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ORIGINAL RESEARCH

Barriers to Pursuing Emergency Medicine Specialty Among Iranian General Practitioners: A Cross-Sectional Study

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Abstract: **Introduction:** Although emergency medicine is crucial globally, it remains underdeveloped in Iran, facing low recruitment rates. This study aimed to explore barriers deterring Iranian general practitioners (GPs) from pursuing emergency medicine as a specialty. **Methods:** A cross-sectional survey was conducted in Kerman, Iran, in 2023. Data were collected from GPs using a structured questionnaire assessing demographic characteristics and barriers to choosing emergency medicine. Statistical analyses, including chi-square and Mann-Whitney U-tests, were performed. **Results:** 198 GPs were involved in this study. 95.5% of the participants cited a mismatch between income and workload as the primary deterrent, while high psychological stress (87.4%) and limited private sector opportunities (86.9%) were also significant barriers. Additionally, 82.8% reported high burnout levels, with frequent night shifts (81.8%) and long working hours (75.3%) as contributing factors. Demographic analysis showed younger GPs and those with fewer years since graduation perceived financial and emotional strains more strongly, indicating that early-career physicians may feel more vulnerable to these challenges. Further, GPs lacking emergency department experience rated career uncertainties higher, suggesting unfamiliarity with the field might amplify negative perceptions. Rural GPs emphasized high patient loads and exposure risks, while urban GPs noted stress from crowded settings. **Conclusion:** Findings highlight financial and workload issues as major deterrents to choosing emergency medicine as a specialty. Addressing these concerns through better compensation, work-life balance improvements, and enhanced career prospects could attract more GPs to this specialty.

Keywords: Emergency medicine; General practitioners; Burnout, professional; Occupational stress

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1. Introduction

The emergency department (ED) serves as a critical and unique component within hospitals, providing essential primary care to patients in urgent need (1). Despite its importance, managing emergency departments presents ongoing challenges globally, including in Iran, where a lack of defined responsibilities in patient management has been a persistent issue (2). To address these challenges, many countries have established emergency medicine as a distinct specialty, aimed at fostering timely diagnosis, swift action, and effective management for emergency cases (3).

In Iran, emergency medicine is a relatively new specialty, with the first residency training program introduced in 2001 at the Iran University of Medical Sciences. By 2018, 25 medical universities had implemented accredited emergency medicine residency programs (4). Studies indicate that this training has positively influenced clinical, administrative, educational, economic, and occupational facets of healthcare (5). However, in Iran and other developing countries, this field remains in its early stages, and research evaluating the strengths and weaknesses of emergency medicine residency programs remains limited.

The intensive nature of emergency medicine places unique demands on its residents. Specialty residents are integral to the medical and educational system, bearing a considerable portion of patient care responsibilities in teaching hospitals (6). Yet, prolonged working hours and frequent night shifts lead to high levels of burnout, demotivation, mental health challenges, and even physical health issues among residents (7). For emergency medicine, these pressures are heightened as residents work in high-stress environments with continuous patient interaction, exacerbating the risk of burnout (8).

Although physician training aims to prepare professionals to serve within national healthcare systems, the distribution of trained physicians across specialties and regions is often imbalanced. This is attributed to numerous factors, includ-

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ing emigration and misalignment between training and actual employment opportunities (9). Some studies estimate the cost of training a single general practitioner (GP) at approximately $57,000, highlighting the economic burden if these professionals do not contribute to their home country's healthcare system (10).

Despite increased admission to medical fields in Iran, issues of unequal distribution and low interest in certain specialties, including emergency medicine, persist. According to reports, GPs are less inclined to pursue specialty training, and some are diverting from their original training objectives to pursue non-medical careers or cosmetic services (11). Economic, political, and structural factors, along with inadequate support during residency, contribute to this shift, especially in developing countries (12). Additionally, uncertainty regarding career stability and work conditions further discourages GPs from entering specialty training, especially in fields like emergency medicine. This trend is reflected in recent data showing that, as of 2021, nearly 91% of emergency medicine residency positions in Iran remained unfilled (13).

The growing reluctance of GPs to choose emergency medicine as a specialty has become a serious concern. Although some studies have examined the field's challenges, there remains a lack of comprehensive research identifying specific barriers in this field. Understanding these factors is essential for developing effective strategies to attract GPs to emergency medicine, ensuring an equitable distribution of healthcare professionals across specialties. This study aimed to identify and analyze the barriers impacting the inclination of Iranian GPs to choose emergency medicine as a specialty.

2. Methods

2.1. Study design and setting

This study was designed as a cross-sectional survey to examine barriers preventing GPs from pursuing emergency medicine as a specialty. The survey was conducted in Kerman County, Iran, targeting active GPs within the region. Recruitment and data collection were carried out over several months in 2023, encompassing both urban and rural areas.

The study was approved by the Ethics Committee of Kerman University of Medical Sciences (approval code: IR.KMU.AH.REC.1402.034). Participation was voluntary, and all participants provided verbal informed consent. Data were collected anonymously, and no identifying information was included in the published results.

2.2. Participants

Eligibility criteria were that participants must be licensed GPs working in Kerman County in 2023 and willing to participate. GPs who did not provide consent were excluded. Sampling was carried out using a random sampling method based on the medical system number of the target population of the study.

2.3. Data gathering

Data were collected using a structured, researcher-designed questionnaire comprising two sections. The first section recorded demographic and occupational data (age, gender, marital status, years since graduation, place of employment, and prior experience in emergency settings), while the second section contained 19 items assessing barriers to specializing in emergency medicine. This questionnaire was designed based on a review of previous research literature and the opinions of emergency medicine specialists. Responses were given as "yes" or "no." The items were developed based on a literature review and refined with input from emergency medicine specialists and a psychometric expert to ensure face and content validity. The questionnaire's reliability was confirmed with a Cronbach's alpha of 0.74, indicating good internal consistency.

Data were collected anonymously following participants' informed consent (Appendix 1). Efforts to reduce bias included the anonymous collection of responses to minimize social desirability bias and random sampling to enhance representativeness. Face and content validity of the questionnaire were evaluated to ensure clarity and relevance of items, reducing measurement bias.

2.4. Statistical methods

The study sample size was determined using Cochran's formula, calculated to obtain a minimum of 198 respondents. This sample size was based on the number of active GPs in Kerman and aimed to ensure adequate statistical power for analyzing barriers across demographic and occupational subgroups.

Data analysis was performed using SPSS version 26. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were calculated to summarize the data. Inferential statistics, specifically the chi-square test and Mann-Whitney U-test, were used to assess associations between participant characteristics and identify barriers. A significance level of $p < 0.05$ was used for all analyses. Analytical methods accounted for the sampling strategy through random sampling, though no specific methods were required to control for confounding given the descriptive nature of this study. No subgroup analyses or sensitivity analyses were conducted as they were beyond the study's scope.

3. Results

3.1. Baseline characteristics of participants

A total of 198 GPs in Kerman participated in this study with an average age of 28.5 ± 6.7 (range: 24 - 68) years and a male-to-female ratio of 1.1:1. Table 1 presents the demographic and characteristics data of the participants, including elapsed time since graduation, marital status, practice location, and work experience in the emergency department as a GP.

3.2. Barriers to choosing emergency medicine as a specialty

The primary barriers to choosing emergency medicine as a specialty included a mismatch between income and workload (95.5%), high psychological stress during work (87.4%), and lack of opportunities in the private sector (86.9%). Other frequently reported barriers were higher job burnout compared to other specialties (82.8%), frequent night shifts (81.8%), uncertainty regarding the career future of emergency medicine specialists (81.8%), and high physical stress during work (80.8%). Financial pressure on emergency medicine residents (78.8%), longer working hours compared to other specialties (75.3%), and the challenge of working in crowded environments with frequent interaction with patient companions (74.7%) were also significant barriers. Less frequently cited barriers included the risk of exposure to various diseases (38.9%), overlap with other specialties (36.9%), lack of patient follow-up (35.9%), and reliance on teamwork rather than individual skills (24.2%). Only 45.5% of respondents believed the three-year emergency medicine specialty program would make this specialty more attractive to GPs (Table S1).

3.3. Subgroup analysis of barriers based on

3.3.1 Age

Age analysis showed that younger physicians were more likely to view “high physical stress during work (p = 0.012)”, “high psychological stress (p = 0.001)”, “financial pressure on emergency medicine residents (p = 0.006)”, and “lack of private sector opportunities (p = 0.03)” as barriers to choosing emergency medicine (Table S2).

3.3.2 Gender and marital status

The analysis by gender and marital status showed no significant differences in attitudes toward these barriers between male and female and single and married participants (Tables S3 and S4).

3.3.3 Elapsed time since graduation

The analysis, which was based on the number of years since graduation, showed that physicians who identified barriers such as "high psychological stress during work (p = 0.001) ", "financial pressure on emergency medicine residents (p = 0.003)", "lack of private sector opportunities (p = 0.002)", "career uncertainty for emergency specialists (p = 0.001)", and "reluctance to deal with frequent deaths and the psychological impact (p = 0.031)" had significantly fewer years since graduation (Table S5).

3.3.4 Practice location

Location-based analysis revealed that physicians working in the provincial center were significantly less likely to consider the “high risk of exposure to diseases during work” as a barrier compared to those in urban and rural settings (p = 0.013). Urban physicians ranked “working in a crowded environment with frequent interaction with patient companions” significantly higher as a barrier than their provincial or rural counterparts (p = 0.041). Rural practitioners identified “high patient monitoring load (p = 0.024)”, “career uncertainty for emergency medicine specialists (p = 0.004)”, and “reluctance to face frequent deaths and associated psychological impacts (p = 0.005)” as more significant barriers compared to those in urban or provincial areas (Table S6).

3.3.5 Work experience in ED as a GP

Regarding emergency experience, practitioners without emergency experience considered "lack of private sector opportunities (p = 0.034)" and "career uncertainty for emergency specialists (p = 0.033)" to be significantly more critical barriers than those with emergency experience (Table S7).

4. Discussion

Emergency medicine is one of the newest academic fields in medicine, and its importance continues to grow globally. Today, emergency medical services play a crucial role in delivering healthcare. Although the implementation of this specialty, particularly in Iran, is relatively recent, its impact on improving the quantity and quality of medical services for emergency patients and reducing waiting times in emergency departments has already been demonstrated (14). By accelerating triage and care processes, hospitals can maintain capacity for new patients, improve diagnostic accuracy, and allocate patients efficiently, preventing resource wastage and increasing patient satisfaction. Consequently, policymakers and health officials have emphasized training and deploying skilled emergency medicine specialists. Despite this emphasis and the significant demand for trained personnel, interest in emergency medicine has sharply declined in recent years, with emergency medicine having the highest number of unfilled residency seats among all specialties in Iran. Investigating the reasons behind this trend is essential, and this study addresses the barriers faced by GPs in Kerman in pursuing this specialty.

This study examined potential factors influencing GPs’ reduced interest in emergency medicine. Our findings revealed that the most significant barrier, cited by over 95% of participants, was the mismatch between income and workload. Additionally, 78.8% of respondents indicated financial pressure on emergency medicine residents as a critical deterrent. Economic factors, therefore, are primary barriers to pursuing emergency medicine. Notably, this issue was cited by both male and female physicians and among both married and single participants. Similarly, in a study conducted in Tehran, Sadeghi et al. reported that 97.8% of 135 clinical residents believed their income was insufficient for living expenses, necessitating additional income sources (15). Vedadhir and Eshraghi also found that economic factors were significant deterrents, driving many physicians to seek opportunities abroad (16). Collectively, these findings indicate that income and workload disparity is a crucial factor affecting residency choices, with emergency medicine being no exception. Addressing this issue requires aligning emergency medicine compensation with workload, timely payment of salaries, and improving residency conditions.

Beyond economic concerns, our study identified heavy workload as a significant barrier to entering emergency medicine, with factors such as high psychological stress (87.4%), physical strain (80.8%), frequent night shifts (81%), longer working hours (75.3%), and higher burnout rates compared to other specialties (82.8%) discouraging interest. Supporting our findings, numerous studies highlight the high burnout levels among emergency physicians. In a study by Soltanifar et al., 94.8% of emergency medicine specialists and residents reported moderate to high workloads (17). Similarly, Jalili et al. reported significant burnout among 118 emergency medicine specialists and residents, with 56% experiencing emotional exhaustion (18). Zhang et al. found that about 40% of emergency physicians reported emotional exhaustion and emphasized the need for mental health support in this high-stress field (19). In Australia, Arora et al. reported that up to 60% of emergency physicians experienced burnout, a rate significantly higher than in other specialties (20). These findings underscore that the stressful nature and high workload associated with emergency medicine may deter applicants.

Our study also highlighted professional and academic factors specific to Iran that contribute to the lack of interest in emergency medicine. For example, lack of private sector opportunities (86.9%) and uncertainty about career prospects for emergency specialists (81.8%) were key deterrents. Additionally, the absence of fellowship and subspecialty opportunities in Iran (42.9%) was noted, albeit with less significance than the other two factors. Since most emergency medicine jobs in Iran are restricted to public hospitals, emergency specialists have limited autonomy compared to other fields, which restricts private practice and is a significant deterrent from the perspective of GPs. Thus, establishing private sector employment opportunities for emergency specialists and developing subspecialties could create positive incentives for pursuing this field.

Demographic analysis showed no significant differences in attitudes toward barriers between male and female, or single and married physicians. Although slight variations in barrier frequency were observed, they were not statistically significant, indicating similar perceptions of barriers to emergency medicine across these groups. However, notable differences were found based on location, age, and work experience. For example, rural physicians placed greater importance on factors such as high patient monitoring load and exposure to frequent fatalities. This may be due to the limited access to specialist colleagues and paraclinical facilities in rural centers, which could heighten the burden of patient monitoring, leading to a more negative perception of emergency medicine. Supporting this, Leigh et al. found that rural emergency physicians reported higher levels of burnout than urban physicians, with 85.7% of rural physicians experiencing some degree of burnout compared to 71.4% in urban centers (21).

Additionally, our study found that physicians without prior emergency experience were more concerned about the lack of private sector opportunities and uncertainty in career prospects for emergency medicine specialists. This suggests that physicians without experience in emergency departments may have a more negative outlook on the field. Familiarity with the emergency medicine system may provide a more realistic view, potentially dispelling some misconceptions. Examining attitudes by age and years since graduation showed that younger physicians and those with fewer years since graduation were more affected by factors such as physical, psychological, and financial pressures. These findings suggest that younger, less experienced physicians, with lower resilience, may perceive the challenges of emergency medicine more acutely. Given that most residency applicants are younger and less experienced, the physical and psychological demands of emergency medicine may be significant in reducing interest in the field.

It seems necessary to improve the status of emergency medicine specialists, especially by paying attention to the proportion of income to the difficulty of work in the emergency department, including timely payment of salaries and bonuses, as well as making the necessary arrangements to create an employment environment in the private sector.

On the other hand, paying attention to the welfare of emergency medicine residents, increasing residents' salaries and fees, and increasing psychological support are very important in order to increase the willingness of general practitioners to enter this specialty. In addition, defining subspecialty fields in the field of emergency medicine can be very effective in creating a positive motivation to study in this specialty. Future research could also use qualitative studies, longitudinal follow-ups, or larger national surveys to obtain more accurate and comprehensive results. Policymakers and educators can further emphasize the importance of addressing the identified barriers.

5. Limitations

The study population comprised only GPs working in Kerman, which may limit the generalizability of findings to all physicians in Iran. Further studies in other regions are necessary to validate these findings because students' attitudes may differ depending on the facilities, number of residents, and other factors. Second, this study focused solely on GPs. Given that emergency medicine specialists and residents likely have a more comprehensive view of the field's challenges, additional studies on their perspectives regarding the lack of interest in emergency medicine are recommended.

6. Conclusions

Overall, this study demonstrates that a range of factors contribute to the declining interest of GPs in pursuing emergency medicine as a specialty. Income and workload mismatch, psychological and physical pressures, burnout, lim-

ited private sector opportunities, and uncertainty about career prospects for emergency specialists are key deterrents for entering this field. Improving conditions for emergency medicine specialists, particularly by aligning income with workload, timely payment of salaries, and creating private sector job opportunities, is essential. Additionally, enhancing residency conditions, increasing residency salaries, and providing psychological support could significantly encourage GPs to consider this specialty. Introducing subspecialty programs in emergency medicine could also create motivation for pursuing this field.

7. Declarations

7.1. Acknowledgments

We thank the Iranian general practitioners (GPs) in this study. We would also like to appreciate the full cooperation of the university officials in Kerman University of Medical Sciences.

7.2. Authors' contributions

All authors conceived and designed the analysis, collected the data, performed the analysis, and wrote the paper and reviewed the manuscript. All authors read and approved the final version of manuscript.

7.3. Ethics approval and consent to participate

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors. The present study is part of a Doctoral thesis in general medicine dissertation (ethics code: IR.KMU.AH.REC.1402.034) in social work approved by the University of Kerman University of Medical Sciences.

7.4. Consent for publication

Not applicable.

7.5. Availability of data and materials

The data that support the findings of this study are available from the corresponding author upon reasonable request.

7.6. Competing interests

The authors declare no competing interests.

7.7. Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

7.8. Informed Consent

Informed consent was obtained from all individual participants included in the study.

7.9. Authors' information

Not applicable.

7.10. Using artificial intelligence chatbots

No artificial intelligence chatbot was used in this study.

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Table 1: Baseline characteristics of participants

Variable	Value
Age (year)	
Mean ± SD	28.51 ± 6.68
Elapsed time since graduation (year)	
Mean ± SD	3.16 ± 6.47
Gender	
Male	102 (51.5)
Female	96 (48.5)
Marital Status	
Married	78 (39.4)
Single	120 (60.6)
Practice location	
Provincial Center	87 (43.9)
City center	70 (35.4)
Rural center	41 (20.7)
Work experience in ED as a GP	
Number (%)	84 (42.4)

Data are presented as mean ± standard deviation (SD) or frequency (%). GP: general practitioner; ED: emergency department.

Appendix 1: Questionnaire used in the study

This questionnaire is designed to examine the barriers to general practitioners' interest in choosing Emergency Medicine as a specialty. The questionnaire is anonymous, and all information obtained will be kept strictly confidential. Please answer the following questions carefully and support us in this endeavor. Thank you.
Marital Status: Single Married Divorced
Age:
Years Since Graduation:
Gender: Male Female
Service Location: Rural Urban Provincial Center
Experience in Emergency Medicine as a General Practitioner: Yes No
1. Do you think that the high physical stress involved in the job could deter general practitioners from choosing Emergency Medicine compared to other specialties? Yes No 2. Could the high psychological stress in Emergency Medicine compared to other specialties reduce general practitioners' interest in this field? Yes No 3. Could the financial pressure faced by Emergency Medicine residents discourage general practitioners from choosing this specialty over others? Yes No 4. Could the overlap between Emergency Medicine and other specialties, such as Surgery and Internal Medicine, reduce general practitioners' interest in Emergency Medicine? Yes No 5. Could the mismatch between income and the demanding nature of the work in Emergency Medicine deter interest in this specialty? Yes No 6. Could the lack of fellowship and advanced subspecialties in Emergency Medicine in Iran discourage general practitioners from pursuing this specialty? Yes No 7. Could the inability to work in private practice reduce the likelihood of general practitioners choosing Emergency Medicine? Yes No 8. Could the high risk of exposure to various diseases in Emergency Medicine compared to other specialties deter general practitioners from this field? Yes No 9. Could the longer working hours in Emergency Medicine compared to other specialties deter applicants interested in Emergency Medicine? Yes No 10. Does the fact that Emergency Medicine specialists often handle the majority of initial patient admissions reduce interest among general practitioners? Yes No 11. Does the responsibility of Emergency Medicine specialists as the frontline providers for critical patients decrease demand for this specialty? Yes No 12. Does working in a crowded environment like the emergency department, with frequent interactions with patients' companions, discourage general practitioners from this field compared to other specialties? Yes No 13. Could the lack of patient follow-up in Emergency Medicine compared to other specialties be a deterrent for general practitioners? Yes No 14. Has the uncertainty surrounding career prospects for Emergency Medicine specialists reduced interest in this specialty? Yes No 15. Has the lack of reliance on individual skills and the team-based nature of Emergency Medicine reduced demand for this specialty? Yes No 16. Could the frequent night shifts in Emergency Medicine compared to other specialties discourage general practitioners from choosing this specialty? Yes No 17. Could the reluctance to frequently face patient fatalities and the associated psychological toll reduce interest in this field? Yes No 18. Could the three-year duration of Emergency Medicine specialty training increase general practitioners' interest in this field compared to other specialties? Yes No 19. In your opinion, does Emergency Medicine lead to greater job burnout compared to other specialties? Yes No

Table S 1: Attitudes towards barriers to physicians' interest in the emergency medicine specialty

Statement	Value	No. (%)
Can high physical strain during work discourage general practitioners from choosing emergency medicine over other specialties?	No	38 (19.2)
	Yes	160 (80.8)
Can high psychological stress during work discourage general practitioners from choosing emergency medicine over other specialties?	No	25 (12.6)
	Yes	173 (87.4)
Can the financial strain on emergency medicine residents discourage general practitioners from choosing this specialty over others?	No	42 (21.2)
	Yes	156 (78.8)
Can the overlap of emergency medicine with other fields such as surgery and internal medicine discourage general practitioners from this specialty?	No	125 (63.1)
	Yes	73 (36.9)
Can the mismatch between income and job difficulty in emergency medicine discourage interest in this specialty?	No	9 (4.5)
	Yes	189 (95.5)
Can the lack of fellowship and subspecialties in emergency medicine in Iran discourage general practitioners from this specialty?	No	113 (57.1)
	Yes	85 (42.9)
Can the inability to work in the private sector discourage general practitioners from choosing emergency medicine?	No	26 (13.1)
	Yes	172 (86.9)
Can the high risk of contracting various diseases, like infectious diseases, during work in emergency medicine compared to other specialties discourage general practitioners from choosing this specialty?	No	121 (61.1)
	Yes	77 (38.9)
Can the longer working hours in emergency medicine compared to other fields discourage applicants in emergency medicine?	No	49 (24.7)
	Yes	149 (75.3)
Can the heavy patient load handled by emergency medicine specialists reduce general practitioners' demand for this specialty?	No	66 (33.3)
	Yes	132 (66.7)
Can the fact that emergency medicine specialists are the first responders to critical and urgent cases reduce interest in this specialty?	No	88 (44.4)
	Yes	110 (55.6)
Can working in a crowded environment like the emergency room and frequent interactions with patient companions discourage general practitioners from choosing this specialty?	No	50 (25.3)
	Yes	148 (74.7)
Can the inability to follow up on patients in emergency medicine compared to other specialties be a barrier for general practitioners' interest in this field?	No	127 (64.1)
	Yes	71 (35.9)
Has job uncertainty for emergency medicine specialists reduced demand for this specialty?	No	36 (18.2)
	Yes	162 (81.8)
Has the lack of reliance solely on individual skills and the teamwork nature in emergency medicine reduced demand for this specialty?	No	150 (75.8)
	Yes	48 (24.2)
Can the frequent night shifts in emergency medicine compared to other specialties be a barrier for general practitioners choosing this field?	No	36 (18.2)
	Yes	162 (81.8)
Can unwillingness to deal with frequent patient deaths and resulting psychological trauma reduce interest in this specialty?	No	81 (40.9)
	Yes	117 (59.1)
Can the three-year specialization program in emergency medicine increase general practitioners' inclination to choose this specialty over others?	No	108 (54.5)
	Yes	90 (45.5)
In your opinion, does emergency medicine have a higher rate of burnout compared to other specialties?	No	34 (17.2)
	Yes	164 (82.8)

Table S 2: Attitudes toward barriers to physicians' interest in the emergency medicine specialty by age

Statement	Response	Age (year)		P
		Mean ± SD	Median	
High physical strain during work	Disagree	30.1 ± 9.0	28.0	0.012
	Agree	28.1 ± 6.0	27.0	
High psychological stress during work	Disagree	31.7 ± 10.7	28.0	0.001
	Agree	28.0 ± 5.8	27.0	
Financial strain on emergency medicine residents	Disagree	31.4 ± 10.1	27.0	0.006
	Agree	27.7 ± 5.2	27.0	
Overlap of emergency medicine with other fields	Disagree	28.4 ± 6.6	27.0	0.773
	Agree	28.7 ± 6.8	27.0	
Mismatch between income and job difficulty	Disagree	35.8 ± 17.0	28.0	0.154
	Agree	28.2 ± 5.6	27.0	
Lack of fellowship and subspecialties in emergency medicine in Iran	Disagree	29.0 ± 7.5	27.0	0.072
	Agree	27.9 ± 5.4	26.0	
Inability to work in the private sector	Disagree	31.8 ± 11.2	27.5	0.030
	Agree	28.0 ± 5.6	27.0	
High risk of contracting various diseases during work	Disagree	29.1 ± 7.6	27.0	0.194
	Agree	27.6 ± 4.8	27.0	
Longer working hours compared to other fields	Disagree	29.8 ± 9.4	27.0	0.741
	Agree	28.1 ± 5.5	27.0	
Handling the highest patient load	Disagree	28.3 ± 7.4	26.0	0.133
	Agree	28.6 ± 6.3	27.0	
Being the first responder to critical and urgent cases	Disagree	28.3 ± 6.4	27.0	0.142
	Agree	28.7 ± 7.0	26.5	
Working in a crowded environment and frequent interactions with patient companions	Disagree	29.4 ± 8.5	27.0	0.300
	Agree	28.2 ± 5.9	27.0	
Inability to follow up with patients	Disagree	28.4 ± 6.3	27.0	0.318
	Agree	28.7 ± 7.3	27.0	
Job uncertainty for emergency medicine specialists	Disagree	31.4 ± 11.2	27.5	0.095
	Agree	27.9 ± 5.0	27.0	
Lack of reliance solely on individual skills; teamwork nature of emergency medicine	Disagree	28.6 ± 7.0	27.0	0.951
	Agree	28.1 ± 5.5	27.0	
Frequent night shifts	Disagree	28.7 ± 9.2	26.0	0.270
	Agree	28.5 ± 6.0	27.0	
Unwillingness to deal with frequent patient deaths and resulting psychological trauma	Disagree	29.5 ± 8.2	27.0	0.070
	Agree	27.8 ± 5.4	27.0	
Three-year emergency medicine specialization program increasing attraction	Disagree	29.6 ± 8.6	27.0	0.515
	Agree	27.2 ± 2.7	27.0	
Higher burnout rate compared to other specialties	Disagree	29.2 ± 9.4	26.5	0.951
	Agree	28.4 ± 6.0	27.0	

SD: standard deviation.

Table S 3: Attitudes toward barriers to physicians' interest in the emergency medicine specialty by gender

Statement	Male	Female	P
High physical strain during work	76.5	85.4	0.110
High psychological stress during work	84.3	90.6	0.181
Financial strain on emergency medicine residents	73.5	84.4	0.062
Overlap of emergency medicine with other fields	41.2	32.3	0.195
Mismatch between income and job difficulty	96.1	94.8	0.664
Lack of fellowship and subspecialties in Iran	48.0	37.5	0.134
Inability to work in the private sector	84.3	89.6	0.273
High risk of contracting various diseases during work	37.3	40.6	0.627
Longer working hours compared to other fields	73.5	77.1	0.562
Handling the highest patient load	66.7	66.7	0.999
Being the first responder to critical and urgent cases	52.9	58.3	0.445
Working in a crowded environment and interactions with patient companions	72.5	77.1	0.463
Inability to follow up with patients	32.4	39.6	0.289
Job uncertainty for emergency medicine specialists	79.4	84.4	0.365
Lack of reliance solely on individual skills; teamwork nature of specialty	28.4	19.8	0.156
Frequent night shifts	77.5	86.5	0.101
Unwillingness to deal with patient deaths and resulting psychological trauma	57.8	60.4	0.713
Three-year emergency medicine specialization program increasing attraction	50.0	40.6	0.185
Higher burnout rate compared to other specialties	79.4	86.5	0.189

Data are presented as percentage of agreement with item.

Table S 4: Attitudes toward barriers to physicians' interest in the emergency medicine specialty by marital status

Statement	Single	Married	P
High physical strain during work	84.2	75.6	0.137
High psychological stress during work	90.8	82.1	0.069
Financial strain on emergency medicine residents	82.5	73.1	0.113
Overlap of emergency medicine with other fields	35.8	38.5	0.708
Mismatch between income and job difficulty	95.8	94.9	0.751
Lack of fellowship and subspecialties in emergency medicine in Iran	41.7	44.9	0.656
Inability to work in the private sector	85.8	88.5	0.593
High risk of contracting various diseases during work	39.2	38.5	0.921
Longer working hours compared to other fields	78.3	70.5	0.213
Handling the highest patient load	68.3	64.1	0.537
Being the first responder to critical and urgent cases	56.7	53.8	0.696
Working in a crowded environment and interactions with patient companions	73.3	76.9	0.570
Inability to follow up with patients	36.7	34.6	0.769
Job uncertainty for emergency medicine specialists	80.8	83.3	0.656
Lack of reliance solely on individual skills; teamwork nature of specialty	21.7	28.2	0.294
Frequent night shifts	79.2	85.9	0.230
Unwillingness to deal with patient deaths and resulting psychological trauma	62.5	53.8	0.226
Three-year emergency medicine specialization program increasing attraction	48.3	41.0	0.313
Higher burnout rate compared to other specialties	83.3	82.1	0.815

Data are presented as percentage of agreement with item.

Table S 5: Attitudes toward barriers to physicians' interest in the emergency medicine specialty by elapsed time since graduation

Statement	Response	Time since graduation		P
		Mean ± SD	Median	
High physical strain during work	Disagree	4.4 ± 8.6	1.5	0.115
	Agree	2.9 ± 5.8	1.0	
High psychological stress during work	Disagree	6.0 ± 10.2	2.0	0.001
	Agree	2.8 ± 5.7	1.0	
Financial strain on emergency medicine residents	Disagree	6.0 ± 9.7	2.0	0.003
	Agree	2.4 ± 5.0	1.0	
Overlap of emergency medicine with other fields	Disagree	3.2 ± 6.5	1.0	0.899
	Agree	3.2 ± 6.5	1.0	
Mismatch between income and job difficulty	Disagree	9.9 ± 16.3	2.0	0.077
	Agree	2.8 ± 5.5	1.0	
Lack of fellowship and subspecialties in emergency medicine in Iran	Disagree	3.6 ± 7.1	1.0	0.088
	Agree	2.6 ± 5.4	1.0	
Inability to work in the private sector	Disagree	6.3 ± 2.0	2.0	0.002
	Agree	2.7 ± 5.4	1.0	
High risk of contracting various diseases during work	Disagree	3.6 ± 7.3	1.0	0.426
	Agree	2.4 ± 4.8	1.0	
Longer working hours compared to other fields	Disagree	4.4 ± 9.1	1.0	0.895
	Agree	2.7 ± 5.3	1.0	
Handling the highest patient load	Disagree	3.1 ± 7.0	1.0	0.628
	Agree	3.2 ± 6.2	1.0	
Being the first responder to critical and urgent cases	Disagree	2.9 ± 6.1	1.0	0.354
	Agree	3.4 ± 6.7	1.0	
Working in a crowded environment and frequent interactions with patient companions	Disagree	4.1 ± 8.3	1.0	0.602
	Agree	2.8 ± 5.7	1.0	
Inability to follow up with patients	Disagree	3.1 ± 6.1	1.0	0.180
	Agree	3.3 ± 7.1	1.0	
Job uncertainty for emergency medicine specialists	Disagree	6.4 ± 10.5	2.0	0.001
	Agree	2.4 ± 4.9	1.0	
Lack of reliance solely on individual skills; teamwork nature of emergency medicine	Disagree	3.3 ± 6.8	1.0	0.995
	Agree	2.8 ± 5.5	1.0	
Frequent night shifts	Disagree	3.3 ± 8.8	1.0	0.099
	Agree	3.1 ± 5.9	1.0	
Unwillingness to deal with frequent patient deaths and resulting psychological trauma	Disagree	4.1 ± 7.8	2.0	0.031
	Agree	2.5 ± 5.2	1.0	
Three-year emergency medicine specialization program increasing attraction	Disagree	4.2 ± 8.3	1.0	0.324
	Agree	1.9 ± 2.7	1.0	
Higher burnout rate compared to other specialties	Disagree	3.8 ± 8.9	1.0	0.683
	Agree	3.0 ± 5.9	1.0	

SD: standard deviation.

Table S 6: Attitudes toward barriers to physicians' interest in the emergency medicine specialty by practice location

Statement	Provincial	City	Rural	P
High physical strain during work	75.9	81.4	90.2	0.154
High psychological stress during work	82.8	87.1	97.6	0.063
Financial strain on emergency medicine residents	79.3	72.9	87.8	0.175
Overlap of emergency medicine with other fields	40.2	40.0	24.4	0.177
Mismatch between income and job difficulty	93.1	98.6	95.1	0.261
Lack of fellowship and subspecialties in emergency medicine in Iran	40.2	47.1	41.5	0.670
Inability to work in the private sector	85.1	85.7	92.7	0.461
High risk of contracting various diseases during work	27.6	50.0	43.9	0.013
Longer working hours compared to other fields	70.1	74.3	87.8	0.094
Handling the highest patient load	58.6	67.1	82.9	0.024
Being the first responder to critical and urgent cases	50.6	64.3	51.2	0.188
Working in a crowded environment and interactions with patient companions	66.7	84.3	75.6	0.041
Inability to follow up with patients	33.3	38.6	36.6	0.789
Job uncertainty for emergency medicine specialists	73.6	82.9	97.6	0.004
Lack of reliance solely on individual skills; teamwork nature of emergency medicine	19.5	28.6	26.8	0.385
Frequent night shifts	82.8	78.6	85.4	0.639
Unwillingness to deal with frequent patient deaths and resulting psychological trauma	48.3	61.4	78.0	0.005
Three-year emergency medicine specialization program increasing attraction	51.7	40.0	41.5	0.289
Higher burnout rate compared to other specialties	75.9	87.1	90.2	0.065

Data are presented as percentage of agreement with item.

Table S 7: Attitudes toward barriers to physicians' interest in the emergency medicine specialty by experience in emergency departments as general practitioner

Statement	Experience		P
	No	Yes	
High physical strain during work	83.3	77.4	0.293
High psychological stress during work	91.2	82.1	0.057
Financial strain on emergency medicine residents	82.5	73.8	0.141
Overlap of emergency medicine with other fields	36.0	38.1	0.759
Mismatch between income and job difficulty	97.4	92.9	0.132
Lack of fellowship and subspecialties in emergency medicine in Iran	45.6	39.3	0.374
Inability to work in the private sector	91.2	81.0	0.034
High risk of contracting various diseases during work	38.6	39.3	0.082
Longer working hours compared to other fields	79.8	69.0	0.922
Handling the highest patient load	68.4	64.3	0.542
Being the first responder to critical and urgent cases	58.8	51.2	0.289
Working in a crowded environment and interactions with patient companions	78.1	70.2	0.210
Inability to follow up with patients	35.1	36.9	0.792
Job uncertainty for emergency medicine specialists	86.8	75.0	0.033
Lack of reliance solely on individual skills; teamwork nature of emergency medicine	20.2	29.8	0.120
Frequent night shifts	83.3	79.8	0.520
Unwillingness to deal with patient deaths and resulting psychological trauma	58.8	59.5	0.915
Three-year emergency medicine specialization program increasing attraction	46.5	44.0	0.733
Higher burnout rate compared to other specialties	83.3	82.1	0.826

Data are presented as percentage of agreement with item.