

## Emergency Department Nurses' Knowledge about Forensic Nursing

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### Abstract

**Introduction:** Forensic nursing makes the relation between medical profession and judicial system using the forensic science in prevention, intervention and treatment guidance. Increasing the nurses' knowledge of forensic nursing will provide high quality, safe and holistic nursing.

**Objective:** This study aimed to determine the level of emergency nurses' knowledge about forensic nursing.

**Materials and Methods:** This descriptive cross-sectional study was conducted on 195 nurses working in emergency department of educational hospitals in Rasht city by census sampling. Data was gathered by a researcher-made questionnaire. The responses had been scored from 0 to 17. Scores had been categorized as 0-5= poor, 6-11= medium, 12-17= good and in three levels of poor (0-33% of total scores), medium (34-66% of total scores) and good (67-100% of total scores).

Data was analyzed using descriptive (means and standard deviation) and Inferencial (statistical tests of Man Whitney, Kruskal-Wallis, Friedman, Logistic Regression) statistics. Significance level was considered less than 0.05.

**Results:** Findings showed that work shifts of 87.2% of subjects were rotated, 89.7% were clinical nurses, with work experience of mean 6.66 years in nursing profession and mean 3.73 years in emergency department. 95.4% of subjects had no education about managing the forensic patients, 92.3% had stated that there was no documented guideline in caring of forensic patients and 95.9% had educational needs for managing the forensic patients.

Data showed that only 0.51%, 54.36% and 45.13% of the subjects had good, medium and poor knowledge on forensic nursing, respectively. The most and least level of knowledge was on identification of forensic patient and protection of forensic evidences respectively. There was a significant relationship between knowledge on forensic nursing and sex ( $P=0.015$ ) and organizational position ( $P=0.021$ ).

**Conclusion:** In order to provide holistic care to forensic patients, the role of forensic nurses in emergency departments is especially important. Findings emphasis that there is a need to specialized education about forensic nursing in Iran.

**Keywords:** Emergency Nursing, Knowledge, Forensic Nursing.

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**Introduction**

Professional nursing has a main approach to team-work and cooperation between Medical Sciences courses and interaction with other sciences in order to increase the level of knowledge, skill, competency and providing high quality nursing caring with better safety [1, 2]. Getting professional of the nursing simultaneously with innovation and development of medical care systems is a whole conforming on the promotion of health, prevention of disease and attention to the patient and considering all aspects of the patient (holistic caring) which includes all of medical, social and forensic aspects of caring [2].

One of the complementary roles in holistic caring is the supportive and defensive role of a nurse [3, 4]. Nursing profession had far combined with forensic sciences due to its supportive nature and the nurses had the duty of caring of victims and actors of harshness [5]. The duty has expressed more in Forensic Nursing [6, 7]. The individual forensic nurse with specialized education in gathering the evidences of Forensic Medicine, Criminal Procedure and Forensic Testimony is the connector between the medicine profession and judicial system [7, 8] that has the lawyer role of the patient in addition to his/ her nursing duties [7]. The nurses do their tasks and duties using forensic sciences in order to prevention, intervention and treatment guidance through common environmental, mental and social educations in the researches and collecting the evidences about trauma, death and the problems of forensic medicine [5, 9]. Identifying forensic patient, gathering, protecting and documenting forensic evidences, providing testimony in the court, providing care on the base of nursing process to forensic patients are the areas about which the forensic nurse is educated [5, 10]. In addition to receiving medical services, a patient who needs to judicial system services simultaneously is introduced as a forensic patient by Association of Nursing of the U.S.A. [11]

A Forensic Patient includes victims of domestic violence and accidents, suspicious deaths, unknown commas, unrecognized individuals, suicide, killing others, death in emergency department, child abuse, neglecting of elderly, rapes, burn up to 5%, drowning, electrocution, victims of plane crash, terrors and retarded patients, the prisoners, the delinquents, the addicts, the poisoned individuals, suspicious injured individuals of physical contention, a patient who brought in emergency department by police, criminal abortion [8, 12, 13].

The investigations show that the statistical level of aggressive criminals has reached to its acute threshold and every day the nurses face to the consequences of the crisis in the hospitals. The statistics show that social violence has increasing against the last years [15]. In each crime, at least one human victim is included that will need to care in emergency department [2, 9]. It's obvious that the first individuals that face with the victim as an observer of the status are the nurses and physicians [9, 16]; so, a forensic nurse is necessary for providing holistic care on the base of forensic principles [2]. Forensic nursing does its tasks of identification of a forensic patient, gathering, protecting and documenting the forensic evidences and identification of the wound pattern [5]. Identification of the forensic patient is composed of 27 cases according to Pascaleon Table [12] and gathering such forensic evidences as cloth, bullet, blood stains, hair, fibers, tiny pieces of such materials as glass, color and metal pieces, swabs related to some parts of a patient's body which was touched by the aggressor, the sentences stated by the patient, the quotations and all details about all kinds of traumas and injuries are important [17] and the protection of the forensic evidences must be done so that they can be used in a laboratory and be cited in a court [5]. Providing the evidences about the characteristics and appearance of the wound included identification of a wound

site and approximate measurement of cuts, ruptures and squashes with interpolation of them in diagrams and body schematic charts and also taking photos of the wound sites are done before, during and after therapeutic measures. A forensic nurse has the duty of identification of kinds of wound patterns resulted from bites and stings of insects, human and animal bits, self-injury, knifing, burning, wounds resulted from accidents, guns, blasts and so on [5].

Forensic nursing can gather and protect the forensic evidences and documents correctly and scientifically in order to provide its supportive and defensive role about the patient [5, 10]; but the results of researches about the principles of nurses' knowledge are different in several countries.

In the study of Al-Saif from Kingdom of Saudi Arabia (Kingdom of Saudi Arabia), only 34% of the nurses had knowledge about forensic nursing [16]. In the study of Brysiewicz in South Africa, Durban, 91% of the nurses hadn't enough knowledge about forensic nursing [18]. In the above-mentioned studies, the level of knowledge about forensic nursing was low and most of the nurses working in emergency department hadn't academic education. But in the study of Kalayci from Turkey, approach to 75% of nursing students had desired knowledge about responsibilities of forensic nursing [19]. In the study of Henderson from the U.S.A., mean total score of the nurses was 37.7 from 50 that it shows a good level of knowledge [2].

In Turkey and U.S.A. educated forensic nurses work in emergency department. It seems that role of a nurse will depend on his/her ability to understand forensic problems and to perform the necessary supports in judicial problems. Since in order to play an efficient and useful role of nursing there should be enough knowledge, investigation of nurses' knowledge about forensic nursing can be a foundation of employing knowledge in their performances. Different results in

several researches show that nurses' knowledge about forensic nursing can vary considering the educational context and work environment.

Since the research results in databases didn't include any study about nurses' knowledge of forensic nursing in Iran and the province of Guilan, the study was performed aimed to investigate emergency department the nurses' knowledge of forensic nursing in educational therapeutic centers of Rasht City.

### **Materials and Methods**

The study is an analytical and cross-sectional one. The study plan had been confirmed in Ethical Committee of Guilan's University of Medical Sciences. The sample had included all nurses working in emergency department of educational therapeutic centers of Rasht City. The samples were selected using census sampling from 8 educational therapeutic centers in which 195 individuals out of 210 individuals participated in the study in which the questionnaire distributed between them after receiving written consent letter and then explaining the goals. 15 nurses ignored to participate in research as a volunteer.

The tool of collecting data was a two-parts researcher-made questionnaire in which the first part included individual and career information consisted of 12 questions and the next part had information about knowledge measurement consisted of 17 true and false questions and the questionnaire had been designed as 'true', 'false' and 'I don't know'. Each true response had one score and false and I don't know responses hadn't any score. The Items provided to investigate knowledge of forensic nursing has been classified in 5 areas of forensic patient with 3 questions and 0-3 scores, collecting forensic evidences with 4 questions and 0-4 scores, protecting forensic evidences with 3 questions and 0-3 scores, documenting forensic evidences with 4

questions and 0-4 scores and identifying wound pattern with 3 questions and 0-3 scores.

In guideline to answer the questions, some definitions of patient, nurse and forensic nursing were stated. In order to identify questionnaire scientific validity, method of Content Validity was used. The questionnaire offered to 10 faculty members of Guilan University of Medical Sciences composed of professors of Forensic Nursing and Nursing; and all questions took the score more than 0.7 in 3 characteristics of simplicity, clearness and relevance; also, Content Validity Ratio of the questions was calculated more than 0.7. For identifying reliability, the method of Test-re-Test was used so that the questionnaire was offered to 20 nurses working in emergency department of Velayat, pour-Sina and Razi hospitals and then after a week, the process repeated.

Reliability Coefficient of Test-re-Test was calculated. The results stated that in two stages the study Correlation Coefficient of the questionnaire was statistically significant and the scores of two stages showed a high correlation [ $r = 0.995$ ,  $P = 0.001$ ]. Given that the questions were 'true' and 'false', Kuder-Richardson coefficient was used to investigate internal stability of the questions. The calculated coefficient was 0.95 which suggest an acceptable internal stability. After collecting data and extracting information, data was analyzed using SPSS Version 20. In order to analyze data, descriptive statistics composed of tables, diagrams and sufficient numerical indicators and inferential statistics included Mann-Whitney, Kruskal-Wallis, Friedman and Logistic Regression were used. Significance Level of the tests was considered as 0.95.

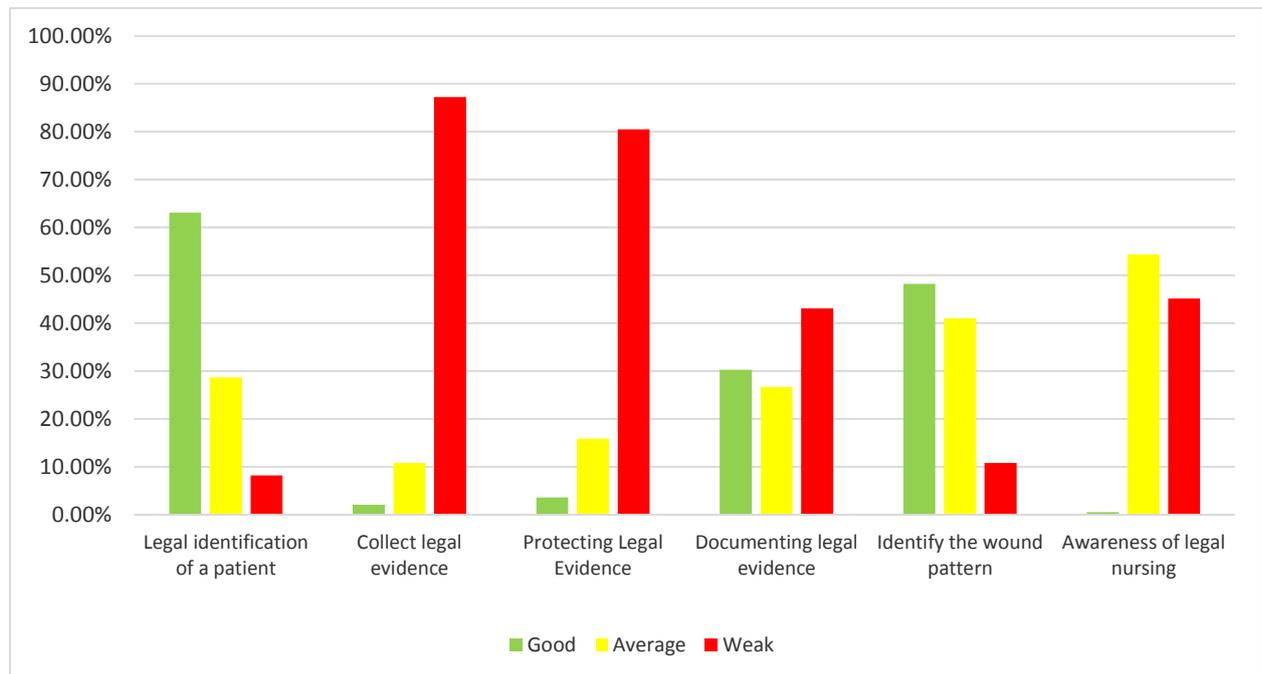


Figure 1: Distribution of nurses' knowledge status about forensic nursing by separating the areas.

## Results

The results show that most of participants were female, married with bachelor degree and under 30 years old (table 1). Mean knowledge scores of the subjects in forensic nursing was  $5.90 \pm 2.40$  from 17; knowledge statues of 54.36% of the subjects about forensic nursing was medium; so, considering knowledge

categorization, only 0.51% on the subjects had a good knowledge (table 2). Also knowledge statues (figure 1) of 5 areas of forensic nursing included identifying patient, gathering, protecting and documenting forensic evidences and identifying wound pattern were investigated.

**Table 1: Distribution of the subjects on the base of personal and career variables**

Abundance of Personal and Career Variables	Number (%)	
<b>Age group (year)</b> Mean $\pm$ SD (30.53 $\pm$ 6.48)	< 30	118(60.5)
	30 - 40	54(27.7)
	> 40	23(11.8)
<b>Sex</b>	Male	182(93.3)
	Female	13(6.7)
<b>Education level</b>	Bachelor	165(84.6)
	Masters	30(15.4)
<b>Marital status</b>	Single	91(46.7)
	Married	99(50.8)
	Divorced	5(2.6)
<b>Work shift</b>	Fixed Morning	18(9.2)
	Fixed Night	7(3.6)
	Rotated	170(87.2)
<b>Organizational position</b>	Head-Nurse	10(5.1)
	Staff	10(5.1)
	Nurse	175(89.7)
<b>Service background in nursing (year)</b> Mean $\pm$ SD (6.66 $\pm$ 5.47)	< 1	39(20.0)
	1 - 5	57(29.2)
	5 - 10	53(27.6)
	> 5	46(23.6)
<b>Work background in emergency(year)</b>	< 1	65(33.3)
	1-5	80(41.0)
	> 5	50(25.6)
<b>Receiving special education</b>	Yes	9(4.6)
	No	186(95.4)
<b>Documented guideline</b>	Yes	15(7.7)
	No	180(92.3)
<b>Need to education</b>	Yes	187(95.9)
	No	8(4.10)
<b>Background of caring forensic patient</b>	Yes	195(100)
	No	0(0.0)
<b>Knowledge status about forensic nursing</b>	Weak	88(45.13)
	Medium	106(54.36)
	Good	1(0.5)

**Table 2: Statistical indicators of the subjects about forensic nursing on the base of personal and career characteristics**

Abundance of Personal and Career Variables	Statistical Indicators of Forensic Nursing			Sig.	
	Mean	SD	Median		
Age group (year)	< 30	5.91	2.30	6	0.676 *
	30 - 40	6.06	2.29	6.5	
	> 40	5.52	3.10	6	
Sex	Male	5.80	2.37	6	0.041 **
	Female	7.38	2.29	7	
Education level	Bachelor	5.88	2.45	6	0.762 **
	Masters	6.03	2.11	6.5	
Marital status	Single	6.24	2.12	6	0.091 **
	Mmarried	5.58	2.61	5	
Work shift	Fixed	5.60	2.83	6	0.706 **
	Rotated	5.95	2.33	6	
Organizational position	Head-Nurse	4.90	4.15	5	0.110 *
	Staff	4.70	1.70	5	
	Nurse	6.03	2.28	6	
Service background in nursing	< 1	6.23	1.98	6	0.833 **
	1-5	6.05	2.42	6	
	5-10	5.72	2.32	6	
	> 10	5.65	2.78	6	
Work background in emergency	< 1	5.85	2.41	5	0.514 *
	1-5	6.08	2.31	7	
	> 5	5.70	2.53	6	
Receiving special education about managing forensic patients	Yes	6.78	2.54	7	0.247 **
	No	5.86	2.39	6	
Existence of a documented guideline for caring forensic patients in hospital	Yes	6.27	2.55	7	0.527 **
	No	5.87	2.39	6	
Requirement to education about managing forensic patients	Yes	5.89	2.40	6	0.799 **
	No	6.13	2.36	6.5	
	Total	5.90	2.40	6	

Among personal and career variables, factors related to nurses' knowledge about forensic nursing, uni-variable analyses of measuring relations show that only is statistically significant using tests of Mann-Whitney and Kruskal- Wallis ( $P=0.041$ ) and a statistical relation wasn't observed between age, education, marital statues and other factors with subjects' knowledge. On the base of table 3 and step by step logistic regression, multi-analyses

of regression coefficient and relative chance of predictors show that sex is one the predictors related to nurses' knowledge about forensic nursing and it is significant statistically ( $P=0.015$ ) and mean score of men's knowledge is 1.659 times more than women's; and the most and least relative chance of predictor are 2.986 and 0.332, relatively. Also organizational position is statistically significant as other predictor ( $P=0.021$ ) and mean knowledge score of

**Table 3: Factors related to nurses' knowledge about forensic nursing in multi-analyses on the base of Logistic Regression.**

Predictor Variables	Regression Coefficient	Standard Error	Sig.	CI 95%	
				Lower Limit	Upper Limit
Males vs. females	1.659	0.673	0.015	0.332	2.986
Nurse vs. head-nurse	1.290	0.553	0.021	0.199	2.381
Constant	2.975	0.907	0.001	1.187	4.764

nurses was 1.290 times more than head-nurses. The least and most relative chance of organizational position were 0.199 and 2.381, relatively. There is a significant statistical difference in aligned score of forensic areas on the base of Friedman Test ( $P=0.0001$ ); and the most percent of knowledge is related to identification of forensic patient and the least percent is about protection of forensic evidences.

### Discussion

The findings of this study revealed that nurses have a moderate knowledge about forensic nursing. However, the results of other studies in this regard are different, such that the level of awareness of nurses in different countries has been reported to range from 9 to 58% [2, 13, 17-20]. Meanwhile, in a country like South Africa, where nurses do not receive any formal nursing education, there is weak awareness [17]. Also, a higher rate was found among nurses in a trauma center, located in the United States, where there is academic education in forensic nursing [20].

The difference between the level of awareness indicated by the findings of the present study and various other studies can be attributed to the differences in educational programs on forensic nursing in the different countries. Currently, a course on forensic nursing is taught academically in some countries, including America [2] and Turkey [18], and there are forensic nurses in their emergency wards [1, 18, 21]. Since 1995, the forensic nursing course has been officially

recognized by the American Nursing Association, as a nursing expertise [5].

In the present study, forensic nursing was investigated in five areas namely: 1) forensic patient identification, 2) collection, 3) protection, 4) documentation of forensic evidence and 5) identification of the wound pattern. In this case, the results showed that most of the participants had good knowledge in the field of forensic patient identification. In other studies, forensic patient identification was proposed by women who experienced domestic violence and abuse of mentally disabled children. A study in Turkey showed that nurses had good knowledge of women who experienced domestic violence [22], and in another study, American nurses had a high score in identifying child abuse cases [23].

The results of this study showed that most subjects had a poor knowledge in the field of forensic evidence collection, but in the study of Chalishkan, only about one third of the health workers had poor knowledge in forensic evidence collection [21]. In the present study, most subjects had a poor awareness status, regarding the field of protection of forensic evidence. In a study conducted by Abdool et al. in emergency wards of the city of Durban, South Africa, most nurses had problems with the protection of forensic evidence and had not experienced any training in the protection chain, and the attempts made were in the form of trial and error [17]. In the study carried out by Chalishkan, most of the research participants were unaware of the methods of evidence protection after identifying forensic cases [21]. This is the

reason why a very important part of the forensic nursing practice is to ensure the proper protection of forensic evidence, because the evidence can be helpful in forensic investigations.

The knowledge status of most of the subjects in the area of documentation of forensic evidence has been weak. This finding is similar to the results of Chalishkan et al. [21]. It should be noted that, after the collection and protection of forensic evidence, its proper documentation in the court has the ability to be cited [5], and the collected evidence can be examined and cited in forensic courts only after proper documentation [5, 24]. Therefore, it seems that the lack of awareness in this case could have irreparable consequences.

The following are likely reasons why nurses lack awareness of forensic evidence: lack of academic education during undergraduate studies and re-education in-service courses on the necessity and importance of collection of forensic evidence, the protection chain, the severity of the consequences of the destruction of forensic evidence, lack of equipment for evidence collection [18], and the lack of written guidance on the hierarchy of protection, when dealing with forensic patients [11, 13].

The results of this study showed that the knowledge status of the majority of subjects regarding knowledge of the wound pattern was good, but few nurses were aware of the defensive wounds. Hence, it is necessary to emphasize the importance and necessity of training, so as to recognize the types of wound patterns.

The relationship between the knowledge of nurses about forensic nursing, and some personal and occupational characteristics revealed that there was a significant relationship between knowledge and sex of

nurses. The level of knowledge of men was more than women. This finding was different from the results of the study carried out by Jahanpour, entitled "study of the level of knowledge, attitude and practice of nurses working in the field of professional rules and regulations" [25].

According to the researcher, awareness about poor topics such as forensic nursing, where nurses had not completed any training courses or had no access to any study, and possibly, no reeducation courses have been proposed. The higher level of men's awareness compared to women could be due to their extensive studies on this issue or because of the difference in the personality of men and women in the choice of subject matter in daily conversations and the exchange of information with other colleagues.

In the present study, the awareness of forensic nursing increased with increasing level of education, but this statistical difference was insignificant, while in some studies, there was a significant difference between knowledge score and educational level [21, 26]. Since in Iran, forensic nursing and its related principles are not taught in nursing education, there is probably no significant statistical difference between the different educational levels.

In the present study, a small percentage of the participants stated that there are written instructions for caring for forensic patients in the hospital where they work. This finding is quite different from the results of some other studies [13, 20]. The lack of written instructions in our hospitals can be due to the lack of awareness of the necessity of presence of a forensic nurse for the patient, while emergency nurses are the first people to come in close contact with the forensic patient and injured.

In this study, most participants required education in the field of dealing with forensic patients. This result bears similarities to the findings of the study conducted by Cucu et al. [27]. Referring to the principles of the charter of the patient's rights, receiving optimal health service is the patient's right (Principle 1), health services should be based on the knowledge of the day (Principle 2), and excellence of the patient's benefits (Principle 5), special attention to vulnerable groups, including women, children, elderly, mental patients, prisoners, mentally handicapped patients (Principle 9) as part of forensic patients and provision of comprehensive services to patients, and attention to the psychological, social, spiritual, and emotional needs of the patient and his or her family (Principle 14) [28]. Therefore, based on the results of this study, the development of nurses' awareness of forensic nursing can lead to comprehensive and safe protection of the patient.

The present study was conducted using the population of nurses at the emergency wards of the educational centers of Guilan province. Due to the limited research community, the results of the study cannot be extended to the general nursing community. Although nursing curricula are the same throughout the country, different reeducation programs may be implemented in different centers and may have different outcomes. It is recommended to repeat this research in the emergency nursing community of different health centers. It is also suggested to conduct another research to determine the educational needs and the effects of different educational programs on the level of knowledge of emergency nursing.

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### **Conflict of interest**

No conflict of interest has been declared by the authors.

### **Author contributions**

All authors have agreed on the final version and meet at least one of the following criteria [recommended by the ICMJE

(<http://www.icmje.org/recommendations/>):

-Substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;

-Drafting the article or revising it critically for important intellectual content

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