

### Effect of Early Clinical Exposure on Learning Motivation of Medical Students

**Background:** Facing an unfamiliar environment is always one of the biggest concerns for medical students who are going to have clinical educations in medical fields. Recently early clinical exposure (ECE) for medical students has been proposed as an effective factor in reducing stress and motivating toward the rest of their education as a clinical student. This study aimed at evaluation of ECE effects on motivating Sabzevar University of Medical Sciences students.

**Methods:** In a cross sectional survey, medical students in 2nd and 4th semesters were studied in the year 2012. 45 students filled the questionnaire and the results were analyzed by SPSS 19.

**Results:** Amongst 45 students, 25 persons (55.6%) were in 2nd semester while other 20 (44.4%) were in the 4th. Most of the students (68.9%) believed that ECE improved their interest on continuation of their field of study. Women believed that ECE helped them in visualizing concepts ( $p=0.02$ ) and remembering facts ( $p=0.03$ ) about their medical lessons more than men. 2nd semester students believed more in the helpfulness of ECE in approving their visual concepts ( $p=0.02$ ). Other important effects of ECE were stress reduction (42%), self steam increase and gaining better attitude about further clinical activities (each by 40%). Most of the students (77.8%) didn't like to change their field.

**Conclusions:** According to the questionnaire analysis, the results showed that ECE can be an important and efficient factor in improving the motivation and can be a great help in the recall of knowledge in medical students.

**Keywords:** Medical Student; Attitude; Motivation

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### اثرالواجبه المبكره للمرحله العمليه لطلاب الطب في ايجاد حافز التعلم

**التمهيد:** إن مواجهة المحيط الغريب وغيرالمألوف عادةً ما يكون واحداً من أكبر المخاوف لدى طلاب الطب الذين يريدون البدء في مرحله التعليم العمليه في الحقول العمليه. ثبت حديثاً أن المواجهه المبكره للمرحله العمليه (ECE) لطلاب الطب تكون عاملاً مؤثراً في تقليل نسبة التوتر و اعطاء حافز وطأئنيه تجاه التعلم في المرحله العمليه. إن هذه الدراسة تطمح الى تقييم تأثيرات (ECE) في ايجاد الحافز عند طلاب جامعه سبزوار للعلوم طبيه .

**الأساليب:** في مطالعه مقطعيه تمت الدراسه على طلاب الفصل الثاني و الرابع الذين كانوا يدرسون في عام 2012.

تم استفتاء 45 طالباً و تم تحليل المعلومات عبر برنامج spss19.

**النتائج:** من ال 45 طالب ، 25 طالب (55.6%) كانوا في الفصل الثاني فيما كان البقيه ال 20 (44.4%) في الفصل الرابع .

أكثرية الطلاب (68.9%) كانوا يعتقدون أن (ECE) يرفع مستوى استمرارهم في مجالهم الدراسي.

النساء كانوا يعتقدون أن (ECE) يساعدهم في المفاهيم التصوريه ( $p=0.02$ ) و في تذكر الحقائق ( $p=0.03$ ) في مجال الدروس الطبيه أكثر من الرجال . إن طلاب الفصل الثاني يعتقدون أن هناك مساعده أكبر من خلال (ECE) في مجال تصويب المفاهيم التصوريه ( $p=0.02$ ). أن المؤثرات السريه الاخرى في (ECE) هي عبارها عن تقليل نسبة التوتر (42%) ، ارتفاع الثقه بالنفس ، اعطاء سلوك افضل في الفعاليات العمليه (كل واحد 40%) . إن أكثر الطلاب (77.8%) لم يكونوا يرغبوا في تغيير مجالهم الدراسي.

**الاستنتاج:** استناداً الى نتائج الاستفتاء ، تشيرالنتائج الى أن (ECE) يستطيع أن يكون عاملاً مؤثراً في تحسين الحافز و يستطيع أن يكون مساعداً لمتذكار المعرفه عند طلاب الطب .

**الكلمات الرئيسية:** الطلاب الطب . حافز . سلوك

### تأثير مواجهه زودرس باليني در ايجاد انگيزه يادگيري در دانشجويان پزشکی

**زمينه و هدف:** در رشته ی پزشکی برای دانشجویان با تنش های متعددی از جمله برخورد با محیط ناآشنای بالینی همراه است. اخیراً مواجهه زودرس بالینی (ECE) دانشجویان پزشکی با این محیط به عنوان راهکاری برای کاهش تنش و افزایش علاقه نسبت به این رشته مطرح شده است. هدف از این مطالعه سنجش دیدگاه دانشجویان نسبت به برنامه ی ECE بوده است.

**روش:** در مطالعه ی مقطعی انجام شده روی 45 نفر از دانشجویان ترم دو و چهار پزشکی دانشگاه سبزواربا شیوه آموزشی نوین، دیدگاه دانشجویان نسبت به ECE توسط پرسشنامه سنجیده شد و در نرم افزار SPSS 19 مورد آنالیز آماری قرار گرفت.

**یافته ها:** از 45 دانشجوی پزشکی شرکت کننده در مطالعه 25 نفر (55.6%) در ترم دوم و 20 نفر (44.4%) در ترم چهارم مشغول به تحصیل بودند. بیشتر دانشجویان (68.9%) عقیده داشتند که ECE باعث افزایش علاقه در آن ها شده است. دختران بیشتر از پسران اعتقاد داشتند که ECE به تجسم ( $P=0.02$ ) و یاد آوری مفاهیم ( $P=0.03$ ) در آن ها کمک نموده است. دانشجویان ترم دوم بیشتر از ترم چهارم ECE را در یادآوری مفاهیم آموزشی تئوری کارآمد دانسته اند ( $P=0.02$ ). سایر نتایج حاصل به ترتیب اولویت شامل کاهش ترس و نگرانی (42%) ، افزایش به نفس و ایجاد نگرش بهتر در فعالیت های بالینی آینده (هر دو 40%) بود. اکثر دانشجویان (77.8%) تمایل به ادامه ی تحصیل در رشته ی پزشکی داشتند.

**نتیجه گیری:** با توجه به نتایج حاصل از بررسی نظرات دانشجویان ECE را می توان عنصری مهم و مؤثر در افزایش علاقه و یادآوری مفاهیم آموزشی در دانشجویان تلقی نمود.

**واژه های کلیدی:** دانشجویان پزشکی، علاقه، انگیزه

### کورس مکمل ہونے سے پہلے طبی طلباء کو کلینکل تجربوں سے ہونے والے فائدے

**بیک گراؤنڈ:** طبی طلباء کے لئے نئے ماحول سے روبرو ہونا ہمیشہ ایک سخت مرحلہ ہوتا ہے کیونکہ نئی صورتحال سے نمٹنا بہرحال ایک کٹھن مرحلہ ہوتا ہے۔ حال ہی میں طبی طلباء کے لئے کورس کے اختتام پہلے ہی کلینکل تجربوں کی روش پیش کی گئی ہے جس سے ان کا ذہنی تناؤ کم ہوتا ہے اور وہ اپنی پڑھائی میں زیادہ دلچسپی لینے لگتے ہیں۔ اس تحقیق میں طبی طلباء پر کورس ختم ہونے سے پہلے طبی تجربوں کے مفید اثرات کا جائزہ لیا گیا ہے۔ یہ تحقیق سبزوار یونیورسٹی آف میڈیکل سائنس میں انجام دی گئی۔

**روش:** اس کراس سیکشن تحقیق میں دوہزار دو میں دوسرے سمسٹر اور چوتھے سمسٹر کے طلباء کو سوالنامے ڈئے گئے۔ پینتالیس طلباء نے سوالناموں کے جواب دئے اور اس کے نتائج کی ایس پی ایس ایس سافٹ ویئر انیس سے تجزیہ کیا گیا۔

**نتائج:** پینتالیس طلباء میں سے پچیس (پچیس اعشاریہ چھ فیصد) دوسرے سمسٹر میں تھے جبکہ بیس طلباء (چوالیس اعشاریہ چار فیصد) چوتھے سمسٹر میں تھے۔ طلباء کی اکثریت (اوسط اعشاریہ نویسٹ) نے تاکید کی کہ قبل از وقت کلینکل تجربوں سے انہیں بہت فائدہ پہنچا ہے اور یہ امر ان کی دلچسپی کا باعث بنا ہے۔ طالبات نے کہا کہ اس روش سے انہیں نظریات قائم کرنے اور طبی حقائق یاد رکھنے میں مدد ملی ہے۔ دوسرے سمسٹر کے طلباء نے کہا کہ کلینکل تجربوں سے انہیں اپنے عملی تجربوں کو سمجھنے میں کافی مدد ملی ہے۔ طلباء کی باتوں سے ان اہم امور کا بھی پتہ چلا ہے کہ وقت سے پہلے کلینکل تجربوں سے طلباء کو لاحق تناؤ کم ہوجاتا ہے اور ان کی خود اعتمادی میں اضافہ ہوتا ہے اور مزید کلینکل سرگرمیوں کے لئے ان کا شوق بڑھتا ہے۔ اس کے علاوہ طلباء کی اکثریت نے کہا کہ ان تجربوں کے بعد وہ اپنی تعلیمی فیڈ بک دلانا پسند نہیں کرتے ہیں۔

**سفرشات:** سوالنامے کے تجزیے کے سے پتہ چلا ہے کہ وقت سے پہلے طبی طلباء کو کلینکل تجربوں سے آشنا کرنا انہیں طبی تعلیم میں آگے بڑھنے کا شوق دلانے کا ایک مؤثر ذریعہ بن سکتا ہے۔

**کلیدی الفاظ:** طبی طلباء، کلینکل تجربے، شوق دلانا .

## INTRODUCTION

The usual conventional method of medical education is common in most medical universities in Iran, Europe and in some medical universities in the United States (1). This conventional method begins with 2-3 years of basic sciences level in which normal structure and physiology of the body is taught along with clinical topics. In the conventional method the clinical exposure of medical students delayed to the third or fourth year of education due to the separation of pre-clinical courses from clinical courses. The late clinical exposure leads in frequent complaints about the curriculum and has become one of the effective factors in the Edinburgh Declaration 1993 (2). Medical students in Iran are also apart from the real professional work environment and their job-related responsibilities until the fourth year of education (3). Moreover, medical students' stress, that was mostly related to first exposure to patients and performing clinical examinations for the first time, has always been the focus of attention for several years. Current data propose that early clinical exposure (ECE) can provide the opportunity for medical students to learn clinical skills by confronting and examining patients in their clinical courses. ECE, therefore, is expected to provide a dynamic learning process instead of solidly taught courses and can result in the sense of preparedness. ECE in the first two years of medical education has been proposed in order to increase the effectiveness of medical education. Few pieces of evidence exist on the effectiveness of this new method (3). Most of the studies performed before to evaluate the effectiveness of ECE were performed on medical students who were exposed to clinical practice accidentally or due to their part time jobs. On the other hand, these studies mostly referred to clinical skills in history taking and physical examination in the 3rd or 4th years of education. Lack of enough evidence on the attitude of medical students towards the effectiveness of ECE motivated us to perform this study on the attitudes of the 2nd and 4th semester medical students in Sabzevar University of Medical Sciences.

## METHODS

### Study participants

Medical students studying in Sabzevar university of Medical Sciences were allocated to participate in this cross sectional study using a global sampling. The inclusion criterion was passing the ECE course prior to the time of study. From a total of 45 medical students, 45 students participated in this study and none of them refused filling the questionnaire. Participants were either in the 2nd or 4th semester of medical education and all of them had successfully passed the ECE course.

### Study instrument

Data on attitudes of medical students towards ECE was collected using a validated questionnaire. This questionnaire was translated directly from English to Persian. The questionnaire contained three items including questions on the effectiveness and achievements from ECE

and students intention in changing their field of study. Except for the question assessing the achievements of ECE, the rest of the questions were in Likert scale, ranging from 1 which indicated strong agreement to 5 which indicated strong disagreement. Achievements of ECE were evaluated using a multiple choice question. Students were asked to choose the achievements according to their experiences and feelings. Achievement categories included increased self confidence, valuable learning opportunity, reduced stress and anxiety and improving the attitudes towards future clinical exposures. Participants could choose more than one choice only for the question on achievements.

### Statistical analysis

Descriptive analysis was used to identify the frequencies. Chi-square test was used to assess the relationship between questionnaire data and gender and semester of study. The confidence interval (CI) was considered 0.95 and p values less than 0.05 were considered statistically significant. The Statistical Package for the Social Sciences (SPSS) version 19.0 was used to analyze the data.

## RESULTS

Amongst the 45 medical students participated in this study 14 (32.1%) were men and 31 (68.9%) were women. Amongst the 45 students 25 (55.6%) were in the 2nd semester while 20 students (44.4%) were studying in the 4th semester. Chi-square test revealed no significant difference between gender and study semester ( $p=0.61$ ).

All the questions were answered by the participants. Most of the students (93.3%) reported maintaining interest towards medical education as an important achievement of ECE (Table 1).

Chi-square test showed a significant difference between gender and the usefulness of ECE in remembering ( $p=0.03$ ) and visualization of the taught courses ( $p=0.02$ ) (Table 1). There was a significant difference between study semester and the efficacy of ECE in terms of remembering taught courses ( $p=0.02$ ). Second semester students agreed more with the efficacy of ECE in remembering the taught courses than the 4th semester students ( $p=0.02$ ) (Table 2).

Most students (77.8%) reported that they do not think of changing their field of study after passing the ECE, 29 students either strongly agreed or agreed with the statement "I do not think of fields other than medicine?". There was no significant difference between gender ( $p=0.41$ ) and study semester ( $p=0.53$ ) and intention to change the field of study (Table 3 and 4).

Amongst 45 participants 25 (55.6%) believed that ECE had been a good clinical experience for them. Other beliefs about ECE were: ECE resulted in a better attitude towards future clinical practice by 19 students (42.2%) and increased self confidence and reduced stress either by 18 students (40%) (Table 5). No statistical test was used to compare results per gender and study semester due to the small number of subjects in each group.

**Table1. Frequency distribution of gender as per efficacy of ECE.**

	Gender	Strongly agree	Agree	No idea	Disagree	Strongly disagree	P Value
<b>Visualization of taught courses</b>	Men	6	6	0	1	1	0.02*
	Women	24	4	3	0	0	
	Total	30(66.7%)	10(22.2%)	3(6.7%)	1(2.2%)	1(2.2%)	
<b>Increased interest</b>	Men	9	4	0	0	1	0.51
	Women	22	7	1	1	0	
	Total	31(68.9%)	11(24.4%)	1(2.2%)	1(2.2%)	1(2.2%)	
<b>Remembering taught courses</b>	Men	4	6	1	1	2	0.03*
	Women	21	7	3	0	0	
	Total	25(55.6%)	13(28.9%)	4(8.9%)	1(2.2%)	2(4.4%)	
<b>Better understanding of taught courses</b>	Men	5	5	1	2	1	0.13
	Women	22	6	2	1	0	
	Total	27(60%)	11(24.4%)	3(6.7%)	3(6.7%)	1(2.2%)	
<b>Improve learning process</b>	Men	7	5	1	1	0	0.58
	Women	21	6	3	1	0	
	Total	28(62.2%)	11(24.4%)	4(8.9%)	2(4.4%)	0(0%)	

ECE denotes early clinical exposure.

**Table2. Frequency distribution of study semester as per efficacy of ECE.**

	Semester	Strongly agree	Agree	No idea	Disagree	Strongly disagree	P Value
<b>Visualization of taught courses</b>	2 <sup>nd</sup>	20	2	2	1	0	0.07
	4 <sup>th</sup>	10	8	1	0	1	
	Total	30(66.7%)	10(22.2%)	3(6.7%)	1(2.2%)	1(2.2%)	
<b>Increased interest</b>	2 <sup>nd</sup>	18	7	0	0	0	0.39
	4 <sup>th</sup>	13	4	1	1	1	
	Total	31(68.9%)	11(24.5%)	1(2.2%)	1(2.2%)	1(2.2%)	
<b>Remembering taught courses</b>	2 <sup>nd</sup>	18	6	0	1	0	0.02*
	4 <sup>th</sup>	7	7	4	0	2	
	Total	25(55.6%)	13(28.9%)	4(8.9%)	1(2.2%)	2(4.4%)	
<b>Better understanding of taught courses</b>	2 <sup>nd</sup>	18	5	1	1	0	0.37
	4 <sup>th</sup>	9	6	2	2	1	
	Total	27(60%)	11(24.5%)	3(6.6%)	3(6.6%)	1(2.2%)	
<b>Improvement of learning process</b>	2 <sup>nd</sup>	19	4	1	1	0	0.18
	4 <sup>th</sup>	9	7	3	1	0	
	Total	28(62.3%)	11(24.5%)	4(8.8%)	2(4.4%)	0(0%)	

ECE denotes early clinical exposure.

**Table3. Frequency distribution of gender as per intention to change the field of study.**

	Gender	Strongly agree	Agree	No idea	Disagree	Strongly disagree	P Value
I do not think of fields other than medicine	Men	8	1	3	1	1	0.41
	Women	21	5	3	2	0	
	Total	29 (64.4%)	6 (13.3%)	6 (13.3%)	3 (6.7%)	1 (2.2%)	

**Table4. Frequency distribution of gender as per intention to change the field of study.**

	Semester	Strongly agree	Agree	No idea	Disagree	Strongly disagree	P Value
I do not think of fields other than medicine	2 <sup>nd</sup>	18	3	2	1	1	0.53
	4 <sup>th</sup>	11	3	4	2	0	
	Total	29 (64.4%)	6 (13.4%)	6 (13.4%)	3 (6.6%)	1 (2.2%)	

**Table5. Frequency distribution of gender and study semester as per achievement items.**

	Increased self confidence	Good clinical experience	Reduced stress	Better attitude towards future clinical practice
<b>Gender</b>				
Men	5	4	5	5
Women	13	21	13	14
Total	18	25	18	19
<b>Semester</b>				
2 <sup>nd</sup>	14	18	12	9
4 <sup>th</sup>	4	7	6	10
Total	18	25	18	19

**DISCUSSION**

Vaughan & Hogg (1995) defined attitude as, ‘A relatively enduring organization of beliefs, feelings and behavioral tendencies towards socially significant objects, groups, events or symbols or a general feeling or evaluation (positive/negative) about some people, objects or issues.’<sup>5</sup> Studies indicate that attitudes have the highest chance of change during university studies (7). These attitudes can be generated for students by producing motivations and imagination of the future goals. Success and reaching goals are results of a positive attitude towards that goal or action. Various factors affect the formation and development of attitudes during life. Psychologists have studied these factors using different methods and have reached different points of views (5). In this study 93.3% of the medical students reported early clinical exposure to have an important effect on maintaining their interest to medical practice. Early clinical exposure resulted in maintaining interests toward medical courses more in the 2nd semester

students than 4th semester students. Moreover, 77.8% of these students reported that they did not think about any other study fields except medicine after passing the early clinical exposure course. In this study no statistically significant difference was found between genders and study semester in the desire to convert the field of study. Among 45 participants, 25 (55.6%) believed that the early clinical exposure resulted in increased self confidence. Interest in the field of study can result in progress and improvement of the level of knowledge in students while negative attitudes can result in boredom, frustration, and lack of motivation in students (5). Early clinical exposure can facilitate medical students rapport with patients, increase their motivation and self confidence, while helping them establish their taught knowledge. In general, this course can teach medical students how to accept their role in clinical practice (4). Other studies have shown that although medical students choose this field with motivation and knowledge, their attitude and motivation decreases gradually and even becomes negative

in later semesters(5). In another study by Littlewood et al. (2005) early clinical exposure was shown to result in a higher satisfaction from learned courses among medical students due to the formation of an attitude towards the physiologic and social problems of "real humans" (4). Ahmadipur et al. showed that 95.5% of medical students reported early clinical exposure to be useful in their studies while 83.3% of medical students believed that this course made a positive attitude in them so that they can enjoy their medical practice in future(7). According to Shirzad Hedayatollah et al.'s study early clinical exposure program have had positive effects on students' self confidence which is the same as our study(8). Solomon Sathishkumar et al.'s study revealed that 60.7% of students believe that early clinical exposure is a great aid in understanding the medical physiology which is approximately the same as ours(55.6%). In comparison with Solomon Sathishkumar et al. and Vahidshahi K studies, they reported 95% of their students believe that early clinical exposure is helpful in understanding the concepts which is much more than ours. 1,9 In Johnson AK and Scott CS study 40% of students indicated that after the early clinical exposure course they were more cynical than

when they had started school but our study revealed that in our students this rate is higher, approximately 64%.10 Because of different integration program among different medical schools, we cannot certainly compare our results with other studies and regarding the small body of literature in this field, this study findings suggest early clinical exposure would be effective in increasing medical students' interest towards their field of study and helping them establish and remember their taught theoretical lessons by changing their learning process from a passive theoretical learning into a more dynamic and clinical learning.

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