EURASIAN JOURNAL OF EMERGENCY MEDICINE
Original Article
DOI: 10.4274/eajem.galenos.2019.49404
Eurasian J Emerg Med. 2019;18(4): 178-84

Defensive Medicine in the Emergency Department: A Cross-sectional Study from the Perspective of Emergency Medical Specialists

Orhan Delice[1], Erdal Tekin[2], Sinan Yılmaz[3]

[1]Clinic of Emergency Medicine, University of Health Sciences, Erzurum Regional Training and Research Hospital, Erzurum, Turkey
[2]Department of Emergency Medicine, Atatürk University Faculty of Medicine, Erzurum, Turkey
[3]Department of Public Health, Atatürk University Faculty of Medicine, Erzurum, Turkey

Abstract

Aim: An increase in defensive medicine has recently been observed due to malpractice suits brought against physicians. This results in increased medical costs, requests for unnecessary tests, or delays in the treatment of high-risk patients.

Materials and Methods: Data were collected using an electronic questionnaire prepared by the authors following a review of the literature and sent to participants via docs.google.com. Numerical data were expressed as mean plus standard deviation, and categorical data as number and percentage. The Mann-Whitney U and Kruskal-Wallis tests were employed for data analysis.

Results: Men represented 67.9% (n=218) of the participants, and 70.7% (n=227) of our subjects were aged 24-35. In addition, 92.2% of participants considered that both consultant physicians in emergency departments (ED) and emergency physicians tended to be defensive in their approach to patients. Our findings showed that 88.1% (n=283) of participants requested more tests and consultations from patients arriving at the ED in order to avoid malpractice suits. Finally, 39.6% (n=127) of participants considered that emergency medicine specialists sought to avoid caring for complicated patients involving a greater workload in terms of tests, consultation, ED stay, and treatment.

Conclusion: Defensive medicine is a growing global phenomenon. The most undesirable and dangerous aspect of defensive medicine is that it also impacts on ED patients. The practice of ascribing every adverse patient outcome to the physician must be abandoned, and steps must be taken toward finding a solution.

Keywords: Defensive medicine, emergency department, malpractice, medical insurance

Introduction

Defensive medicine is defined as "physicians requesting additional tests in the absence of indications or else avoiding high-risk patient groups in which adverse outcomes may occur during diagnosis and treatment" (1,2).

There are two forms of defensive medicine, namely positive and negative. Positive defensive medicine involves more procedures of no or little benefit to the patient's medical status (imaging, additional tests, and consultations) being requested than are required. Negative defensive medicine is defined as the avoidance of procedures in high-risk patients in terms of survival or complications (2-5).

An increase in defensive medicine has recently been seen due to malpractice suits brought against physicians. The disproportion between physicians' earnings and compensation payments deriving from such suits inevitably harms attitudes toward patients, and this results in increased medical costs, requests for unnecessary tests, or delays in the treatment of high-risk patients (6). Defensive medicine reduces the quality of health services and leads to distrust and dissatisfaction among patients. The consequences of defensive medicine also violate patients' rights

Corresponding Author: Erdal Tekin MD, Department of Emergency Medicine, Atatürk University Faculty of Medicine, Erzurum, Turkey
Phone: +90 442 314 90 00 **E-mail:** dret_25@hotmail.com **ORCID ID:** orcid.org/0000-0002-6158-0286

Cite this article as: Delice O, Tekin E, Yılmaz S. Defensive Medicine in the Emergency Department: A Cross-sectional Study from the Perspective of Emergency Medical Specialists. Eurasian J Emerg Med. 2019;18(4):178-84.

Received: 03.01.2019
Accepted: 09.05.2019

and medical ethics (2,7). By behaving defensively, physicians are, in effect, ignoring their legal responsibilities. Defensive medicine, encountered in almost all areas of health services, has also begun to impact on emergency department (ED) patients. Delayed admission due to consulting physicians requesting more tests and unnecessary consultations for high-risk patients in terms of survival presenting to the ED can also be included within the concept of defensive medicine (8). Having advanced tests that are non-urgent and can easily be performed after admission carried out in the ED instead can lead to delayed admission, unnecessary occupation of the ED, resource wastage, and increased morbidity and mortality.

This study investigated the defensive medicine applied to ED patients by emergency medicine specialists/residents and consultant physicians (from other departments).

Materials and Methods

Study Design

The requisite ethical committee approvals were granted for this cross-sectional study (protocol no.: BEAH KAEK 2019/11-119). Data were collected using an electronic questionnaire prepared by the authors following a review of the literature and sent to participants via docs.google.com. This questionnaire consisted of questions/propositions concerning demographic data, professional experience, a region of employment, number of patients served, and the perceptions and opinions of physicians working in the area regarding defensive medicine. Questions regarding defensive medicine were 5-point Likert type, with responses closer to 5 expressing more significant disagreement with the presence of defensive medicine. Our aim in this study was to evaluate consultant physicians' attitudes toward patients in the ED through the eyes of emergency medicine specialists/residents and to investigate tendencies to adopt defensive medicine.

Participant Selection

Three hundred and sixty-nine out of 500 emergency medicine specialists and specialist students who work in our country and whose contact information can be accessed have agreed to participate in the study. The data collection process lasted six months, at the end of which 48 questionnaires were discarded for being incomplete or carelessly completed (Figure 1). The participation rate was 86.9%.

Data Analysis

Data analysis was performed on Statistical Package for the Social Sciences version 22 software. Numerical data were expressed as mean plus standard deviation, and categorical data as number and percentage. Compatibility with normal distribution was assessed using the Kolmogorov-Smirnov test. The Mann-Whitney U and Kruskal-Wallis tests were used in the analysis of non-normally distributed numerical data. P values <0.05 were regarded as statistically significant.

Results

Men represented 67.9% (n=218) of the participants, and 70.7% (n=227) of subjects were aged 24-35. Physicians with 1-10 years' work experience constituted 86.9% (n=279) of the participants, and 53.0% (n=170) served 300-600 patients over a 24-h period. The highest level of participation was from the Eastern Anatolia region of Turkey, at 22.4% (n=72). Various sociodemographic characteristics of the participants are shown in Table 1.

We observed that 92.2% of participants considered that both consultant physicians in EDs and emergency physicians tended to exhibit defensive medicine. Emergency and consultant physicians' defensive tendencies were unaffected by variables such as age, gender, length of time in the profession, numbers of patients served in 24 h, and region of employment.

Seventy-one percent of participants (n=228) thought that the use of imaging techniques had increased following the

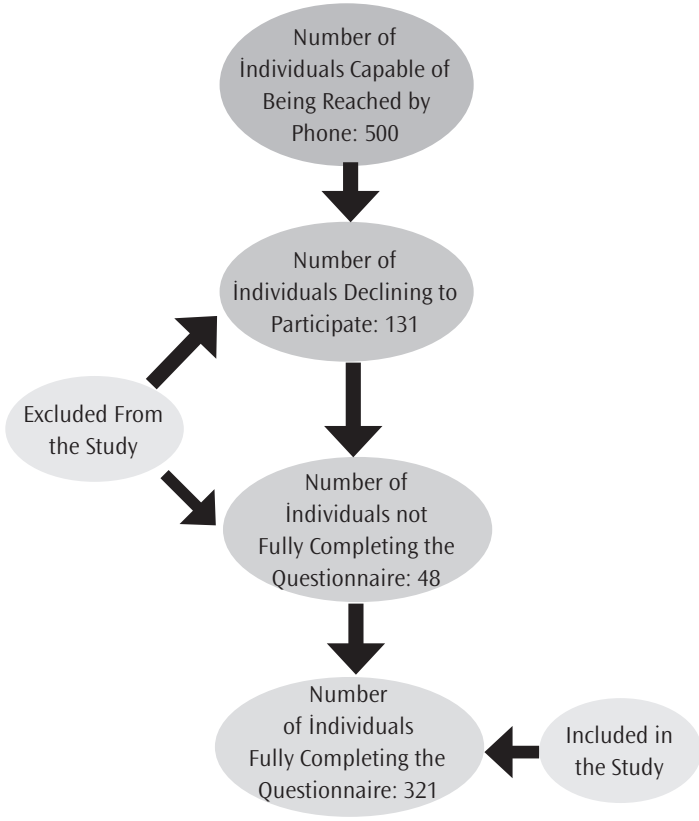

Figure 1. Flowchart: Number of people included and not included in the study

introduction of compulsory financial liability insurance against medical malpractice. Additionally, 93.1% of participants (n=299) reported that the use of computed tomography had increased. Moreover, 88.1% of participants (n=283) requested more tests and consultations for patients presenting to the ED in order to avoid malpractice suits in such departments (Table 2).

Ninety-five percent of participants (n=305) thought that consultant physicians in the ED exhibited reluctance by requesting unnecessary tests and consultations. Also, 87.6% (n=282) of participants thought that clinicians were reluctant to admit patients, even when this was indicated. Moreover, 90.3% (n=290) of participants considered that consultant physicians were reluctant to admit patients in generally poor condition, while 95.3% (n=306) thought that they preferred to complete unnecessary tests and consultations in the ED (Table 3).

In our study, 85.9% of participants (n=276) thought that internal medicine clinics exhibited the most considerable reluctance concerning consultation and admittance procedures for ED patients, and 82.8% (n=266) considered that the hospital administration was passive in intervening (Table 4).

We observed that 39.6% (n=127) emergency medicine specialists considered that there was a reluctance to care for complicated cases involving a higher workload in terms of tests, consultation, length of stay in the ED, and treatment. Also, 88.1% (n=283) of participants thought that more tests and consultations tended to be requested for ED patients (Table 5).

Seventy-six percent of respondents (n=244) reported that clinics from which they requested consultations referred patients to other clinics without seeing them, while 80.7% (n=259) reported that clinics behaved as if consultations requests were unnecessary in the case of patients whom they did see. Additionally, 55.8%

Table 1. Participants' sociodemographic characteristics

Characteristics	Number	Percentage
Age		
24-35 years	227	70.7
36-45 years	78	24.3
≥46 years	16	5.0
Gender		
Male	218	67.9
Female	103	32.1
Length of service		
1-10 years	279	86.9
11-20 years	28	8.7
>20 years	14	4.4
Number of patients served in 24 h		
300-600	170	53.0
601-1000	106	33.0
>1000	45	14.0
Region where employed		
Eastern Anatolia	72	22.4
Mediterranean	21	6.5
Aegean Coast	53	16.5
Southeast Anatolia	21	6.519.3
Central Anatolia	62	14.0
Black Sea	45	14.6
Marmara	47	

Table 2. Emergency department physicians' opinions concerning test requests for patients

Question/Proposition	Responses	Percentage	Number
The frequency of the use of imaging techniques (USG, MRI, and CT) during the diagnosis of patients in the ED was influenced by the introduction of medical liability insurance.	Definitely agree	36.4	117
	Agree	34.6	111
	Unsure	11.8	38
	Disagree	13.1	42
	Definitely disagree	4.0	13
If you think the use of imaging has increased, which technique has seen the most significant increase?	USG	4.4	14
	MRI	1.6	5
	CT	93.1	299
	X-ray	0.9	3
More tests and consultations are being requested in order to avoid malpractice suits in the ED.	Definitely agree	43.9	141
	Agree	44.2	142
	Unsure	4.4	14
	Disagree	6.9	22
	Definitely disagree	0.6	2

USG: Ultrasonography, MRI: Magnetic resonance imaging, CT: Computed tomography, ED: Emergency department

(n=179) of ED physicians considered that surgical clinics encouraged patients or families not to undergo surgery by providing misleading or dissuasive information, while 64.8% (n=208) considered that aggressive or complaining behavior by patients and/or families affected consultant physicians' attitudes toward patients (Table 6).

Table 3. Emergency physicians' opinions concerning the attitudes of consultant physicians to patients requiring consultation and hospitalization

Question/Proposition	Response	Number	Percentage
The clinicians you invite to the ED are reluctant to admit patients by requesting unnecessary tests or consultations.	Definitely agree	199	62.0
	Agree	106	33.0
	Unsure	8	2.5
	Disagree	7	2.2
	Definitely disagree	1	0.3
The clinician concerned is generally reluctant to admit even if the patient you evaluate in the ED has admission indication.	Definitely agree	140	43.6
	Agree	142	44.2
	Unsure	19	5.9
	Disagree	20	6.2
	Definitely disagree	-	-
The clinic exhibits reluctance during the admission of patients in generally poor condition from your ED.	Definitely agree	186	57.9
	Agree	104	32.4
	Unsure	22	6.9
	Disagree	8	2.5
	Definitely disagree	1	0.3
Other consultations and tests are performed in the ED for patients due to be admitted to other departments.	Definitely agree	195	60.7
	Agree	111	34.6
	Unsure	1	0.3
	Disagree	12	3.7
	Definitely disagree	2	0.6
The relevant clinic physician does not seek space for a patient considered for admission to that department from the ED. The search for space is generally left to emergency physicians.	Definitely agree	220	68.5
	Agree	74	23.1
	Unsure	12	3.7
	Disagree	14	4.4
	Definitely disagree	1	0.3

ED: Emergency department

Table 4. Emergency department physicians' opinions concerning other clinics and hospital administrations

Question/Proposition	Response	Number	Percentage
Internal medicine clinics exhibit greater reluctance in terms of consultations in the ED and of admission.	Definitely agree	177	55.1
	Agree	99	30.8
	Unsure	34	10.6
	Disagree	10	3.1
	Definitely disagree	1	0.3
The hospital administration is passive toward clinics that are reluctant in terms of consultation and admission.	Definitely agree	159	49.5
	Agree	107	33.3
	Unsure	24	7.5
	Disagree	27	8.4
	Definitely disagree	4	1.2

ED: Emergency department

Table 5. Emergency department physicians' regarding consultation procedures for complicated patients

Question/Proposition	Response	Number	Percentage
Some emergency specialists in the ED avoid caring for complicated patients (a patient group involving a greater workload).	Definitely agree	59	18.4
	Agree	68	21.2
	Unsure	52	16.2
	Disagree	109	34.0
	Definitely disagree	33	10.3
Excessive tests and consultations are requested in the ED in order to avoid malpractice suits.	Definitely agree	141	43.9
	Agree	142	44.2
	Unsure	14	4.4
	Disagree	22	6.9
	Definitely disagree	2	0.6
Procedures in the ED, such as requesting consultations, admitting patients, and seeking places for patients adversely impact on the time you spend on the telephone, taking histories, and physical examinations.	Definitely agree	223	69.5
	Agree	87	27.1
	Unsure	5	1.6
	Disagree	6	1.9
	Definitely disagree	-	-
You have to convince the consultant physician from the clinic from which consultation is requested to take care of the patient.	Definitely agree	127	39.6
	Agree	112	34.9
	Unsure	36	11.2
	Disagree	39	12.1
	Definitely disagree	7	2.2

ED: Emergency department

Table 6. Emergency health professionals' opinions concerning consultant physicians' attitudes toward emergency patients

Question/Proposition	Response	Number	Percentage
The physician from whom you request a consultation generally suggests that another clinic or clinics examine the patient, after which the physician will do so, before even seeing the patient.	Definitely agree	105	32.7
	Agree	139	43.3
	Unsure	45	14.0
	Disagree	29	9.0
	Definitely disagree	3	0.9
When the ED requests a consultation, we generally hear discouraging comments from the consultant, such as 'Why did you bother me with this? This has nothing to do with me. I have written a note on the file'.	Definitely agree	122	38.0
	Agree	137	42.7
	Unsure	40	12.5
	Disagree	21	6.5
	Definitely disagree	1	0.3
A surgeon who is reluctant to intervene encourages the patient/family to refuse surgery by providing misleading or dissuasive information.	Definitely agree	74	23.1
	Agree	105	32.7
	Unsure	82	25.5
	Disagree	55	17.1
	Definitely disagree	5	1,6
Aggressive behavior and complaints from patients and relatives in the ED make consultant physicians reluctant to care for and admit patients.	Definitely agree	79	24.6
	Agree	129	40.2
	Unsure	73	22.7
	Disagree	36	11.2
	Definitely disagree	4	1.2

ED: Emergency department

Discussion

All health workers, and particularly physicians, have employed defensive methods with which to protect themselves while engaged in their profession, based on the conditions applying at the time. Unfortunately, defensive medicine can lead to positive or negative practices by distracting practitioners away from evidence-based medicine (9). Negative defensive medicine practices include concealing or not employing high-risk therapies and diagnostic tests in order to avoid potential risks in patient care and resulting claims of malpractice (5). Positive defensive medicine involves unnecessary and excessive use of diagnostic tests and interventions by health service providers in order to minimize risks that may be encountered in health care (5). In a study of 824 specialist physicians in high-risk departments in Pennsylvania, Studdert et al. (10) reported that 93% of participants employed defensive medicine, while in their study of medical students, Rodriguez et al. (11) reported an increase in concerns over malpractice and defensive thinking as students approached graduation. In our study, 92.2% of participants considered that both consultants and emergency physicians employed defensive medicine. In their study of brain surgeons, Solaroglu et al. (12) determined that 82.4% of subjects tended to employ defensive medicine and that they were affected by sociodemographic characteristics such as age, geographical region of residence, and region of employment. In our study, however, emergency medicine specialists' dispositions to defensive medicine were unaffected by sociodemographic characteristics. We attribute the discrepancy between Solaroglu et al.'s (12) study and our own to the different specialty fields involved. Nahed et al. (13) reported that 72% of participants employed more imaging techniques due to a fear of malpractice claims (13). In this study, it was found that imaging methods increased in ED.

Although malpractice is a matter of anxiety to all health workers, it primarily concerns physicians, as being solely responsible for the patient, and leads to an increase in unnecessary consultation and test requests. These unnecessary procedures slow down health services, lower their quality, and lead to increased costs (14). Wong et al. (15) reported that due to concerns over malpractice, emergency physicians requested computed tomography for child patients even with only minor head traumas (15). In this study, tended to request more examination and consultation because of the malpractice anxiety of the emergency service workers. They may make considerable efforts to avoid even complicated patients in the poor general condition being admitted to their clinics. This defensive approach leads to loss of time and increased costs as a result of which the patient may also suffer harm (6,16,17). In a study involving radiation oncologists, Ramella et al. (18) reported that due to concerns over malpractice, 43% of participants shared documentation regarding diagnosis and treatment with colleagues and requested their opinions (18). In our study, the participants thought that the consultant physicians applied for defensive medicine by requesting unnecessary investigations and consultations from the patients in the ED.

EDs are units that operate on the 24/7 principle and where procedures are performed very quickly. Also, due to increasing patient crowding, great efforts are made to accelerate procedures in EDs still further. Both patients and families and also consultant physicians frequently take advantage of this feature of EDs. In our study, 95.3% of participants considered that consultant physicians take advantage of the rapid functioning of EDs. Also, in this chaotic environment, the task of finding space for patients admitted to clinics is left to emergency physicians. In our study, 91.6% of participants reported that physicians applying defensive medicine to patients in the ED also expected emergency physicians to undertake the task of finding space for them.

EDs are units that represent the first point of presentation for high-risk patients and that exhibit high patient turnover. ED physicians may, therefore, request more tests than necessary and seek to share risks with other clinics (19). In addition to the high density of risky patients in EDs and the stress in the working environment, emergency physicians also experience problems with professional colleagues; much time is lost due to procedures such as requesting consultations by telephone and convincing colleagues to perform them and admission or referral procedures. In our study, most participants reported being unable to devote sufficient time to patients due to unnecessary tasks and procedures in the ED.

Similarly to physicians from other branches, there is also a tendency to employ positive and negative medicine among ED physicians (6). The tendency in emergency physicians generally manifests in the form of requesting unnecessary tests and consultations. Katz et al. (20) investigated the attitudes of physicians to patients with chest pains in the ED from the perspective of malpractice fears. They observed that physicians requested more tests and consultation than necessary in order not to overlook medical conditions, and that they even admitted patients with low-risk chest pains (20). Similarly, in the present study, requested unnecessary tests and consultations due to concerns over malpractice suits.

Despite the high tendency to defensive medicine, emergency physicians still have an obligation to care for risky and complicated patients. Although specialists from other branches also have such obligations, they may still sometimes avoid assuming responsibility for patients through various delaying tactics or by referring them directly to the ED. Consultant physicians invited

to the ED sometimes request that other relevant clinics evaluate the patient and exhibit negative behaviors toward emergency physicians. In the present study, reported being subjected to reluctance or negative attitudes on the part of consultant physicians. Surgical departments may sometimes provide dissuasive or misleading information in order to persuade the patient or the family against surgery. We observed that considered that surgical clinics attempted to dissuade patients from surgery.

Study Limitations

There are several limitations to our study. First, the study data were collected using a questionnaire sent out electronically, rather than at face-to-face interviews. Also, participation in this study, which was planned on a nationwide basis, was low due to difficulties in obtaining up-to-date communication details for emergency medicine specialists and residents. Our study also involved only ED physicians and not specialists from other branches.

Conclusion

Defensive medicine is resulting in countries facing increased health spending, reduced patient satisfaction, and reduced quality of health services. This study shows that EDs are significantly affected by this medical malpractice situation. A malpractice law setting out the responsibilities of the patient, physician, and health administration must be established. EDs' working conditions and functioning must be reviewed. Public awareness activities aimed at preventing the use of EDs for other than their intended purposes and at increasing their efficiency are also needed.

Ethics

Ethics Committee Approval: The requisite ethical committee approvals were granted for this cross-sectional study (protocol no.: BEAH KAEK 2019/11-119).

Informed Consent: Consent form was filled out by all participants.

Peer-review: Externally and internally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: E.T., O.D., S.Y., Concept: E.T., O.D., S.Y., Design: E.T., O.D., S.Y., Data Collection or Processing: E.T., O.D., S.Y., Analysis or Interpretation: E.T., S.Y., Literature Search: O.D., S.Y., Writing: E.T., O.D., S.Y.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

References

1. Hermer L, Brody H. Defensive Medicine, Cost Containment and Reform. J Gen Intern Med. 2010;25:470-3.
2. Tuers DM. Defensive Medicine in the Emergency Department Increasing Health Care Costs Without Increasing Quality? Nurs Adm Q. 2013;37:160-4.
3. Johnston WF, Rodriguez RM, Suarez D, Fortman J. Study of Medical Students' Malpractice Fear and Defensive Medicine: A "Hidden Curriculum?". West J Emerg Med. 2014;15:293-8.
4. Waxman DA, Greenberg MD, Ridgely MS, Kellermann AL, Heaton P. The Effect of Malpractice Reform on Emergency Department Care. N Engl J Med. 2014;371:1518-25.
5. Summerton N. Positive and Negative Factors in Defensive Medicine: a Questionnaire Study of General Practitioners. BMJ. 1995 310:27-9.
6. Smith TR, Habib A, Rosenow JM, Nahed BV, Babu MA, Cybulski G, et al. Defensive Medicine in Neurosurgery: Does State-Level Liability Risk Matter? Neurosurgery. 2015;76:105-14.
7. Yılmaz K, Polat O, Kocamaz B. Investigation of Defensive Medicine Practice from the Legal Angle. TAAD. 2014;5:19-51.
8. Li S, Brantley E. Malpractice Liability Risk and Use of Diagnostic Imaging Services: A Systematic Review of the Literature. J Am Coll Radiol. 2015;12:1403-12.
9. Dirnhofer R, Wyler D. Treatment Failure From the Viewpoint of Forensic Medicine. Ther Umsch. 1997;54:272-9.
10. Studdert DM, Mello MM, Adaçayı WM, DesRoches CM, Peugh J, Zapert K, et al. Defensive Medicine Among High-Risk Specialist Physicians in a Volatile Malpractice Environment. JAMA. 2005;293:2609-17.
11. Rodriguez R, Anglin D, Hankin A, Hayden SR, Phelps M, McCollough L, et al. A Longitudinal Study of Emergency Medicine Residents' Malpractice Fear and Defensive Medicine. Acad Emerg Med. 2007;14:569-73.
12. Solaroglu I, Izci Y, Yeter HG, Metin MM, Keles GE. Health Transformation Project and Defensive Medicine Practice Among Neurosurgeons in Turkey. PLoS ONE. 2014;9:e111446.
13. Nahed BV, Babu MA, Smith TR, Heary RF. Malpractice Liability and Defensive Medicine: A National Survey of Neurosurgeons. PLoS One. 2012;7.
14. Büken NÖ, Büken E. Discussıons on Medıcal Malpractıces and Medıcal Ethıcs. T Klin J Med Ethics, Law and History. 2003;11:140-7.
15. Wong AC, Kowalenko T, Roahen-Harrison S, Smith B, Maio RF, Stanley RM. A Survey of Emergency Physicians' Fear of Malpractice and İts Association With the Decision to Order Computed Tomography Scans for Children With Minor Head Trauma. Pediatr Emerg Care. 2011;27:182-5.
16. Brennan T. Overview of Legal İssues. Jt Comm J Qual Improv. 1993;19:319-21.
17. Moser JW, Applegate KE. Imaging and Insurance: Do the Uninsured Get Less Imaging in Emergency Departments? J Am Coll Radiol. 2012;9:50-7.
18. Ramella S, Mandoliti G, Trodella L, D'Angelillo RM. The First Survey on Defensive Medicine in Radiation Oncology. Radiol Med. 2015;120:421-9.
19. Cervellin G, Cavazza M. Defensive Medicine in the Emergency Department. The Clinicians' Perspective. Emergency Care Journal. 2016;12:5615.
20. Katz DA, Williams GC, Brown RL, Aufderheide TP, Bogner M, Rahko SP, et al. Emergency Physicians' Fear of Malpractice in Evaluating Patients with Possible Acute Cardiac Ischemia. Ann Emerg Med. 2005;46:525-33.