

## ORIGINAL RESEARCH

# Levels of Knowledge of Emergency Nurses Regarding Forensic Cases and Approaches to Evidence

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**Abstract**

**Background:** This descriptive research was conducted to determine the level of knowledge of nurses working in emergency services regarding their approach to forensic cases and evidence. **Method:** The universe was nurses working in the emergency services of state and university hospitals located within the borders of a province. The study group consisted of 175 nurses who agreed to participate and were working in the emergency departments of 15 hospitals (14 state hospitals and one university hospital). The data were collected with a questionnaire developed with reference to the literature to determine the characteristics of the nurses and their approaches to forensic cases and evidence. The data were evaluated using mean, frequency, percentage distributions, t test and ANOVA in the SPSS 21.0 program. **Results:** From the research, it was concluded that nurses had knowledge deficiencies in the identification and reporting of forensic cases, identification of forensic evidence, and collection, storage and delivery of evidence to the competent authorities. The proposition to which most respondents gave the correct answer was 'Evidence should be placed in a separate paper package/envelope' (99.4%), and the most incorrect was 'When taking the story, the questions should be distracting to reveal inconsistencies (6.3%)'. 57.1% responded correctly to the propositions. **Conclusion:** Nurses working in emergency departments have a low level of knowledge about approaches to forensic cases and evidence.

**Keywords**

Forensic nursing, Emergency nursing, Health services research, Knowledge

## 1. Introduction

Emergency services represent the primary risk unit of the hospital with the highest patient intensity, serving every kind of emergency patient 24 hours a day to prevent or eliminate the dangers that might occur in cases that come to the hospital. Emergency intervention consists of a team of doctors, nurses and other health care personnel. Nurses are the most important members of this team providing the necessary care and services to patients of every gender and age, who have yet to be diagnosed with a surgical/medical health problem or acute condition [1]. Any injuries caused by another person's accidental or intentional behavior, results of disobeying the law, suspected poisoning and suicide are considered criminal cases and all traumatic events are included in the case until the underlying cause is deter-

mined [2, 3].

Since the first unit to deal with the case is emergency services, emergency health personnel are the first to come into contact with items that can be considered evidence. To protect the rights of victims and to provide information to investigators, accurate identification, storage, and recording and complete transmission of the evidence to the relevant authorities is extremely important. The primary role of the nurse is the patient's care and treatment. In addition, the nurse should know how to approach the victim or the accused during emergency treatment, recognize objects that might be evidence, collect and register evidence, and knowhow to protect it. The nurse should be able to protect evidence, identify the crime and the offender and eliminate the victim as much as other relevant personnel such as forensic doctors, police officers and prosecutors [4–6].

**TABLE 1. The Distribution of Socio-Demographic and Working Characteristics of Nurses (n = 175).**

Characteristics	Number	%
Gender		
<b>Male</b>	63	36
<b>Female</b>	112	64
Marital status		
<b>Married</b>	82	46.9
<b>Single</b>	93	53.1
Educational Status		
<b>Vocational High School</b>	44	25.1
<b>Associate degree</b>	33	18.9
<b>BSc</b>	84	48
<b>MSc/PhD</b>	14	8
Emergency Service Working Area		
<b>Green Zone</b>	30	17.1
<b>Yellow Zone</b>	116	66.3
<b>Red Zone</b>	29	16
Manner of Working in Emergency Service		
<b>Static</b>	66	37.7
<b>Rotation</b>	109	62.3
Training in Judicial Cases		
<b>Malpractice</b>	75	42.9
<b>Judicial reports</b>	46	26.3
<b>Health legislation</b>	10	5.7
<b>Intervention in judicial cases</b>	44	25.1
<b>Expertise</b>	0	0
<b>Forensic Nursing</b>	0	0

*\*The participants marked only one answer on the subject of training in judicial cases.*

Forensic nursing; is defined as forensic medicine to be a bridge for strengthening the justice system by merging with nursing. They are responsible for accurate, complete records of victims / perpetrators arriving or brought to the emergency department, storing clothes, taking samples from individuals for control of substances such as drugs / alcohol, collecting biological evidence, keeping them under appropriate conditions and transmitting them to competent authorities [7, 8]. The fact that the nurse has evidence identification and his / her approach to the evidence may lead to disruption of the forensic investigation by revealing an incident or by destroying the details. He / she should take note of the patient's information, physical findings, wound status in detail and without fail. He / she should pay attention to body language and tone of voice and record all kinds of medical treatments. This information should be written clearly and legibly without abbreviations [2, 9–11]. For many reasons, the clothing of the forensic cases that arrive at the emergency department should be evaluated first. Clothing may contain biological evidence or physical evidence of gunshot wounds and stab wounds. Tears, cuts, and

holes on clothing can provide an idea of the nature and type of the event and can reveal whether it is a suicide or murder [2, 12, 13]. Clothes should not be folded as much as possible, if they must be folded, paper should be placed between them. When taking off the clothes of the patient, the nurse should not leave the room, as the patient's shoes may also be important, they should be taken as evidence and all the clothes taken off should be put in separate paper packages. Plastic should not be preferred since it will keep moisture and cause bacteria to grow. If the clothes are wet or damp, they should be air dried without using any drying equipment. Evidence bags should be sealed and the information from whom they were taken, and what was in it should be written on it [13, 14]. Another important evidence is wounds. Wound shape, location, appearance, criteria, area should be defined in detail and recorded. In firearm injuries, the hole on the clothing, the shape and number of holes, traces of gunpowder give important information about the incident [4]. Collected evidence should be stored in a shelf and glass cabinet with lock. They should not be handed over to anyone, even family members, except the competent au-

**TABLE 2. The Distribution of Nurses' Characteristics (n = 175).**

Characteristics	Number	%
Involved with judicial cases		
<b>Always</b>	162	92.6
<b>Sometimes</b>	13	7.4
<b>Never</b>	0	0
Assignment of forensic nurses in emergency department		
<b>Yes</b>	145	82.9
<b>No</b>	30	17.1
Should forensic nursing be a major branch?		
<b>Yes</b>	143	81.7
<b>No</b>	32	18.3
Would you like to be forensic nurse?		
<b>Yes</b>	71	40.6
<b>No</b>	104	59.4
Feel sufficiently knowledgeable about approaches to judicial cases and evidence		
<b>Sufficient</b>	6	3.4
<b>Partial</b>	56	32
<b>Insufficient</b>	113	64.6
Who collects judicial case evidence in the working environment?		
<b>Doctor</b>	28	16
<b>Nurse</b>	17	9.7
<b>Hospital police</b>	101	57.7
<b>Security</b>	29	16.6
<b>Other</b>	0	0

*\*The participants marked only one answer on the task of collecting judicial case evidence in the working environment.*

**TABLE 3 A. The Distribution of Participant Responses to Questions (n = 175).**

	Items	Correct (%)	FALSE (%)
<b>Identifications of judicial case</b>	Whether emergency room cases such as traffic accidents, battering, poisoning and falls are judicial cases should be evaluated	149 (85.1%)	26 (14.9%)
	A two-month-old baby falling out of bed is not considered a judicial case®.	65 (37.1%)	110 (62.9%)
	Child abuses should be considered in cases where the child and siblings are accused.	88 (50.3%)	87 (49.7%)
	The palms and backs of the hands of children, which are the areas most used for punishment, should be examined.	116 (66.3%)	59 (33.7%)
	The incident may be a judicial case when the baby is carried from hospital to hospital.	22 (12.6%)	153 (87.4%)
<b>Laws on judicial cases</b>	A health professional who encounters signs that a crime has been committed and does not report the situation to the competent authorities or delays doing so should be sentenced to imprisonment of up to one year.	74 (42.3%)	101 (57.7%)
	The family needs to raise a complaint in order to initiate an investigation into child abuse®.	52 (29.7%)	123 (70.3%)
	To obtain evidence of a crime, samples may be taken from the body of the accused or victim by a doctor or another health professional under the supervision of a medical doctor.	113 (64.6%)	62 (35.4%)

**TABLE 3B. The Distribution of Participant Responses to Questions Continued (n = 175).**

	<b>Items</b>	<b>Correct (%)</b>	<b>False (%)</b>
<b>Getting story</b>	a If both parents' stories are the same when taken separately there is no need to consider the case to be judicial®.	51(29.1%)	124 (70.9%)
	When the nurse takes details, in addition to the general medical history, when, where and how the event took place should be determined.	115 (65.7%)	60 (34.3%)
	When taking the history, the nurse should ask the patient to explain the event®.	136 (77.7%)	39(22.3%)
	When taking the history, the questions should be distracting to reveal inconsistencies®.	164 (93.7%)	11(6.3%)
	The nurse should not waste time dealing with contradictions in the statements of patients and their relatives®.	52(29.7%)	123 (70.3%)
<b>Physical Examination</b>	Since it is a judicial case, there is no need to obtain consent from the patient before physical examination®.	47 (26.9%)	128(73.1%)
	Internal examination can only be made by a physician or another health care professional.	111 (63.4%)	64 (36.6%)
<b>Collecting of Evidence</b>	The victim/suspect should be asked to remove his clothes while seated to avoid loss of evidence®.	153 (87.4%)	22 (12.6%)
	The room should not be left while the victim/suspect is removing clothes.	124 (70.9%)	51 (29.1%)
	The clothes of the victim/suspect should be shaken in order to reveal all the evidence®.	126 (72.0%)	49 (28.0%)
	If the clothes of the victim/suspect cannot be removed normally, they should be removed with scissors®.	81(46.3%)	94 (53.7%)
	If the nurse takes a swab of the tongue and cheeks, a sterile swab moistened with sterile water should be used.	146 (83.4%)	29 (16.6%)

**TABLE 3C. The Distribution of Participant Responses to Questions- Continued (n = 175).**

	<b>Items</b>	<b>Correct (%)</b>	<b>False (%)</b>
<b>Collecting of Evidence</b>	It is important to rinse the victim's mouth with water in cases of sexual crime and to retain the water.	121(69.1%)	54 (30.9%)
	If 24 hours have elapsed since the event, urine must be collected from the patient for one to five days for drug analysis.	141 (80.6%)	34(19.4%)
	If clothes need to be folded, paper should be placed on top of each item.	88(50.3%)	87(49.7%)
	Clothes removed from the victim/suspect must be placed in pouches immediately®.	140(80.0%)	35(20.0%)
	Materials should also be stored as evidence if the victim/suspect was dressed during the intervention.	107(61.1%)	68 (38.9%)
	In cases where gastric lavage is performed, a sample of the gastric contents should be taken.	140 (80.0%)	35(20.0%)
<b>Keeping of Evidence</b>	Warm ambient conditions are best for storing biological materials®.	95 (54.3%)	80 (45.7%)
	The evidence must be stored in a locked cupboard until use.	74 (42.3%)	101 (57.7%)
	All evidence that is wet or damp should be dried before storage.	101(57.7%)	74(42.3%)
	Glass is better than paper for packing®.	103(58.9%)	72(41.1%)
	Ventilators or other tools should not be used to dry clothes.	115 (65.7%)	60 (34.3%)
	After evidence has been gathered in the emergency room, garments should be returned to the victim or suspect®.	3(1.7%)	172(98.3%)

**TABLE 3D. The Distribution of Participant Responses to Questions Continued (n = 175).**

	Items	Correct (%)	False (%)
<b>Protection of Evidence</b>	There is no harm in the patient changing clothes in forensic or suspected cases®.	70 (40.0%)	105(60.0%)
	Each item of evidence should be placed in a package/envelope separately.	174 (99.4%)	1(0.6%)
	The package/envelope containing the evidence should not be closed®.	64 (36.6%)	111 (63.4%)
	The chain of evidence should be as long as possible®.	79 (45.1%)	96 (54.9%)
	The name of the individual should not be written on the package/envelope to maintain confidentiality®.	92(52.6%)	83 (47.4%)
	Name, title and name of the clinic of the collector should be written on the package/envelope.	49(28.0%)	126(72.0%)
<b>Saving of Evidence</b>	In the judicial record, notes on the individual should be made as soon as possible.	129 (73.7%)	46 (26.3%)
	Notes should be written using the abbreviations of health care personnel so that they are not understood by others.	81(46.3%)	94 (53.7%)

**TABLE 4. Comparison of Socio-demographic Characteristics of Nurses according to judicial case process stage.**

Judicial case Process stage		N	$\bar{x}$	SS	t/F	p
Protecting evidence	<b>Age</b>					
	Under 25	90	3.37	0.83	-2.71	0.007
	25 and over	85	3.7	0.83		
Getting the story	<b>Working years in Emergency</b>					
	0-5 years	158	2.44	1.05	3.39	0.001
	6 years and over	17	1.52	1.07		
Physical examination	0-5 years	158	1.13	0.7	2.03	0.044
	6 years and over	17	0.76	0.83		
Getting the story	<b>Professional working years</b>					
	0-5 years <sup>a</sup>	116	2.47	1.01	3.61*	0.029
	6-11 years <sup>b</sup>	34	2.32	1.14		
	12 years and over <sup>c</sup>	25	1.84	1.21		
Physical examination	0-5 years <sup>a</sup>	116	1.2	0.71	5.74*	0.004
	6-11 years <sup>b</sup>	34	1.05	0.65		
	12 years and over <sup>c</sup>	25	0.69	0.7		

\* F value. P < .05. a > c

thorities. Any dryer should not be used to dry damp and wet evidence before packaging, they should be naturally dried [12]. Evidence should be sent to the involved authorities in sealed bags. The name, surname, gender, age and detailed information of the person who collected the evidence should be written on it. One of the most important stages of the collected evidence is the registration. The lack or absence of records firstly suggests the idea that “what was not written was not done”. Accurate collection of evidence and complete registration of the evidence will contribute to the establishment of justice. The emergency nurse has an important position in recording the evidence, since he / she is the first contact with the patient [9, 15–18].

The knowledge and attention of the health personnel in forensic studies will ensure that the evidence is collected correctly and not lost. However, in the studies; it was stated that they did not receive training on the collection and stor-

age of evidence that could be found on the criminal or victim individuals who came to the emergency room for treatment [4, 19–22].

This study was carried out to determine the knowledge level and approach to forensic cases and evidence of nurses working in the emergency departments of state hospitals and medical facilities in the center and regions of one province.

## 2. Material and Methods

The research universe consisted of 210 nurses working in the emergency department (ED) of hospitals and medical facilities affiliated to the provincial health directorate. In the study, the total-count sampling method was used, and 175 people formed the working group. National and international literature was examined by the researcher who has

received forensic nursing training [2, 3, 12, 18, 19, 23–27]. There are 16 descriptive questions at the beginning of the questionnaire. Nurses participating in the study were asked to respond to statements with ‘yes’ or ‘no’. The Knowledge Status of Nurses in Approach to Forensic Cases and Evidence Questionnaire Form was evaluated by six experts, including a faculty member working in the field of forensic nursing, a forensic science expert, a forensic medicine specialist physician and a forensic nursing instructor. Among 40 questions in the survey, there were 19 contrary propositions and “false” signs that were evaluated positively. The questions were created under eight subheadings: Forensic Case Identification (five items), the Laws on Forensic Cases (three items), Getting the story (five items), Physical Examination (two items), Collecting Evidence (11 items), Keeping of Evidence (six items), Protection of Evidence (six items), and Saving of Evidence (two items).

The data of the study were analyzed in terms of number, percentage, mean and standard deviation for descriptive statistics. ANOVA and *t* test analysis was used in the comparisons with the questions in the form. The percentage of correct answers to each item showed how much or less of that item was known. Face-to-face interviews were conducted with the ED nurses.

### 3. Results

The results of the study were examined in three sections: socio-demographic and working characteristics, opinions on forensic nursing, their proposition replies for approach to forensic cases and evidence, comparison of knowledge situations in the approach to forensic cases and evidence.

When the knowledge of nurses in their approach to forensic cases and evidence is examined, the correct answer rate was 57.1% and it appears that the nurses lack information about collecting evidence, getting the story, understanding the law and diagnosing a forensic case. The question most correctly answered was: ‘Each piece of evidence should be placed in paper/envelope separately’ and that most wrongly answered was: ‘When taking the story, the questions should be distracting to reveal inconsistencies’.

According to the socio-demographic and study characteristics of the participants, the knowledge status of the forensic case process was compared and the results were given according to the eight dimensions in study : (Forensic case identification, Law on forensic cases, Getting a Story, Physical examination, Evidence collection, Evidence storage, Evidence protection, Recording).

There was a significant difference between the scores of the nurses’ regarding evidence protection and their age using a *t*-test to see if there was a significant difference between the scores of the nurses and their age ( $t = -2.71$ ,  $p = 0.007$ ). Based on this finding, it is observed that those who are 25 years of age and older have higher scores than those under 25 years of age.

Obtain a meaningful difference between the points taken by the nurses in history and the physical examination, and to see if there is a significant difference between the working

years in the emergency and the *t* test ( $t = 3.39$ ,  $p = 0.001$ ) and the physical examination ( $t = 2.03$ ,  $p = 0.044$ ) a significant difference was found between the points they received and the years of work in the emergency. Based on this finding, it is seen that the scores of 0-5 years were higher than those of 6 years and over. On physical examination, those with 0-5 years were higher than those with 6 years and over.

One-way analysis of variance (ANOVA) to determine if there was a significant difference between the scores of the nurses and getting the history ( $F = 3.61$ ,  $p = 0.029$ ) and physical examination ( $F = 5.74$ ,  $p = 0.004$ ) and the year worked in profession. In order to determine the differences among the groups, a Scheffe Test was performed from post-hoc tests. In getting the story, there was a significant difference between those with 0-5 years’ experience and those with 12 years and above. The scores of those with 0-5 years were higher than those of 12 years and over. On physical examination, there was a significant difference between 0-5 years and 12 years and above. The scores of 0-5 years were higher in the physical examination segment than those of 12 years and above.

As a result of the study, it was found that emergency room nurses always had forensic cases, inadequate cases of forensic nursing, no nurses were trained in forensic nursing, the nurses working in forensic nurses felt insufficient to approach forensic cases and evidence, forensic nursing was a specialty and It was reached that the nurses who are working in emergency departments should have low level of knowledge about the approach to forensic cases and evidence.

### 4. Discussion

None of the nurses involved in the study stated that they had received training in forensic nursing. The findings of the nurses working in the emergency services were analyzed by the İlçe et al. (2010) found that 65.9% of the staff involved in the study did not receive training on forensic nursing [18]. 78.3% of the participating nurses in the study of Soğukbulak et al. (2014) stated that they did not receive training on forensic cases after training and 87% said that they did not receive training on forensic cases after graduation [28]. In parallel with these findings, a literature study shows that most nurses working in emergency services do not receive training related to forensic nursing [2, 4, 19]. It is thought that the training in forensic nursing is insufficient because of the lack of appointment in the application areas of forensic nursing (in the emergency room) in Turkey and the awareness is not yet at the desired level.

The first health care personnel to meet forensic victims/perpetrators with evidence of the victim/perpetrator are emergency nurses [17]. However, nurses who do not have sufficient information and knowledge on forensic issues can overlook the evidence and not take the necessary approach to forensic cases [4]. 82.9% of the participants think that forensic nurses should be employed in emergency services. Purdue (2001) stated that emergency medical doctors and health workers were witnesses of a criminal case



and that they had information about the case, such as the cause of injury [29]. Green (1993) reported that policemen may need information about the case as well as doctors and nurses in forensic cases [16].

It is very important that nurses working in emergency services are trained in the forensic case in order to identify the crime and the offender and to eliminate the victims of the individuals [2]. In order to minimize the problems that may occur in this regard, nurses are expected to specialize in the forensic case. Indeed, it supports this prediction in the results of the studies. In the 2017 study of Küçükoğlu et al., 76.9% stated that forensic nursing should be a specialty [30]. In this study 81.7% of nurses are in similar opinion. These results suggest that forensic nurses are needed to approach forensic cases.

Sharma (2003) reported that nurses were inadequate in identifying evidence and that the forensic records of victims or criminals treated in emergency services were often lost because nurses were not sufficiently aware of the importance of evidence [31]. 25.1% of the nurses who participated in the study reported that they were trained to intervene in criminal cases but more than half (64.6%) felt inadequate in treating forensic cases and evidence.

In the research, half of nurses stated that it was the duty of the hospital police to collect evidence for forensic cases (57.5%). In the study of Soğukbulak et al. (2014), 20% of the participating nurses did not report cases to the hospital police [28]. In this survey, it was proposed that “A health professional who encounters signs that a crime has been committed and does not report the situation to the competent authorities or delays doing so should be sentenced to imprisonment of up to one year” 57.7% of participants did not answer. The results of the two studies suggest that health workers lack information about legal arrangements related to criminal cases.

When the knowledge status of nurses regarding their approach to forensic cases and evidence is examined, it seems that there is a lack of information on the subjects of collecting evidence, getting the story, identifying the law and forensic cases. The proposition to which most respondents gave the correct answer was ‘Evidence should be placed in a separate paper package/envelope’ (99.4%), and the most incorrect was ‘When taking the story, the questions should be distracting to reveal inconsistencies (6.3%)’. 57.1% responded correctly to the propositions.

In the study, it was found that the scores of nurses aged 25 and over were higher than those under 25. However, in the study of Köroğlu (2013), the rate of being aware of the legal responsibility for evidence protection and storage was reported to be 80% in participants aged 24 and under and 65.6% in participants aged 35 and over [32]. The fact that the evidence protection scores were higher in nurses over 25 suggested that the number of cases experienced led to increased awareness. In his study, Köroğlu (2013) stated that there is a significant difference between the years worked in emergency and everything related to forensic cases [32]. However, in the study, nurses with 0-5-years’ experience in

emergency had higher scores in getting the story and physical examination than those with six years and over. Soğukbulak et al. (2014) found that nurses with working experience between one and five years had the most difficulty in forensic cases [28]. However, in the study, scores of those with 0-5 years working experience were higher in getting the story and physical examination than those with 12 years’ experience and above. The results of the study suggest that forensic nursing is a field that has attracted more attention in recent years in Turkey and has been added to education programs of late.

#### 4.1 Limitations of the Study

Due to the collection of the study data only from public/university hospitals in a province, the lack of forensic nursing role in Turkey and considering the role of the police more than the nurse in forensic cases was a limitation of the study. Thus, our results may not be generalizable.

### 5. Conclusions

As a result of the study, it was found that all emergency room nurses encountered forensic cases, no nurses were properly trained in forensic nursing, nurses working in forensic cases felt insufficiently experienced to approach forensic cases and evidence, forensic nursing was a specialty and nurses working in emergency departments have a low level of knowledge about approaches to forensic cases and evidence.

#### 5.1 Implications for clinical forensic nursing practice

The findings of this study were; it shows that there is a lack of information in the forensic case of nurses. The nurse who is able to identify the forensic event and evidence, and has knowledge about the evidence protection chain, will have a very important place in the judicial process. Know how to approach the forensic case; to make a physical assessment of the victim, or to take the necessary measures for his / her health and provide psychological support. Thus, it will be ensured that the victim is affected at least from the event. On the other hand, it is necessary to apply the necessary actions of the persons brought as defendants and to ensure that the evidence does not lose the value of being evidence; will contribute to the illumination of the event. At the same time, he/she will be aware of his/her legal responsibilities in this judicial process and he/she will be assured himself/herself by working more consciously and in accordance with the procedure. It should also ensure the appointment of forensic nurses in Turkey and is in urgent need of more research to be done about it.

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## CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

## ETHICAL APPROVAL

Permission was received from the medical faculty's Pharmaceutical and Non-Medical Research Ethics Committee (2016/575). In addition, written permission was received from the hospitals in the sampled province. During the application, written permission was received from health care service managers and the related medical faculty hospital's head nurse. Written permissions were repeated verbally. The questionnaire forms were applied with the written approval of the emergency nurses who agreed to participate in the study.

## AUTHOR CONTRIBUTIONS

Manar Aslan designed the study and wrote and reviewed the manuscript. Dilek Sakallı collected the data and wrote the manuscript.

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