Original Article

Emergency medicine as a growing career in Iran: an Internet-based survey

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BACKGROUND: In Iran, few studies have evaluated emergency medicine as a career option. In the present study, we aimed to find out how Iranian emergency-medicine specialists view their specialty as a career.

METHODS: Following a qualitative study, a Likert-scale questionnaire was developed. Iranian emergency physician specialists who had at least two years' job experience were contacted via email. A uniform link to a Web-based survey and a cover letter that explained the survey were sent to the recipients. We used the Kruskal-Wallis test and post hoc analysis to determine the differences between demographic subgroups.

RESULTS: A total of 109 eligible responses were received, a response rate of 72.63%. Of the responders, 57.8% were 30–40 years of age, 86.2% were male, 86.2% were single, 84.4% were faculty members and 90.8% had fewer than 10 years' job experience. The main problems occurring during the career of Iranian emergency physicians were: insufficient income, inadequate recognition of the specialty by the community, inadequate union support, insecurity in the emergency wards, overcrowding, job stresses and night shifts. Despite insufficiency of income, Iranian emergency physicians (EPs) did not care about the financial benefits of patient care. Academic activity had positive effects on the perspectives of Iranian emergency physicians regarding their careers.

CONCLUSION: Iranian emergency physicians and leaders in emergency medicine should struggle to improve the present situation, aiming at an ideal state.

KEY WORDS: Emergency medicine; Career; Survey

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INTRODUCTION

Emergency medicine is a unique specialty involving rapid diagnosis, medical care and discharge for patients who need immediate medical attention. Emergency physicians (EPs) must acquire broad medical knowledge and are often forced to make rapid decisions based on limited information. Multitasking, dealing with interruptions, and managing numerous patients simultaneously are key skills in EPs' work lives.^[1]

Previous studies have revealed that variety in clinical pathology, emphasis on acute care, previous work in an

emergency setting, and flexibility both in terms of practice location and work schedule are the main factors in EPs' career selection.^[2] Career longevity, job satisfaction, and burnout among EPs are areas of debate.^[3,4] Recent studies have reported various problems in the field of emergency medicine, especially in relation to night shifts, emergency department (ED) overcrowding, limited resources, job stresses, litigation concerns, and miscommunication between patients and physicians.^[5]

These tensions could lead to burnout, defined as a triad of emotional exhaustion, depersonalization, and

low sense of personal achievement.^[6] Burnout is reported among EPs.^[7,8] According to the American College of Emergency Physicians (ACEP), EPs have a 25% attrition rate over 10 years.^[9] Some researchers have reported low levels of stress and high levels of job satisfaction among EPs, whereas others have reported high levels of stress and job dissatisfaction.^[10–12]

In Iran, emergency medicine was approved as a new specialty area by the Iranian Council of Graduate Medical Education in 1999. Subsequently, the Iran University of Medical Science (IUMS) gained the authority to train its first emergency-medicine residents in 2000. In early 2005, the Iranian Society of Emergency Medicine (ISEM) was founded. Every year, the number of Iranian EP graduates increases. Sixteen years after the establishing of emergency medicine in Iran, this field is growing nationwide. Today, 200 emergency-medicine specialists are practicing in different parts of the country. In the future, along with the development of expertise in the field of emergency medicine, one should expect fundamental changes in both the character and the quality of emergency services in Iran.^[13]

Given the novelty of the specialty in Iran, few studies have evaluated emergency medicine as a career. In the present study, we aim to find out how Iranian emergency-medicine specialists view their specialty as a career.

METHODS

The research presented here follows on from a previous study conducted by Farahmand et al.^[14] In the former study, we opted for a qualitative methodology (grounded theory) and face-to-face interviews in order to identify the main characteristics of the field in Iran. Each interview was recorded by a voice recorder, and then a verbatim transcript was extracted from the audio file. The texts were read separately by the executors of the study, and the main themes were coded and classified into three categories: 1) career nature; 2) the positive aspects of the career; 3) the negative aspects of the career. Items under each extracted theme were used to develop a Likert-scale questionnaire for our online survey.

The questionnaire was validated in six steps. First, a panel of experts (five board-certified emergency-medicine consultants) evaluated the questions to establish face validity of the survey. In a second step, before embarking on the subject area, we conducted a pilot study among a sample of 10 EPs. In step three we collected the pilot data and entered them into a spreadsheet. Then, responses to negatively phrased

questions were reverse coded to compare the consistency of responses to similar positively phrased questions. In step 4, principle components analysis (PCA) was performed to aggregate the questions loading onto the same factors. In step 5, the Cronbach Alpha (CA) test was used to check the internal consistency of the questions (values more than 0.6 were considered acceptable). In step 6 the questionnaire was revised based on the results of the PCA and CA tests (Table 1).

The survey consisted of 24 questions: the first five related to demographic data, including age, gender, marital status, the number of years in practice, and academic or nonacademic activity. Nineteen questions evaluated the viewpoints of the participants regarding the emergency-medicine career in Iran. A five-point Likert scale (1=strongly agree, 2=agree, 3=neutral, 4=disagree, 5=strongly disagree) was used in order to rank the viewpoints on each item.

Finally, in a cross-sectional study, a 24-item survey was emailed to 150 emergency-medicine specialists. Specialists who fulfilled the following criteria were recruited: 1) they had at least two years' job experience; 2) they had an email address; 3) they were members of the Iranian Society of Emergency Medicine (ISEM); and 4) they gave permission for use of their emails in correspondence with the ISEM. We sent the survey twice; the time interval between each email was four weeks. Emails contained a uniform link to a Web-based survey and a cover letter that explained the survey to the recipients. The average time required

Table 1. Survey items and results of validation process (Principal component analysis and Cronbach Alpha test)

Factors	Item	Cronbach Alpha
Career has flexible schedule	A: I have enough free time	0.7
	E: I do not have adequate time to research	
	P: My work schedule is flexible	
Career has hopeful future	B: I have opportunities for career progression	0.78
	C: My career has a promising future	
	D: My income is sufficient to cover my living expenses	
Career is established	S: I would choose emergency medicine as my profession again, given the chance	0.75
	F: My career has been recognized in the community	
	G: Emergency medicine has good union support	
Career has hazards	N: Other specialists do not cooperate with me	0.87
	I: My shifts are overcrowded	
	J: My career is stressful	
Career nature	K: I am worried about contagious diseases	0.9
	L: I feel secure in my work environment	
	M: I have few job opportunities	
	H: The excitement in my career is an advantage	
	O: When I deal with my patients, I do not care about financial issues	
	Q: Night shifts are a disadvantage in my career	
	R: I can fulfill my patient's expatiations with my expertise	

to complete the survey was about five minutes. In order to make the responses anonymous, completing the Web survey was possible without logging in for authentication. The Internet address of the survey was IP-sensitive and each participant could only fill out the survey once. Survey responses were automatically stored on a password-protected server. Data analysis was performed using SPSS version 23 (SPSS Inc.). Descriptive statistics were used to analyze demographic characteristics and to establish overall agreement or disagreement for each item. We used the Kruskal-Wallis test and post-hoc analysis to determine the differences between demographic subgroups for the other 19 items. *P* values less than or equal to 0.05 were presumed to be statistically significant.

RESULTS

Of the 150 surveys distributed, 120 emergency physicians responded. Eleven surveys were excluded because of missing data. A total of 109 eligible responses were received (response rate: 72.63%). A participant flow chart is shown in Figure 1.

Demographic characteristics of the participants are summarized in Table 2. Of the responders, 57.8% were

30–40 years of age, 86.2% were male, 86.2% were single, 84.4% were faculty members, and 90.8% had fewer than 10 years' job experience.

The Iranian EPs had high levels of disagreement with the following items: my income is sufficient (median: 4, IQR 25%–75%: 2–5), there is adequate recognition of the specialty by the community (median: 4, IQR 25%–75%: 4–5), there is good union support (median: 4, IQR 25%–75%: 4–5) and there is adequate security in the emergency wards (median: 4, IQR: 25%–75%: 2–4). They had high levels of agreement with the following items: the ED is overcrowded (median: 1, IQR 25%–75%: 1–2) and my job is stressful (median: 1, IQR 25%–75%: 1–2). Responders indicated night shifts as a weakness in their profession (median: 2, IQR 25%–75%: 1–3), while the excitement of the role was considered to be an advantage (median: 2, IQR 25%–75%: 1–3). Iranian EPs were confident about their expertise in fulfilling patient expectations (median: 2, IQR 25%–75%: 1–2), and they did not care about the financial benefits of patient care (median: 2, IQR 25%–75%: 1–3).

The Kruskal-Wallis test and post-hoc analysis were used to determine significant differences in demographic subgroups. Among the age subgroups, there were significant differences in responses to Items C (promising future), E (inadequate time for research), G (enough union support), K (concern about contagious disease), and S (would choose to enter emergency medicine again).

Physicians who were 31–40 years old were less hopeful about the future of emergency medicine (mean±SD: 3.24±0.14, 95%CI: 2.94–3.53 for the age of 31–40; mean±SD: 2.38±0.33, 95%CI: 1.64–3.11 for 20–30; mean±SD: 2.21±0.2, 95%CI: 1.79–2.64 for 41–50). Young emergency physicians (20–30 years old) agreed less that they had inadequate time to spend on research (mean±SD: 3.77±0.16, 95%CI: 3.41–4.13). This was significantly higher than the value for older respondents (mean±SD: 2.35±0.14, 95%CI: 2.06–2.64 for EPs who were 31–40; mean±SD: 2.79±0.21, 95%CI: 2.36–3.22 for those aged 41–50).

Middle-aged EPs were more in agreement with the adequacy of union support in their career (mean±SD: 3.5±0.16, 95%CI: 3.36–4). This score was higher in both young EPs (mean±SD: 4.62±0.26, 95%CI: 4.03–5) and older EPs (mean±SD: 4.67±0.1, 95%CI: 4.46–4.88). Younger EPs were less concerned about contagious diseases (mean±SD: 3.77±0.23, 95%CI: 3.27–4.27). Middle-aged and older EPs showed more concern about

Figure 1. Flow chart of the study population.

Table 2. Demographic characteristics of participants

Characteristics	N=109 (%)
Gender	
Male	94 (86.2)
Female	15 (13.8)
Age, in years	
30–40	13 (11.9)
40–50	63 (57.8)
50–60	33 (30.3)
Marital status	
Single	94 (86.2)
Married	15 (13.8)
Academic activity	
Faculty member	92 (84.4)
Non-academic	17 (15.6)
Work experience, in years	
0–5	51 (46.8)
5–10	48 (44)
10–15	10 (9.2)

this risk (mean±SD: 2.6±0.15, 95%CI: 2.37–2.97 and mean±SD: 2.39±0.23, 95%CI: 1.94–2.85, respectively).

We asked EPs whether they would choose emergency medicine again, given the chance, and negative responses were more common among middle-aged EPs (mean±SD: 3.1±0.2, 95%CI: 2.7–3.5), whereas younger and older EPs were more eager to make this choice again (mean±SD: 1.85±0.3, 95%CI: 1.1–2.5 and mean±SD: 2.24±0.22, 95%CI: 1.7–2.8, respectively).

There was a significant difference between male and female EPs in their responses to Items J (high job stress), K (contagious diseases), and P (flexible schedule).

Female EPs were less in agreement that emergency medicine is a stressful career (mean±SD: 2.24±0.24, 95%CI: 1.73–2.8 for females and mean±SD: 1.7±0.1, 95%CI: 1.47–1.9 for males).

In comparison with male EPs, female EPs had more concern about contagious diseases in the ED (mean±SD: 2.52±0.12, 95%CI: 2.27–2.77 and mean±SD: 3.9±0.15, 95%CI: 3.6–4.2, respectively). Female EPs were more in disagreement with the flexibility of their work schedule (mean±SD: 3.2±0.3, 95%CI: 2.53–3.8 for females and mean±SD: 2.24±0.11, 95%CI: 2–2.48 for males).

In the marital-status subgroup, there were significant differences between married and single EPs in their agreement with Items K (contagious disease) and Q (night shifts as a negative point).

In comparison with single EPs, married EPs were more concerned about being infected with contagious diseases in the ED (mean±SD: 2.53±0.12, 95%CI: 2.29–2.78 and mean±SD: 3.87±0.21, 95%CI: 3.4–4.3, respectively). Married EPs were more in agreement that night shifts are a negative aspect of the emergency-medicine career (mean±SD: 2.93±0.23, 95%CI: 2.44–3.42 for single EPs and mean±SD: 1.84±0.1, 95%CI: 1.63–2.06 for married EPs).

In the academic activity subgroup, there were significant differences in the responder scores to items B (many opportunities for career progression), C (promising future), I (overcrowding in the ED), and N (uncooperativeness of other specialists).

In comparison with EPs who did not engage in academic activity, faculty members had more agreement with the idea that they had the opportunity to progress in their careers (mean±SD: 2.38±0.12, 95%CI: 2.36–2.4 for faculty members; mean±SD: 3.7±0.29, 95%CI: 3.57–3.83 for non-faculty members). In addition, faculty members were more optimistic about the futures of their careers (mean±SD: 2.64±0.2, 95%CI: 2.4–2.9 for faculty members; mean±SD: 3.82±0.24, 95%CI: 3.3–4.3 for

non-faculty members).

Faculty members had more agreement with the statement that there was overcrowding in the ED (mean±SD: 1.3±0.07, 95%CI: 1.19–1.48, for faculty members; mean±SD: 1.94±0.23, 95%CI: 1.44–2.44 for non-faculty members).

EPs who had no academic position disagreed that the other specialists were cooperative (mean±SD: 2±0.12, 95%CI: 1.76–2.24 for faculty members and mean±SD: 3±0.27, 95%CI: 2.43–3.5 for non-faculty members).

In the job-experience subgroups, there were significant differences in the level of agreement with Items B (opportunity for job promotion) and K (contagious diseases).

EPs who had over 10 years' job experience showed more hope for the futures of their careers (mean±SD: 1.4±0.16, 95%CI: 2.5–3.1 for over 10 years' experience; mean±SD: 2.56±0.18, 95%CI: 2.18–2.94 for 5–10 years; mean±SD: 2.84±0.16, 95%CI: 2.5–3.1 for fewer than five years).

EPs who had fewer than five years' job experience were less concerned about the risk of being infected with contagious diseases in the ED (mean±SD: 3.16±0.17, 95%CI: 3.11–3.21 for fewer than five years' experience; mean±SD: 2.3±0.15, 95%CI: 1.99–2.63 for 5–10 years; mean±SD: 2.4±0.34, 95%CI: 1.63–3.17 for over 10 years).

DISCUSSION

Considering the novelty of emergency medicine in Iran, there are not enough studies about careers in emergency medicine in our country. Farahmand et al^[15] conducted interviews with 23 emergency-medicine residents. They mentioned the following reasons for choosing emergency medicine: gaining experience in a new specialty, encouragement of mentors, the possibility of performing various procedures, the length of the course (in Iran, emergency-medicine training consists of three years of postgraduate education), interest in helping others, encouragement of family, opportunities for advancement, professional safety, social prestige and income.

Based on the descriptive analysis, most of the Iranian EPs who participated in the survey were male, single, young, or middle-aged; they had fewer than 10 years' job experience and had academic positions. The main weaknesses of a career in emergency medicine from the viewpoint of our participants were: 1) insufficiency of income; 2) inadequate recognition of the emergency-medicine specialty by the community; 3) inadequate

union support; 4) insecurity in the workplace; 5) stress at work; 6) night shifts; and 7) overcrowding in the ED. Iranian emergency-medicine specialists considered the element of excitement to be an advantage in their career; in addition, they were confident about their own expertise in practice. Despite insufficiency of income, they did not care about the financial benefits of treating patients.

In a previous study in Iran, Nejati et al^[16] evaluated the occupational hazards (contagious diseases and management of critically ill patients) encountered by ED physicians and staff. They reported emergency medicine as a hazardous occupation in Iran.

In other countries, overcrowding, dealing with patients and families, inadequate administrative support,^[17] a higher number of shifts,^[18] insufficient personnel and heavy workloads,^[19] income and financial matters, malpractice,^[20] and familial conflict^[21] were significant factors.^[22] Besides these factors, the ED was seen as more prone to exhibitions of aggressive behavior, including threatening behavior and verbal and physical attacks.^[23]

Based on the Kruskal-Wallis test and post-hoc analysis, middle-aged EPs were less hopeful regarding the futures of their careers. In addition, they would be less inclined to choose emergency medicine as a career again if they had another chance. It seems that there are problems in the career path in this subgroup that should be examined in future studies.

Married EPs showed higher levels of concern about infectious diseases in the ED. It is possible that this concern can be attributed to their responsibilities for their families. Married EPs considered night shifts to be a negative point in their career; this is also attributable to familial issues. However, our sample included fewer married EPs than singletons, and this will affect our results.

Academic activity and faculty membership had positive effects on respondents being optimistic about the future of their emergency-medicine careers. Besides other reasons, faculty members had more opportunities for progression in their career. One possible explanation is the effect of having full-time employment. It is possible that this creates a more stable economic state and increases the self-confidence of faculty members. Non-faculty members had more agreement with the inadequate cooperation of other specialists. In private hospitals, patients are managed by graduate specialists, but in public hospitals, residents manage emergency patients and have to respect the educational regulations. This may explain the different levels of agreement between faculty members and EPs who are engaged in private activity, although this is just an assumption

and more studies are needed in order to support this conclusion.

Faculty members were more likely to face ED overcrowding. In Iran, university hospitals are committed to serving all patients, regardless of their financial status or ability to pay. Private hospitals have the right to refuse treatment, although, by law, they must stabilize patients who are in an emergency situation. Consequently, university hospitals are always crowded, including their EDs. Further studies are required to evaluate overcrowding in public hospitals.

In Australia, ED overcrowding is also an ongoing problem. A four-hour rule (the discharge of ED patients within four hours of admission) has been implemented in order to resolve this problem.^[24]

In Iran, a similar solution has recently been applied by the Ministry of Health. According to this new regulation, all ED patients must receive their final discharge within six hours of admission. Although it has seemed to help, no study has yet been carried out on the results of this new regulation.

EPs who had over 10 years' job experience were more optimistic about the future of emergency medicine. Older EPs also had this perspective. More studies are needed to determine the relation between levels of experience and optimism regarding the careers of Iranian EPs.

It is possible that there are differences in the perspectives of male and female EPs regarding their careers. According to Korte and Cydluka, American EPs found emergency medicine to be an attractive career, regardless of gender or faculty membership.^[25]

According to Clem et al,^[9] most female EPs were satisfied with their careers as EPs (35.5% were very satisfied, 44% were satisfied). Iranian female EPs reported less job stress; however, the number of female EPs in Iran is currently less than that of males, which means no firm conclusions may be drawn on the issue.

There are reports about the negative opinions of other medical specialists about emergency medicine as a specialty. Smith,^[26] in a study carried out in the Royal Berkshire Hospital in England, reported such a negative attitude. Iranian EPs also reported this problem, especially in private hospitals.

Although we did not evaluate burnout in our survey, according to a recent study carried out in Iran by Jalili et al,^[22] burnout has a high prevalence rate among Iranian EPs (56% experienced emotional exhaustion, 66% had depersonalization, and 78% had a sense of personal non-accomplishment).

There are reports about high prevalence rates of

burnout among EPs in Canada,^[8] Romania,^[27] France,^[21] the United Kingdom, and Australia.^[28] According to Xiao et al,^[29] Chinese EPs, regardless of age or gender, also reported career burnout.

Iranian EPs still have a long road ahead of them before they attain their ideal career status. They need to cultivate teamwork and coordinated union activity, and to guide policymakers in removing the obstacles in their way. On a personal level, they might adopt successful strategies from other medical professions, as described in the literature, such as dental educators^[30] and the army's intensive-care nurses.^[31] Instead of maladaptive strategies (using alcohol, smoking, or taking drugs) that will not resolve the problem, some proposed solutions that may be applicable for EPs include exercise, communication with other colleagues, regular rest and relaxation, and experiencing new hobbies or interests.^[32]

Limitations

This study had limitations. First, the survey was internet-based and we had no access to EPs who had not registered their email addresses into the ISEM database; the survey size was therefore limited. The second limitation was the high male-to-female ratio of the study population. This was due to the demographic characteristics of EPs, because most of them were males. More females are beginning to participate in the emergency-medicine residency programs, and in the future this ratio will change. The third limitation was the higher number of faculty members. In Iran, emergency-medicine training is rapidly growing and each year new programs are being established in different provinces; this situation is leading to new vacancies for EPs to work as faculty members. Consequently, the number of faculty members is more than the number of EPs who work in private hospitals. Last but not least, considering the novelty of emergency medicine in Iran, the number of experienced EPs available for our research was limited.

In conclusion, emergency medicine is a new specialty in Iran. In the future, along with the development of expertise in emergency-medicine training, EPs and leaders in emergency medicine should strive to improve the present situation toward the ideal.

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Conflicts of interest: The authors declare there is no competing

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Contributors: Farahmand S proposed the study and wrote the first draft. All authors read and approved the final version of the paper.

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