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Determination of the knowledge and skills of physicians working in emergency services against judicial incidents

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ABSTRACT

In our study, we aimed to determine the approach of physicians working in emergency services to forensic cases and to provide data for training on this subject.

Our study was carried out between 10.06.2016-15.08.2016 with the physicians working in the emergency services across the country. In order to measure the level of knowledge of physicians in judicial cases, qualitative evaluation including questionnaires and cases were conducted.

496 physicians were participated in the study. The correct answer rates average of 74 questions asked to doctors about basic medical intervention was 85.6 ± 11.1%. Average of correct responding to questions about life-threatening was 70.3 ± 9.3% and the average of correct responding to all questions was 78.0 ± 7.7%. Among basic medical intervention, life-threatening and total, a positive correlation was found between the level of knowledge and age ($p < 0.05$). The total and simple medical intervention knowledge of the men was found to be better than women ($p < 0.05$). As a result, specialist doctors' knowledge level was lower, general practitioners had the best knowledge level ($p<0.05$). It was detected that specialist physicians had a low level of knowledge in terms of basic medical intervention, life threatening condition and overall sum and it was determined that the best knowledge was possessed by practitioners ($p<0.05$). Life-threatening and the total level of knowledge was higher in physicians who attended the seminar ($p<0.05$). As a result, the knowledge level of physicians is inadequate on forensic medicine and should be increased with in-service training.

Keys Words: Forensic medicine, Emergency medicine, Forensic reports

Introduction

Forensic reports are the documents in which the physician informs the judicial authorities about the medical condition of the patient by answering questions according to their opinions (1). Physicians working in emergency services; have the obligation to assess whether the case carries the nature of a forensic case or not in addition to the responsibility for examining the patient and implementing the necessary medical intervention. If it is a forensic case; the doctor has the obligation to notify the judicial authorities. Health workers are obliged to report any crime they encounter while performing their duties.

Many problems can be encountered in writing forensic reports. Most importantly, doctors do not fully know the legal procedure, the judicial and medical concepts and the notification system. The fact that physicians are inexperienced, uneducated and unwilling to take responsibility in this regard, cause them to refrain from organizing forensic reports. This leads to problems such as not writing forensic reports in time or not being notified in time (1).

In this study, we aimed to determine the approach of the physicians to forensic cases working in the emergency departments and to provide data for their training.

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Table 1. Demographic characteristics of physicians

		Mean±SD/n (%)
Age		36.7±5.8
Gender	Male	327 (65.9)
	Female	169 (34.1)
Title	General practitioner	49 (9.9)
	Assistant	68 (13.7)
	Specialist	254 (51.2)
	Academician	125 (25.2)
Duty duration	<2 year	24 (4.8)
	2-4 year	17 (3.5)
	>4 year	455 (91.7)
Seminar	Yes	198 (39.9)
	No	298 (60.1)

Table 2. Physicians' knowledge levels

		BMI		LTC	
	Number of questions	Mean±SD	Median	Mean±SD	Median
Cutaneous, subcutaneous, muscular tissue	12	81.1±13.3	83.3	81,2±13,1	83.3
Head	11	86.1±13.8	90.9	63.7±17.9	63.6
Face	17	85.4±14.3	88.2	92.9±4.2	100
Neck	1	92.9±5.6	100	51.2±5.0	100
Chest	11	88±5.3	90.9	84.8±2.2	90.9
Abdomen-pelvis	10	83.8±14.5	85	73.2±16.4	70
Vertebra-nerve	5	95±3.9	100	70.2±22.6	80
Extremity	7	83.7±9.5	85.7	83.2±9.5	85.7

Table 3. General evaluation of knowledge levels

		Wrong answer BMI		Wrong answer LTC	
	Mean±SD (Median)	Wrong answer although problem can be solved n(%)	Wrong answer when the problem cannot be solved n(%)	Wrong answer when positive n(%)	Wrong answer when negative n(%)
BMI	85.6±11.1 (87.8)	46.4	53.6		
LTC	70.3±9.3 (71.6)			41.5	58.5
Total	78±7.7 (79.7)				

Material and Method

This study was carried out as a prospective-questionnaire study in Antalya Training and Research Hospital Emergency Medical Clinic with the approval of the Antalya Education and Research Hospital ethics committee with the approval dated 09.06.2016 and numbered 11/1.

Our work was carried out between 10.06.2016-15.08.2016 with the physicians working in emergency services of our country. Physicians were sent a link via e-mail address in which they can contribute to our survey. 74 questions were asked to the physicians to measure the level of forensic knowledge. Different types of lesions were defined in each question and physicians were requested to be evaluated for basic medical intervention (BMI) and life threatening condition (LTC). The data were categorized as cutaneous-subcutaneous-muscle, head region, facial region, neck region, chest region, abdominal-pelvis, vertebral column-medulla spinalis-peripheral nerves and extremity traumas. The responses were evaluated according to gender, education level, mission time, receive training, courses and seminars on forensic medicine.

Data were analyzed in SPSS Windows version 18. Mean, median, standard deviation nd frequency

Table 4. The relationship between age and knowledge of physicians

	Age	
	r	p
BMI	0,241	<0,001
LTC	0,138	0,002
Total	0,255	<0,001

Table 5. The relationship between gender and the level of knowledge of physicians

	Male (n=327) Mean±SD (Median)	Female (n=169) Mean±SD (Median)	p
BMI	87.1±9.6 (89.2)	82.6±13.2 (86.5)	<0.001
LTC	69.9±9.8 (71.6)	71.2±8.1 (73)	0.076
Total	78.5±7.5 (80.4)	76.9±8 (78.4)	<0.001

Table 6. The relationship between education and the level of knowledge of physicians

	General practitioner (n:49) Mean±SD (Median)	Assistant (n=68) Mean±SD (Median)	Specialist (n=254) Mean±SD (Median)	Academician (n:125) Mean±SD (Median)	p
BMI	88.6±6.6 (89.2)	85.8±5.7 (82,4)	83.8±13.1 (87.8)	87.8±9.8 (89.2)	<0.001
LTC	74.4±5.1 (74.3)	73.8±4 (74.3)	67.8±11.1 (71.6)	72.1±6.8 (73)	<0.001
Total	81.5±5.4 (80.4)	79.8±4.2 (78.8)	75.8±8.8 (78.4)	79.9±6.3 (81.8)	<0.001

values were used in the descriptive statistics of the data. The distribution of the variables was checked by the Kolmogorov Smirnov test. In the analysis of numerical non-parametric data; Mann Whitney U and Kruskal Wallis test and Spearman's rho tests were used. A value of p <0.05 was considered as statistically significant unless otherwise stated.

Results

The study was conducted with 496 physicians who agreed to participate in the study and their level of forensic medical knowledge was measured. The mean age was 36.7 ± 5.8 years and 327 (65.9%) of the physicians were male. 49 (9.9%) of the physicians were general practitioners, 68 (13.7%) were_assistant doctor, 254 (51.2%) were specialists and 125 (25.2%) were academicians. 24 of the participants (4.8%) were working as physicians for less than 2 years, 17 were (3.5%) for 2-4 years and 455 were working (91.7%) for more than 4 years. 198 (39.9%) of the physicians participated in a seminar about forensic medicine (Table 1).

The highest correct response rates for the BMI and LTC questions were determined for the questions about traumatic changes related to vertebral column-medulla spinalis-peripheral nerves (95%±3.9) and facial region(92.9%± 4.2), while the lowest rates were determined for the questions about traumatic changes related to skin, subcutaneous, muscle tissue (81.1%±13.3) and neck region (51.2%±5.0), respectively. Evaluation of the physicians' levels of knowledge about BMI and life-threatening condition according to body regions is shown in (Table 2).

The mean correct response rate of physicians to BMI related questions was 85.6 ± 11.1%; the total number of false answers given to the total (496x74) BMI questions was 46.4 % of the answers given by doctors were insistently claiming that situations could not be solved with BMI instead of they could be solved and 53.6 % of the answers given by doctors were insistently claiming that situations could be solved with BMI although they could not be solved. The average correct response rate of physicians to LTC related questions was 70.3 ± 9.3%; the total number of false answers was 7189 to a total of 36704 (496x74) questions. 58.5 % of the answers given by doctors were insistently claiming that there was a life-threatening condition although there was no such a condition and 41.5 % of the answers given by doctors were claiming that there was no life-threatening condition although there was a life-threatening condition. The correct response average to all questions was 78.0 ± 7.7%(Table 3).

Table 7. Relationship between participation in seminar and knowledge level of physicians

	No (n=298) Mean±SD (Median)	Yes (n=198) Mean±SD (Median)	p
BMI	84.7±12.1 (87.8)	86.1±10.4 (87.8)	0.489
LTC	68.4±10.5 (71.6)	71.6±8.1 (73.7)	0.001
Total	76.6±8.5 (79.1)	78.9±7 (79.7)	0.030

When the relationship between age and general knowledge level was examined; there was a positive correlation between BMI, general knowledge level and age ($p<0.05$) (Table 4).

When the relationship between gender and general knowledge levels was examined; it is found that the forensic knowledge of male physicians is better ($p<0.05$). In general, the correct response ratio of male physicians was 78.5 ± 7.5% (80.4%) and the correct response ratio of female physicians was 76.9 ± 8% (78.4%). In general, BMI related knowledge levels was found to be high in male physicians ($p<0.05$), LTC related knowledge level was not related with gender ($p>0.05$) (Table 5).

When the relationship between profession and general knowledge levels was examined; The correct response rate of general practitioners to BMI related questions was 89,2 %, the correct response rate of assistant doctors to BMI related questions was 82,4 %, the correct response rate of specialist physicians to BMI related questions was 87.8 % and the correct response rate of academicians to BMI related questions was %89.2. Correct response averages to questions about LTC was 74.3 % in general practitioners, 74.3 % in assistant doctors, 71.6 % in specialist physicians and 73.0 % in academicians. When the ratio of correct answers to the questions in the overall sum were examined; 80.4 % of the general practitioners, 78.8 % of the assistant doctors, 78.4 % of the specialist physicians and 81.8 % of the academicians gave correct answers to questions in the overall sum. It was detected that specialist physicians had a low level of knowledge in terms of BMI, LTC and overall sum and it was determined that the best knowledge was possessed by practitioners ($p<0.05$) (Table 6).

When the relationship between seminar participation related to judicial cases and general knowledge levels was examined; the correct response average of physicians who did not participate to seminars was 76.6 ± 8.5% (79.1%); the correct response average of physicians who participated to seminars was 78.9 ± 7% (79.7%). There was no relation between physicians' participation to the seminar and total BMI ($p<0.05$). It was determined that the knowledge level of the physicians participating to a seminar was better with regard to the total life threat ($p<0.05$). The knowledge level of the physicians participating to a seminar was significantly higher ($p<0.05$) (Table 7).

Discussion

How to assess and rate injuries in the judicial examination is explained in the Guidelines for Forensic Medicine Evaluation of Foreseeable Crimes Defined in the Turkish Criminal Code and in the Guidelines for the Forensic Report. In the guidelines, evaluation of criminal offenses defined in the Turkish Penal Code according to forensic medicine was stated in detail. Whether the injuries can be remedied by simple medical intervention or not and localization of life-threatening condition was shown with tables in guideline in detail (3).

Although there are studies in the literature that question whether doctors have sufficient knowledge about forensic medicine or not; no studies measuring the level of knowledge of physicians were found. In addition, social and regional differences in judicial evaluation of cases lead to resource constraints (7).

There have been no studies showing the adequacy level of physicians in the literature. Tüzünet al., mentioned in their study about forensic cases with life-threatening condition that; 49-50% of physicians accept this duty and 33-6% of the physicians state that this task is appropriate for forensic doctor (8). In another study; it was mentioned that 11.5% of physicians do not know the concept of life threatening (9). In another study; 6.4% of the physicians were found to have misunderstood the concept of life threatening (10). It was reported that physicians' insufficient information on forensic medicine and 35-44% of deficiencies and mistakes were reported in reports prepared by non-forensic physicians due to this insufficiency (11-13). In a study of Tuğcu et al., 78% of the physicians were found to be inadequate and 13% of the physicians were found to be partially adequate against forensic cases (2). In the study conducted by Hakkoymaz et al.,

48.2% of judicial cases were found to be unlikely to be resolved by BMI, but this ratio was higher than the literature and it was stated that the life threatening frequency was higher than the literature (14). Although Seviner et al., stated in their study that 12% of patients had a life-threatening condition; mortality rate was only 0.4% (4). In addition, many studies have shown that the law enforcement officers' hasty attitude has increased the error margin (5,6). In our study, it was determined that the ratio of physicians who responded correctly to the questions related to BMI was 86%, the rate of correct answers to the life threat questions was 70% and the rate of correct answers to all questions was 78%. When the wrong answers were examined; 53.6 of them were found to be resolved with BMI and it was detected that in 58.5% patients answer to presence of a life-threatening condition was positive although there was no such a condition. Physicians' lack of knowledge can be related with; incomplete understanding of book information and confusion about information, share of clinical experience, the efforts of judicial authorities to shorten the period of giving a judicial report, judicial authorities who believe that the mortalities due to developing complications have been omitted by the physician and clinics that change over time to make doctors more obsessive. We think that this condition forced physicians to behave as there is a life-threatening condition although there is no such a condition. We think that the physician interprets the lesion as being able to be resolved by BMI in cases where the physician normally resolves it by himself in situations which normally cannot be solved by BMI. Besides we think physicians are often more likely to make life-threatening conditions or transient reports, ask for related specialist to make the exact report and solve the life-threatening condition in order to protect themselves.

In the literature, there was no study examining the level of forensic knowledge according to localization. In our study, it was determined that BMI was most effective in traumas related with the colon-medulla spinalis-peripheral nerves, whereas BMI was least effective in traumas related with skin, subcutaneous, muscular tissue. On the other hand, BMI was most effective in traumas related with head region when life-threatening condition is concerned and worst in traumas related with neck region. Ratio of correct answer increased because of knowing that the pathologies caused by the affected nerve lesions usually result in surgical intervention or morbidity and cannot be resolved by BMI. We think that the diversity and coexistence of cutaneous, subcutaneous, muscle tissue lesions can cause illusions. In the case of life-threatening questions, the main reason for the most correct response rate being in head trauma; is the potential for mortality of all lesions affecting brain tissue in the head region. We believe that the most basic reason for the high error ratio in the neck region is the mortality of the neck region trauma in general. We also think that this high ratio can be due to presence of only one question about neck region.

There was no study comparing age and the level of forensic knowledge in the literature. When the relationship between age and general knowledge levels is examined; there was a positive correlation between BMI, life-threaten, age and level of general knowledge. We believe that the experiences of physicians over time and the judicial problems they are dealing with cause us to give more appropriate answers about forensic cases.

There was no study in the literature comparing gender and level of forensic medicine knowledge. When we examined the relationship between gender and general knowledge levels in our study; the level of knowledge about BMI in general was higher in male physicians, life-threatening condition and knowledge levels were not related to gender and the general information of male physicians in the overall was better. As a result of the desire of female physicians to stay away from working in the emergency care service and in an attempt to leave emergency services shortly; lack of experience develops which results in inadequate approach for judicial cases.

There was no study in the literature comparing the level of education and the level of forensic knowledge. In a study of Colaket al., 89% of physicians were need to be informed about legal responsibilities and authorities regarding forensic medicine, needed to have extended theoretical and practical training before graduation, and wanted to have in-service training (12). Fincanci and Bicer pointed out that forensic training given to general practitioners is often inadequate with a ratio of 93% (11). Tuğcu et al., stated that the forensic medicine training of physicians is inadequate in 74% and partly sufficient in 18% (2). In the study of Tuzun et al., they stated that it was difficult for the practitioners to make the diagnosis, they are less intimidated by judicial factors and want to receive less education about forensic medicine (8). When we examine the relationship between education and general knowledge levels in our

work, The knowledge level of specialist physicians is low in BMI, life-threatening and general total; it is determined that the best knowledge is possessed by practitioners. We think that the level of knowledge of general practitioners in forensic cases is better because emergency medicine is a new branch, specialist physicians are usually relatively inadequate in simple cases due to their involvement in severe cases, no separate forensic training is given during the assistant education, long-term practitioner physicians have more clinical experience, interim training of practitioners.

In previous studies; it is obvious that physicians consider themselves inadequate in forensic medicine (11-13). Colak et al. stated that majority of physicians want to be informed legal responsibility and authority, want prolonged theoretical and practical training before graduation and want in-service training (12). Günaydın et al., reported in their study that 91.5% of the physicians wanted to take forensic medicine training after graduation, but only 18.3% of them were reported to have such a training (15). In a test including 5 questions which was conducted by Bükenet al., the correct response rate before the seminar was 2.1 and after the seminar this ratio was increased to 3.2 (16). When we examine the relationship between participation in seminars and general knowledge levels, there was no relation between physician's participation in the seminar and total BMI. It was determined that the knowledge level of the physicians participating in the training about total life threat was better. It was determined that the knowledge level of the physicians participating in the training in the total sum was significantly higher. The training given to doctors may have improved the judicial cases as well as every case. But we think that as emergency physicians focus on life-threatening conditions in emergency and also focus on this topic in seminars; they are more successful in this regard.

In our study; correct answer ratio of physicians to questions about BMI was 86%, correct answer ratio to questions about life-threaten was 70% and correct answer ratio to all questions was 78%. Physicians had serious errors with different severities at different trauma localizations. Although there are many reasons for this in terms of the physician, none of these reasons can be regarded as excuse. Because these faults are harmful to the operation of the emergency service, it affects the forensic process negatively. The fact that there are more life-threatening cases in forensic cases causes the defendants to stay in custody for a long time and causes them to be arrested, resulting in different victimizations.

Age, gender, educational status and duration of urgent service work change physicians' forensic skills. Their primary junction point is the time spent in emergency service.

Training and seminars taken in the field of forensic medicine increase the physician's skill in this area. It is obvious that the deficiencies in this subject can be eliminated with in-service training given to doctors.

Limitations: This is a survey study; There are 74 questions in the survey that measure the level of knowledge of doctors. Due to the high number of these questions, physicians may be bored while filling out the form, may have difficulty understanding, and the likelihood of giving wrong answers to questions may increase.

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