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Evaluating validity of current criteria for judgment passing ER rotation among internee medical students

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HIGHLIGHTS

- Previous studies have shown that the results of clinical tests in emergency medicine and other clinical education courses do not correlate accurately with a medical student's degree of confidence in performing tasks and their readiness for future career.
- Validity and authenticity of clinical test in emergency medicine and other clinical education course must be evaluated to ensure that these examinations predict whether the students who pass have greater skills and confidence when compared to the ones who fail the rotation.
- Self-assessment is an effective tool for evaluating validity of clinical tests.

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ABSTRACT

Background: Passing the emergency medicine internship is an essential process for all graduates of medical schools. The main purpose of this study was to evaluate validity of current criteria for judgment passing ER rotation among internee medical students.

Methods: In this cross-sectional study, a total of 200 students in the emergency departments (ED) of the teaching hospitals at Tehran University of Medical Sciences (TUMS) were included. The data were gathered using by a valid self-assessment questionnaire including demographic information and 12-items about the students' level of confidence with the skills and procedures under study. Statistical analyses were done using SPSS (version 22).

Results: 200 medical students participated in this study. A Univariate analysis showed a significant correlation between successfuly completions of training in emergency medicine (passing emergency medicine in past rotations) with some items in self-assessment questionnaire same as knowledge of interns in managing emergency situations ($p = 0.009$). The Spearman test demonstrated a significant correlation between the duration of emergency training (number of months which interns spent on the emergency training) with the some items in self-assessment questionnaire same as importance of emergency medicine training ($p = 0.019$).

Conclusions: According to association between successfully completions of training in emergency medicine and self-assessment questionnaire, it seems current criteria for judgment passing emergency medicine rotation is valid as well as we recommended using self-assessment for evaluating validity of such testes.

1. Background

It has been emphasized that medical students should be competent in the procedural skills considered crucial to handle emergency situations [1]. Also, there is a need for every medical school to provide the valuable experience for medical students who handle emergencies as they arise in daily practice [2]. Since, the main goal of teaching emergency medicine (EM) is to increase medical students' knowledge and expertise about important skills such as resuscitation, general procedural skills and to improve the

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perception of the emergency environment as a specialty [3]. In medical schools, students are required to demonstrate clinical proficiency in their educational experience in EM. hence, there are several tests currently in use for assessing students' clinical skills in the EM internship [4] however, previous studies have shown that the results of these tests and passing the EM internship do not correlate accurately with a student's degree of confidence in performing tasks or their readiness for their future career [5–7] Accordingly, validity and authenticity of assessment tools must be evaluated to ensure that these examinations predict whether the students who pass have greater EM skills and confidence when compared to the ones who fail the rotation [8]. It seems that the self-assessment method is a useful tool for predicting the performance and self-confidence of medical students [9] Studies indicate that self-assessment has many potential benefits, including improving the academic achievement, reflecting on the learning process and promoting a deeper learning approach and encouraging medical students to become life-long learners [10,11]. Meanwhile, it's important to have multiple sources of evidence same as self-assessment results for supporting score-based inferences and for validity of the criteria used to judge whether a medical student who pass have greater ER skills and confidence when compared to the ones who fail the rotation. As mentioned in the literature review, many studies have addressed medical students' self-confidence, experience and attitude toward the EM rotation [1,5,12–15] however, to the best of our knowledge, very little was found in the literature regarding EM medical students' perceived mastery and self-confidence of their EM skills by self-assessment technique to realign and enhance an emergency training course. According to the importance of the subject, the main goal of this study is evaluating validity of current criteria for judgment passing ER rotation among internee medical students by self-assessment method. Our assumption in this study was that if medical students pass an EM rotation exams and spent more time in EM training that they will have better confidence and skills when it comes to managing emergency situations when compared to their peers who failed the rotation or spent less time on training in self-assessment test. As a result of this research, it is possible that the curriculum for the emergency medicine course in Tehran University of Medical Sciences, one of the largest medical universities in Iran country, was redesigned and improved.

2. Methods

2.1. Study design

This was a cross-sectional study.

2.2. Study setting

The study was set in the emergency departments (ED) of the teaching hospitals at Tehran University of Medical Sciences (TUMS). The ED of these hospitals is staffed by a team including faculty, residents, and interns. The faculty members supervise the care of patients, who are assigned to residents and interns. They receive an approval by the faculty before ordering any tests or performing any procedures. Interns must take at least a mandatory four-week EM internship in their fourth year of clinical phase.

2.3. Participant

The study population consisted of all emergency internees of the two educational hospitals. A list of students was prepared for this purpose and participants were selected randomly.

2.4. Instrument

The instrument was a questionnaire which has previously been shown to be valid and reliable ($r = 0.85$). The questionnaire included two sections: (1) a demographic information and (2) 12-items about the students' level of confidence with the skills and procedures under study. Likert scales ranging from 1 to 5 were used to score questions in self-assessment questionnaire.

2.5. Ethical considerations

Survey participation was voluntary and the anonymity of the respondents was considered. The Ethics Committee of the Tehran University of Medical Sciences approved the study.

2.6. Statistical methods

A descriptive analysis was carried out to provide the demographic characteristics. We performed a Univariate analysis to assess the correlation between succefuly completions of training in emergency medicine (passing emergency medicine in past rotations) with mean scores of the self-assessment questionnaire. The variables with normal distribution were analysed by a two-sample *t*-test, while other variables with non-normal distribution were analysed using the Mann–Whitney test. In addition, the Spearman test was used to assess the correlation between the duration of emergency training (number of months which interns spent on the emergency training) with mean scores of the self-assessment survey.

Table 1
Correlation between passing emergency medicine in past rotations with mean scores of the self-assessment survey using the *t*-test.

Questions	Mean (Group 1: not passed the ED rotation)	Mean (Group 2: passed the ED rotation)	*P*-value
How much exposure have you had to emergency medicine during your undergraduate training?	3.11 ± 0.71	3.05 ± 0.93	0.63
How much teaching have you had in emergency medicine during your undergraduate training?	2.85 ± 0.68	2.57 ± 0.69	0.007
How challenging do you feel emergency medicine is compared to other clinical specialties?	3.38 ± 0.78	3.56 ± 0.91	0.15
How stressful do you feel emergency medicine is compared to other clinical specialties?	3.76 ± 0.79	3.98 ± 0.89	0.07
How challenging do you feel are these areas of emergency medicine?	3.21 ± 0.65	3.44 ± 0.65	0.01
How would you grade your knowledge on the principles of management of the emergency conditions?	2.35 ± 0.62	2.59 ± 0.611	0.009
How confident do you feel in performing the clinical procedures in the emergency situation?	3.19 ± 0.79	2.84 ± 0.75	0.002
How confident do you feel in interpreting the following clinical investigations?	3.11 ± 0.79	3.05 ± 0.65	0.62