend to have more motivation in performing well academically as compared to students with a moderate and low perceived stress. However, the P-value is found to be 0.453, showing no significance. Thus, there is no association between perceived stress and motivation in academic performance.

For the second factor (Communication skills), results show that students with low perceived stress have the highest mean value of communication skills 22.5 (2.38) followed by moderate perceived stress 20.7 (2.94) and high perceived stress 19.1 (3.61) respectively. This indicates that students with lower perceived stress have better communication skills compared to students with moderate or higher perceived stress. The P-value is found to be 0.076, which is more than 0.05, thus showing no significance. There is no association between perceived stress and communication skills of students.

Moreover, the third factor (Learning skills) presents the highest mean value of 22.6 (4.76) for students with high perceived stress, followed by students with low perceived stress 21.7 (3.94) and moderate perceived stress 21.7 (3.94) respectively. This indicates that students with high perceived stress have higher learning skills compared to students with lower and moderate perceived stress. Nevertheless, the P-value is found to be 0.509, which is not significant. Therefore, there is no association between the perceived stress and learning skills of students.

The fourth factor (Creativity) shows the mean value of 20.4 (3.08) for students with high perceived stress, followed by 19.6 (SD) for students with moderate perceived stress and 18.3 (1.89) for students with low perceived stress respectively. Based on the results obtained, it indicates that

students with higher perceived stress have higher creativity compared to students with moderate or lower perceived stress. The P-value is found to be 0.379, showing no significance. Thus, there is no association between perceived stress and creativity of students.

Besides that, the fifth factor (Positive attitude) shows the highest mean value of 27.6 (2.87) in students with low perceived stress, followed by students with moderate perceived stress 24.8 (2.89) and students with low perceived stress 23.7 (3.75) respectively. This shows that students with low perceived stress have more positive attitude towards academics compared to students with moderate and high perceived stress. However, the P-value shows 0.061, showing no significance. Therefore, there is no association between perceived stress and positive attitude of students towards academic performance.

The sixth factor (Study Skills) shows the highest mean value of 21.8 (2.5) in students with low perceived stress, followed by 19.6 (3.93) in students with high perceived stress and 19.3 (4.31) in students with moderate perceived stress respectively. This indicated students with low perceived stress have better study skills compared to students with moderate and high perceived stress. P-value is found to be 0.505, showing no significance. Thus, there is no association between perceived stress and study skills of students.

4. Discussion

A cross-sectional study was conducted in Melaka Manipal Medical College, Malaysia to dictate the association of self-esteem and academic performance among the medical students in their penultimate and final year. The academic performance of a student can be governed by various factors such as family, school, society and motivation. Thus, identifying factors that contribute to academic performance should be critically important and necessary in helping students perform and excel academically. For instance, it will further evince other variables affecting the students' self-esteem such as gender, current academic year and their stress level.

In conclusive of this study we have established that for a start, students in Melaka Manipal Medical College (MMMC) have achieved a high level of motivation towards their academic performance. A previous study conducted by the English Department of Islamic State University (UIN) Ar-Raniry Banda Aceh revealed that English students from their first, third, fifth and seventh semester flourished high levels of motivation in learning. [23] Subsequently, our results showed that students from MMMC obtained a high mean value for communication skills truly demonstrating up to snuff communication skills. Consequently, a study carried out among the students in University Kebangsaan Malaysia (UKM) proclaimed that their students also portrayed good communication skills. [24] Next, this study arrayed that majority of the clinical year medical students have an average creativity potential academically. On the contrary, a study conducted in a Swedish University unveiled that students majoring in business and engineering revealed a higher level of creativity in learning. [25] Moreover, our results also implied that majority of medical students take a more positive attitude towards their academics. A descriptive study orchestrated in Gazi university, Turkey among students at the Faculty of Technology and Technical Education revealed that the prospective engineers and technical teachers have positive attitudes towards learning. [26] Furthermore, we've discovered that most of the students in MMMC projected a norm level of study skills. While this may be true, a cross-sectional descriptive study conducted by Fasa Medical University, to explore the quality of study skills showed that the range of the students' study skills was below par. [27] Likewise, an evaluation of study skills among students of Mashhad Dental School in the Academic Year of 2008-2009 concluded that students do not have enough knowledge of study skills thus impacting their academic performances. [28]

One of the factors investigated in our study in correlation to self-esteem was gender however the association between gender and academic performances such as motivation, communication skill, learning skill, creativity, positive attitude and study skill was not statistically significant.

Based on our results, female students prospered a higher mean score in motivation, as well as learning skills and study skills in comparison to the male students. However, male students showed to have better communication skills and a more positive attitude academically compared to female students. Above all, both have equal creativity. The same results were also proven in a previous study conducted in a Malaysian University among 153 Iranian undergraduate students which eventually revealed that there was no significant association between gender and academic performance. [29] Similarly, a quasi-experimental design

study that was conducted among 120 students obtained from the intact classes of the three selected Junior Secondary Schools in the three selected Local Government Areas of Ogun State, South-west Nigeria, revealed that there was no significant difference in the academic achievement of male and female students. [30] In like fashion, another study conducted in Pakistan revealed a significant difference between male and female students on self-esteem and academic performance scores finally implying that female students achieve higher academic performance as compared to male students nevertheless male students have higher self-esteem in comparison to female students. [31] Apart from that, a study conducted among secondary school students in Kenya, reported that there was a significant difference in the association of gender in comparison to overall performance in which more males were found passing their secondary school level (form 1 and 2) as compared to females in the same division. [32]

Based on our research, we also concluded that there was a significant association between the academic year and academic performance in the level of creativity of a student. Final year students showed to have better creativity than students in their penultimate year. Interestingly, an exploratory study conducted among 301 students with 184 grade eight students and 117 grade eleven students in Norway demonstrated that the older students were more creative, exhibiting that there was a significant interaction between the grade level and creativity in a student's academic achievement. [33] However, based on our results we found no significance in the association between academic performance inclusive of motivation, communication skills, learning skills, positive attitude and study skill and the academic year of the students. Medical students in their fourth year obtained a higher mean value for motivation in comparison to final year students.

On the contrary, final year medical students have better communication skills, learning skills, study skills and a more positive attitude in their academics when compared to the fourth year students. A previous study conducted among high school students in Kenya with a target population comprising of all Form two and Form four students in the sixteen secondary schools in Nakuru Municipality established that students' age had a significant effect on the student's academic performance notwithstanding, the students' age had no significant effect on the academic motivation. [34]

In this study, there was a significant association between self-esteem and academic performance inclusive of motivation, creativity skills, learning skills, positive attitude and study skills.

Based on our results, we concluded that students who have

high self-esteem have the best motivation, communication skills, learning skills, positive attitude and study skills closely followed by students who have normal and low self-esteem respectively. The association between self-esteem and creativity showed no significance. Students with high self-esteem showed to gain creativity accompanied by students with normal and low self-esteem.

A previous study conducted among university students from G. C University Faisalabad, Pakistan found that there was a significant relationship between self-esteem and academic performance. [31]

Similarly, another study conducted among pre-university students in the centres of Qaemshahr in 2008-2009 demonstrated that there was a significant ($p < 0.01$) positive relationship between self-esteem and academic achievement. [12]

Moreover, a previous cross-sectional study done in University Kebangsaan Malaysia (UKM) among second year undergraduate students discovered that there was a significant association between self-esteem and academic performance. In fact, their results proved that students with higher self-esteem perform better in their academic. [14]

In conclusive of table 7, there was no significant association between perceived stress and academic performance (which include motivation, communication skills, learning skills, creativity, positive attitude and study skills). In conclusive to our research, students who experience higher perceived stress have better motivation, learning skills and creativity in comparison to students who experience moderate and lower perceived stress. Students who experience low perceived stress have better communication skills and positive attitude when compared to students with moderate and high perceived stress respectively. Students who have low perceived stress also obtained a cut above study skills in contrast with students who have high and moderate perceived stress respectively. A previous study was conducted in King Saud Ben Abdulaziz University among Critical Care Nursing Students revealing that there was no significant correlation between the students' perceived stressors and academic achievement. In fact, the results showed that Critical care nursing students experienced low to moderate stress level with no impact on their academic achievement. [37] Most of the previous studies conducted portrayed the association between perceived stress and academic performance to be not statistically significant. For example, a study conducted among University students in Kwara State, Nigeria discovered that there is a significant correlation between the stress levels and academic performance among the students. [37] Besides that, another study conducted among Undergraduate Students in University Putra Malaysia

exhibited a significant but feeble negative relationship between undergraduate students' stress levels and their academic achievement. [38]

There were several limitations that occurred during the course of our research. Firstly, the duration of time was ephemeral with only 6 weeks to be conducted. Due to the pandemic, we had no other choice but to conduct our research via the internet. Students were asked to participate via an online questionnaire which was difficult to monitor and extremely difficult to gain responses. We also were unable to know for sure if students answered them themselves or were duplicated by someone else. Moreover, the time taken to collect, analyse and finalize the data was extremely short-lived and had to be rushed in order to be done. This study was conducted among medical students in their penultimate and final year in Melaka Manipal Medical College hence the results is not reflective upon the entire population in MMMC. The judgement of their academic performance has also been solely dependent on the perception of a questionnaire and may not be accurate as academic success is dependent on various factors such as grades (GPA) which were not questioned during this study. Lastly, the questionnaire is not generalized and conclusive to all medical students as it was limited to just one institute.

Based on our experience, we highly recommend that a questionnaire should be handed out and responses collected physically as this would enable the researcher to confirm that students are participating and answering by themselves. This would also save time as researchers are able to target their population group and collect the responses they need. Next, we strongly recommend the research to be conducted for a longer period of time as this would help researches gain more response and even extend to more than one institute thus gaining a more vast and accurate research. We find that many factors do in fact affect one's academic performance and we strongly feel that each variable should be closely monitored and a more detailed questionnaire for specificity of each probable cause be strongly studied. Lastly, we recommend that future researchers correlate the importance of self-esteem on one's academic performance. We strongly feel like this cause can swing both ways and a more detailed research can be conducted in order to explore the exact correlation of self-esteem and academic performance.

5. Conclusion

Based on the study we conducted, there was a significant relationship between medical students' self-esteem and academic performance (P value < 0.001). We concluded that students with higher self-esteem performed better academically. However, we found no correlation of gender,

academic year and stress with the academic performance of the students in Melaka Manipal Medical College (MMMC). In a nutshell, there should be a solution to intervene the clinical year medical students lacking of self-esteem to effectively better their academic performance and they should be implemented ways to upraise their self-esteem in hopes to improve their academic performance.

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Appendix

1. Rosenberg Self-Esteem Scale

Instructions

Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

Table A1. Rosenberg Self-Esteem Scale.

No	Item	Strongly Agree	Agree	Disagree	Strongly Disagree
1	On the whole, I am satisfied with myself.				
2	At times I think I am no good at all.				
3	I feel that I have a number of good qualities.				
4	I am able to do things as well as most other people.				
5	I feel I do not have much to be proud of.				
6	I certainly feel useless at times.				
7	I feel that I'm a person of worth, at least on an equal plane with others.				
8	I wish I could have more respect for myself.				
9	All in all, I am inclined to feel that I am a failure.				
10	I take a positive attitude toward myself.				

Scoring: Items 2, 5, 6, 8, 9 are reverse scored. Give "Strongly Disagree" 1 point, "Disagree" 2 points, "Agree" 3 points, and "Strongly Agree" 4 points. Sum scores for all ten items. Keep scores on a continuous scale. Higher scores indicate higher self-esteem.

2. Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling *how often* you felt or thought a certain way.

Table A2. Perceived Stress Scale.

No	Item	Never	Almost never	Sometimes	Fairly often	Very often
1	In the last month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
2	In the last month, how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
3	In the last month, how often have you felt nervous and "stressed"?	0	1	2	3	4
4	In the last month, how often have you felt confident about your ability to handle your personal problems?	0	1	2	3	4
5	In the last month, how often have you felt that things were going your way?	0	1	2	3	4
6	In the last month, how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
7	In the last month, how often have you been able to control irritations in your life?	0	1	2	3	4
8	In the last month, how often have you felt that you were on top of things?	0	1	2	3	4
9	In the last month, how often have you been angered because of things that were outside your control?	0	1	2	3	4

No	Item	Never	Almost never	Sometimes	Fairly often	Very often
10	In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

0=Never; 1=Almost Never; 2=Sometimes; 3=Fairly Often; 4=Very Often.

3. Academic Performance Questionnaire.

Indicators of academic performance:

Table A3. Indicators of Academic Performance in relation to the Academic Performance Questionnaire.

Motivation 1-6 (question)	Creativity 19-24
Communication skills 7-12	Positive Attitude 25-32
Learning Skills 13-18	Study Skills 33-38

Table A4. Academic Performance Questionnaire.

No	Questions	Strongly Agree	Agree	Uncertain	Disagree	Disagree Strongly
1	I participate more when class work involves interesting tasks.					
2	I prefer course material that really challenges me so I can learn new things.					
3	The most important thing for me right now is improving my overall grade point average, so my main concern in study is getting a good grade.					
4	I want to do well in studies because it is important to show my ability to my family, friends, or others.					
5	I do not find my studies very interesting so I keep my work to the minimum.					
6	I choose assignments that I can learn from even if they don't guarantee a good grade.					
7	I like to share ideas with my friends.					
8	I feel confident in participating class discussion.					
9	I feel frustrated because it is difficult for me to communicate with other students.					
10	I get upset because other students and teachers cannot understand me.					
11	I feel relaxed when I talk to my teacher.					
12	I am confident delivering class presentations.					
13	I set my own learning goals.					
14	I list what I need to do to achieve my learning goals.					
15	I identify strategies for achieving my goals					
16	I list the strategies I'm using when I work on assignments.					
17	I check my progress towards achieving my goals.					
18	I modify (correct) my actions on my own to achieve my goals.					
19	I prefer to write the material by joining my own ideas rather than rote learning.					
20	I have a good imagination during class.					
21	I have a lot of good ideas during class.					
22	I am good at coming up with new ways of finding solutions of problems.					
23	I explore new areas of knowledge related to given class assignment.					
24	I am good at creative writing in different subjects.					
25	I am always optimistic about my future.					
26	I tend to expect the worst in people.					
27	I expect more good things to happen to me than bad.					
28	Even when things are stressful, I am able to focus on what needs to be done.					
29	If someone criticizes me, I tend to take it in the worst light.					
30	I have something good to say about everyone, even my enemies.					
31	When something goes wrong in a group I tend to blame others.					
32	I find it easy to forgive people and forget about the bad things that have happened to me.					
33	I find it easy to stick to a study schedule.					
34	I am able to study subjects that I don't really like.					
35	I can focus my attention without too much effort.					
36	I am up to date with assignments.					
37	I have enough time in my week to study.					
38	I spend more time on difficult courses.					

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