SURVEY REPORT

Perceived Self-Efficacy and Academic Performance of Medical Students at Ataturk University, Turkey

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ABSTRACT

Objective: To determine the association of perceived self-efficacy with academic performance of pre-clinical medical students.

Study Design: A cross-sectional analytical study.

Place and Duration of Study: Medical Education Department, Ataturk University, Turkey, from March to May 2012.

Methodology: Participating students were members of the first to third year medical students class considered to be pre-clinical years at Ataturk University. A validated and reliable questionnaire consisted of 10 questions applied to assess the general self-efficacy of the medical students in pre-clinical years and evaluate whether their self-efficacy has relation to their academic performance. Responses and studied variables were compared using ANOVA and Pearson correlation test as applicable.

Results: The mean scores of three consecutive examinations were compared with self-efficacy mean scores of three classes. A validated and reliable questionnaire was used for assessment of self-efficacy. There was no correlation found in between mean examination scores and self-efficacy mean scores in first year ($r = -0.11$, $p = 0.276$), second year ($r = 0.20$, $p = 0.180$), and third year ($r = -0.040$, $p = 0.749$). However, comparison of mean scores between male and female demonstrated significant difference ($p = 0.001$) and males dominant in self-efficacy scores.

Conclusion: The results illustrate in pre-clinical years at medical schools the general self-efficacy does not play any role in their performance.

Key words: *Self-efficacy. Performance-assessment. Self-confidence.*

INTRODUCTION

Competencies and outcome are very important for performance of medical professionals. It requires not only requisite knowledge and skills but also beliefs of personal efficacy to use both effectively. Since an effective intellectual functioning requires much more than simply understanding of factual knowledge and reasoning operations for any activity,[1] self-confidence to perform in a very stressful environment is vital for all medical students. The effects of self-efficacy beliefs on cognitive process take a range of forms and much human behaviour and goals setting influenced by self-appraisal of capacity. Hence, a result, the stronger the perceived self-efficacy, the higher the goal challenges people set for themselves and firmer is their commitment to them.[1]

It has been proven that students' self-efficacy beliefs about their capabilities influence their academic achievement too.[2] Previous studies support this claim showing that self-efficacy is a strong predictor of academic achievement.[3] Pajares and Miller showed that self-efficacy was the most powerful predictor of students' math problem solving ability.[4] Nonetheless, it is important to understand why some students excel academically and others even cannot pass simple examination. It is established that motivational beliefs and learning strategies do affect their academic performance.[5]

However, one cannot deny the role of perceived self-efficacy as this perceived judgment influences people's behaviour (e.g. achievement), choice in activities, persistence, effort, motivation, thoughts, and emotions.[6-8] So far, the relation between self-efficacy and academic performance has been depicted in other disciplines mainly.[4] Only one study targeted this area in medical education related to practical performance in objective structured clinical examination (OSCE).[9] Indeed, medical students are expected to acquire a science knowledge base, develop clinical competencies, and integrate these contextually in clinical decision-making scenarios. It is speculated that these three learning domains may be sensitive to the effects of self-efficacy,[2,7] but this is yet to be determined. Thus, this survey was designed to find out any relation of self-efficacy and overall examination achievement among pre-clinical medical students.

METHODOLOGY

It was a cross-sectional analytical study conducted in Medical Education Department at Medical College,

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Ataturk University, Erzurum, Turkey, from March to May 2012. The participants were members of the first to third year medical student class that considered being pre-clinical years in this university. The students were asked to participate in the study and assured confidentiality. The students completed the pre-survey including some basic information, along with a consent form that requested permission to use and/or obtain their scores in the last three consecutive committee examination from examination department.

Medical students at university need to complete 6 years and total 6 committees in phase 1 (1st year), 6 committees in phase 2 (2nd year) and 9 committees in phase 3 (3rd year). In fourth and fifth year, students are supposed to go for clinical clerkship. Each committee has integrated vertically topics to be covered during certain period. For instance, in committee 1 (phase 1-First year) students are supposed to learn different topics related to anatomy, physiology and biochemistry with family medicine etc. Similarly, they have same configuration of subjects in phase 2 and 3. The fourth year starts with forensic medicine and clinical rotations in at least 5 specialties and remaining rotations are completed in next year. After completing 5 years students go for one-year internship.

There are two assessment methods: formative and summative, the formative assessment are conducted through out the course by assessing through small tests, assignments, presentations and research projects. While the summative assessment are conducted at the end of each committee and consists of multiple-choice questions (MCQs); some practical questions and objective structured clinical examination (OSCE) etc. We, therefore, collected mean value of these three committee examinations conducted for first year to third year medical students at the end of each committee.

There are several tools available for assessment of self-confidence, however, we used a validated and reliable questionnaire for assessment of the general self-efficacy in different places and in more than 30 languages.[10,11] It was translated into Turkish language, validated and applied in different settings. It contained 10 questions related to how peoples handle their problems, can cope the conflict situation easily, confident enough to deal unexpected events and unforeseen situations, remain calm in difficult circumstances and find several solutions of problems. The responses were recorded like; Not at all true (1), Hardly true (2), Moderately true (3) and Exactly true (4). Results were analyzed using Statistical Package for Social Sciences (SPSS) version 18.0 for Windows. For each attribute, mean and standard deviation were calculated based on assessment scores and self-efficacy scores for different classes and gender. These were tested using one way and two ways ANOVA for significant differences with test of homogeneity. Level of significance was set at $p < 0.05$. Pearson correlation was used to describe associations, among mean examination scores and self-efficacy mean scores.

RESULTS

Out of a total 650 students, we approached to 100 to each class and made a total of 300 in all three classes. The frequency of response for first year was 95, for second year it was 45 and from third year 70 students responded. The male to female ratio was 0.98. The Table I illustrated that there was a significant ($p = 0.001$) difference among mean scores of their examination. There was no significant difference in the mean self-efficacy scores ($p = 0.70$) among different three classes. However, comparison of mean scores between male and female demonstrated significant male dominant

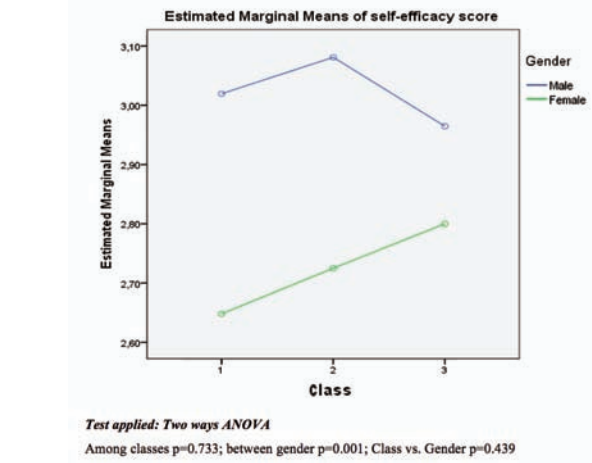

Figure 1: Comparison in between males and females as regard to self-efficacy mean scores.

Table I: Comparison of mean examination scores and self-efficacy scores.

Mean scores	Class	Frequency	Mean	SD*	95% CI**		p-value
					Lower Bound	Upper Bound	
Mean examination scores							
	First Year	95	52.81	11.57	50.46	55.17	0.001
	Second year	45	63.66	12.08	60.03	67.29	
	Third year	70	68.35	11.62	65.57	71.12	
Self-efficacy mean scores							
	First year	95	2.80	0.56	2.69	2.92	0.700
	Second year	45	2.89	0.53	2.73	3.05	
	Third year	70	2.84	0.53	2.71	2.97	

Test applied: Oneway ANOVA; SD = Standard deviation; CI** = Confidence Interval*

Table II: Self-efficacy mean scores among classes and gender.

Class	Gender	Mean	SD	Frequency	p-value
First year	Male	3.02	0.55	41	Among classes (0.733)
	Female	2.65	0.52	48	Between gender (0.001)
Second year	Male	3.08	0.50	21	Class vs. gender (0.439)
	Female	2.73	0.51	24	
Third year	Male	2.96	0.52	33	
	Female	2.80	0.53	34	

Test applied: Two ways ANOVA

Table III: The correlation between mean examination scores and self-efficacy mean scores .

Mean scores and classes	Self-efficacy mean scores		
	r*	95% CI**	p-value
Mean examination scores			
First year	-0.11	-0,31 to 0,09	0.276
Second year	0.20	-0,10 to 0,47	0.180
Third year	-0.040	-0,27 to 0,20	0.749

*r * = Pearson correlation coefficient; CI ** = Confidence Interval*

difference (p = 0.001) in self-efficacy scores. In fact there was no correlation found in between mean examination scores and self-efficacy mean scores in first year (r = -0.11, p = 0.276), second year (r = 0.20, p = 0.180), and third year (r = -0.040, p = 0.749). Furthermore, when compared male and female mean scores with self-efficacy mean scores, we couldn not find any correlation.

DISCUSSION

Though it has been claimed and demonstrated by literatures that higher levels of self-efficacy were associated with higher levels of student achievement in terms of grades, seatwork, reports, essays, exams, and quizzes,[2,3] this study declined to accept that there was any correlation with self-efficacy and examination performance. Though we included theory as well as practical examination but it could be comparable with a study done by Mavis which highlighted that self-efficacy was not significantly correlated to OSCE performance.[9] In fact the results depicted in other studies are mainly related to other than medical discipline,[12,13] which might be different in a way that not be a science knowledge base with clinical competencies that build in a critical thinking virtually in different context.[14,15]

Furthermore, it is important to understand that different studies might use different tools for assessment of academic achievements, therefore, self-efficacy evaluation based on different tools produce different results. Therefore, it is also an important point while assessing any correlation and comparing results. In addition, as an argument, the self-efficacy questionnaire is self-administered questionnaire so there is a chance for bias in self-assessment. Indeed, performance was found to be the product of complex relationships between skills and knowledge, mediated by perceptions of anxiety, self-confidence and preparedness,[9] therefore, it is not only dependent on self-efficacy and even if there is an association we cannot declare because of self-efficacy. There are some other areas assessed by Schunk as motivation that is related to self-efficacy, which could also be important for learning as well as for performance.[8] Another study demonstrated that participation mediates the relationships between motivation and learning strategies, and medical school performance.[5] However, participation and self-efficacy beliefs also made unique contributions towards performance.

Interestingly, this study showed that males scored higher in self-efficacy as compared to females. It is obvious that males since the childhood are highly self-confident and several studies showed males predominance in self-efficacy.[16,17] However, in this study when compared their mean scores in examination, there was not much difference found in their performance. Even if females are perceived less confident, it does not make any difference as last three decades are witnessed for higher achievements of females and shows that women now earn more undergraduate college degrees than men.[18,19] Therefore, in fact this also nullified the results of other studies that demonstrated higher self-efficacy influence academic performances with gender difference.[2,7]

Despite an appropriate sample size and using a valid and reliable assessment tool, the study has a few limitations, for instance; we combined the theory and practical scores including OSCE for comparison with self-efficacy score that might be given results of overall performance. However, if we could analyze the results separately for theory, OSCE and other practical examination then the conclusion might be changed.

CONCLUSION

Though literature suggests a relationship between the general self-efficacy and academic performance, however, the present study results were unable to show any correlation in between the general self-efficacy and academic achievement at undergraduate level in pre-clinical years. It would be valuable to medical educators to explore further to understand the reasons and would it be same for clinical years at undergraduate as well as postgraduate level.

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