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Student Forum

THE EFFECT OF EMERGENCY DEPARTMENT OBSERVATIONAL EXPERIENCE ON MEDICAL STUDENT INTEREST IN EMERGENCY MEDICINE

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□ **Abstract—Background:** In many different health care educational models, shadowing, or observational experience, is accepted as integral to introducing students to the specifics of medical specialties. **Study Objectives:** We investigated whether emergency department (ED) observational experiences (EDOs) affect medical students' (MSs') interest in emergency medicine (EM). Additionally, we examined how the subjective quality of clinical exposures influences this interest and the decision to recommend EDOs to other students. **Methods:** This is a survey of MSs at a Level 1 tertiary care university hospital during a 2-year period. The study focused on assessing perception of ED exposure, post-EDO change in EM interest, and decision to recommend EDOs to others. **Results:** The majority of MSs had a change in EM interest post-EDO and recommended EDOs. Both variables correlated to ED exposure ratings. **Conclusions:** The EDO significantly influenced MS interest in EM by providing exposure to various aspects of the ED. © 2011 Elsevier Inc.

□ **Keywords—**education; job shadowing; medical student; career choice; observational experience; tag along

INTRODUCTION

An observational experience, or “shadowing,” is accepted as an educational model to recruit and introduce a spe-

cific career to students (1–3). Because required clerkships are usually not offered until the fourth year, students are encouraged to seek out experiential knowledge regarding a career in emergency medicine (EM) earlier in their education (4–6). A multi-center focus group study showed that the best principles of EM teaching are a positive attitude and tailoring the learning for the student (7). EM programs look for the best methods to expose students to the role of the emergency physician (EP) and encourage interest in this relatively new specialty (7–12). However, no prior studies have evaluated the affect emergency department (ED) observational experiences (EDOs) have on medical student (MS) interest in EM and what aspects of these EDOs are influential.

This study's objectives are to determine if an EDO affects MSs' interest in EM and how the perception of six assigned criteria of clinical exposures influenced their interest in EM and their decision to recommend the EDO to other students.

MATERIALS AND METHODS

This study electronically surveyed approximately 70 MSs of all levels of training who had participated in an EDO at the University of California, Irvine Medical

Center (UCIMC), a Level 1 trauma center tertiary hospital, during the 2003–2005 academic years. MSs could observe a resident or attending physician in the ED through two methods: an established voluntary Emergency Medicine Interest Group (EMIG) “tag-along” program or through a required Clinical Service Experience (CSE) course at the medical school that randomly assigns second-year MSs to the ED.

The electronic survey consisted of an informative request to voluntarily submit an anonymous 13-question survey that evaluated their experiences during the EDOs. The survey queried demographics, MS level of training, number and duration of EDO shifts, time since last EDO, and level of training of the observed EP. A five-point Likert scale (1-very poor to 5-very good) assessed perception of exposure to six aspects of the ED: role of an EP, trauma protocol, procedures, history and physical examination, laboratory/radiology/electrocardiogram interpretation, and overall clinical management. Students were then asked to rate the change in interest in EM post-EDO on a five-point Likert scale and whether or not they would recommend the EDO to others. The major outcomes of this study were defined as the change in students’ interest to enter a career in EM and if the students would recommend the EDO to other students.

Statistical associations were assessed using the chi-squared test for independence, Student’s *t*-test, Pearson’s correlation coefficient (*r*), and one-way analysis of variance. Statistical significance was defined as a *p*-value < 0.05. Data were obtained after approval from the Institutional Review Board.

RESULTS

Forty-one MSs completed the survey; their demographics are shown in Table 1. The respondents included both pre-clinical (1st and 2nd year) and clinical (3rd and 4th year) students, and the majority of students were members of the EMIG. Most had completed three or more EDOs, and most EDOs lasted at least 3 h. Exposure to the role of an EP had the most positive ratings, whereas exposure to the trauma protocol had the fewest. The ratings of the six aspects of the ED were closely correlated (*r* = 0.49 to 0.70). Twenty-nine percent of students said their interest in EM decreased significantly or somewhat as a result of their latest EDO. Twenty-four percent said their interest increased significantly or somewhat. Seventy-three percent would recommend the EDO to others.

MSs that completed three or more EDOs gave a mean rating of their exposures 0.7 points higher than those who completed fewer (*p* = 0.02). They also had higher scores for exposure to the role of an EP, clinical procedures, and

Table 1. Survey Responses (n = 41)

Characteristic	Numbers of Medical Students (%)
Female	17 (41)
Male	24 (59)
Age, years	
< 23	2 (5)
23–26	26 (63)
> 26	13 (32)
MS clinical year	
Pre-clinical (1 st and 2 nd year)	22 (54)
Clinical (3 rd and 4 th year)	19 (46)
EMIG member	25 (61)
Have EM mentor	8 (20)
Numbers of EDOs	
1–2	17 (41)
> 3	24 (59)
Hours spent in each EDO	
0–2	8 (20)
> 3	33 (80)
Level of training of shadowed physician	
Attendings	13 (32)
3 rd year residents	9 (22)
2 nd year residents	5 (12)
1 st year residents	14 (34)
Positive rating (good and very good) of exposure to:	
Role of an emergency physician	23 (56)
Trauma protocol	10 (24)
ED history taking and physical examination	16 (39)
Clinical procedures	19 (46)
Radiological/ECG/laboratory findings	18 (44)
Overall clinical management	18 (44)
As a result of most recent EDO, interest in EM has:	
Decreased	12 (29)
Not changed	19 (46)
Increased	10 (24)
Would recommend the EDO to another medical student	30 (73)

MS = medical student; EMIG = Emergency Medicine Interest Group; EDO = emergency department observational experience; ECG = electrocardiographic.

overall clinical management. The ratings did not differ according to the number of hours of the EDO or whether the MS was an EMIG member. The five MSs who observed a second-year resident had a mean rating 0.9 points higher than the others (*p* = 0.09). Although EDOs with second-year residents were rated the highest and those with attending physicians were rated the lowest on each of the six exposure ratings, this difference was significant only for overall clinical management (*p* = 0.02).

In Table 1, all six exposure ratings of the most recent EDO were related to the change in interest in EM, though none of the descriptive variables are shown. The relationship of the full five-point rating scale to the five-point change-in-interest scale was assessed using linear regression (Table 2). Because the six ratings are correlated,

Table 2. Relationship of Clinical Exposure Ratings to Change in Interest and to the Decision to Recommend the Experience to Other Students (n = 41)

Exposures	Change in Interest		Decision to Recommend	
	Regressive Correlation (b)	<i>p</i> -Value	Regressive Correlation (b)	<i>p</i> -Value
Role of an EP	0.64	<0.0005	0.11	0.13
Trauma protocol	0.41	0.01	0.16	0.01
ED H&P	0.38	0.01	0.09	0.12
Clinical procedures	0.55	<0.0005	0.10	0.09
Radiological/ECG/laboratory findings	0.37	0.01	0.04	0.48
Overall clinical management	0.53	<0.0005	0.13	0.03

EP = emergency physician; ED = emergency department; H&P = history and physical examination; ECG = electrocardiographic.

their coefficients were decreased in multiple regression (not shown), and only the rating of exposure to procedures was related to change in interest ($b = 0.36$, $p = 0.04$).

MSs in their clinical years (89%, $p = 0.03$) and those with higher ratings of exposure to the trauma protocol and to overall clinical management were more likely to recommend the EDO to others. No other descriptive variables were related to this decision (Table 2). In multiple regression, these associations were no longer significant, but the rating of exposure to the trauma protocol had the strongest relationship to the decision to recommend the EDO ($b = 0.15$, $p = 0.07$).

DISCUSSION

Interest in EM as a career choice among MSs varies depending on multiple factors. One study found that medical schools affiliated with an EM residency program had a higher proportion of graduates who chose a career in EM (6). EM mentorship can also be an important factor, but is not available to students who attend a medical school without an associated EM residency program (13). One study found that a virtual advisor program enabled MSs to have access to experienced EM faculty mentors (14). However, a virtual program lacks the ability to obtain first-hand experience and exposure in the ED. An EM rotation has been shown to provide a unique educational opportunity, and efforts have been made to create a uniform EM course (15–19). However, a required third-year EM rotation was found to have no correlation with the number of students applying or matching in EM (20). Another factor that helps shape MS career choice is interest groups. EMIGs at medical schools are known to help expose MSs to EM by providing opportunities to gain clinical exposure, develop research ideas, and participate in community service (21).

In our results, the EDO seemed to be successful in helping MSs clarify their interest in EM. The number of

EDOs was more closely related than the length of EDOs to the MS rating of their exposure; a larger number of EDOs could be said to provide a greater variety of observational experience and to improve the quality of their exposures. Also, MSs who shadowed second-year residents tended to rate their exposures higher. At UCIMC, the role of the second-year resident is to see the most patients, the acutely ill and all paramedic transports, which may explain the higher ratings.

MS rating of all six exposures, especially exposure to clinical procedures, was strongly related to their change in interest. Ratings of their exposure to the trauma protocol and to overall clinical management were positively related to their decision to recommend the EDO to others. Exposure to each of these areas is essential to allow MSs to appreciate EM as a unique intervention-oriented specialty that focuses on the acutely ill and injured, an experience that will not only better their educational experience, but will also influence their eventual career choice.

LIMITATIONS

One limitation is the retrospective design, which cannot ultimately detect causality. An additional limitation includes the selection bias evident when surveying a group of students who may already have an interest in EM (i.e., EMIG members). The group of students who were sent to the ED through the CSE requirement may not have had an underlying interest. However, these two groups did not differ in their ratings of exposure to the six aspects of the ED in this study. A future study should compare the effect of the EDO in those with and without interest in EM by asking what their interest in EM is before the EDO, allowing a control group comparison. The number of respondents was also a limitation, lowering the power of our study. A future study could also use a multi-center approach, and ask the students to complete the survey immediately after their tag-

along experience. Lastly, this study was not set out to determine whether these MSs subsequently chose EM as a career, and thus data are not available for that information.

CONCLUSIONS

Our study concludes that an EDO has an effect on MS interest in EM. MSs valued the EDO and subsequently would recommend it to others. More than half of the respondents found that such an experience changed, either positively or negatively, their interest in EM. Furthermore, positive experiences in procedures, trauma protocol, and clinical management were found to have strong direct correlations with MSs' interest and decision to recommend the experience. Therefore, the establishment of an EDO program that focuses on exposure to these experiences can provide assistance to MSs in specialty selection.

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ARTICLE SUMMARY

1. Why is this topic important?

Many medical students are interested in gaining exposure to emergency medicine (EM) before their clerkship through interest groups, mentorship, and shadowing experiences. The importance of this study is to establish whether an ED observational experience affects medical student interest in EM through assessing medical student perception of this experience.

2. What does this study attempt to show?

This study attempts to show the impact of the shadowing experience on medical student interest in EM. It also evaluates the shadowing experience itself by assessing the perceptions of medical students so that EM programs may further enhance the experience for them.

3. What are the key findings?

This study concludes that shadowing or observational experiences do affect medical students' interest in the field of EM. Additionally, this is the first study that focuses on assessing perception of ED exposure, post-shadowing change in interest, and the student's decision to recommend the experience to their peers.

4. How is patient care impacted?

The effect that the shadowing experience has on medical student interest will assist medical students in career choice decision-making. It is hoped that this will direct students who are passionate about EM into a satisfying career, which ultimately has a positive impact on patient care.