

Research Paper

Knowledge and Attitude of Prehospital Emergency Workers Regarding Professional Legal Issues: A Cross-sectional Study



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ABSTRACT

Background: Emergency medical services, more commonly known as EMS, is the first level of health care. The first step to be protected against legal traps is to gain the due legal knowledge. The current study surveyed the knowledge and attitude of prehospital emergency workers regarding professional legal issues at Mazandaran University of Medical Sciences in Iran.

Materials and Methods: This is an analytical, cross-sectional study conducted in 2021. The study statistical community included all emergency medical staff working in headquarters and the personnel of 115 emergency service centers and the emergency staff of Mazandaran Province. The data were collected by a researcher-built questionnaire about the status of knowledge and attitude of emergency medical service staff considering legal issues. To study the relationship between the scores of knowledge, attitude, the Pearson correlation was used and to evaluate the factors influencing the score of knowledge, attitude, multiple linear regression was employed. SPSS software, version 22 was used for data analysis and significance level 0.05 was considered.

Results: The study consisted of 267 participants whose mean age was 33.31 ± 6.99 y. The majority of the participants were men (88%) and married (79.8%). The variables, including marital status, education, the type of employment, service base, presence in judicial communities, age and work experience revealed to be meaningfully related with the score of attitude. In terms of knowledge, 77.9% of the staff were at satisfactory level. Considering attitude, 55.4% were at good level.

Conclusion: The level of legal knowledge and attitude of prehospital emergency workers was at favorable level. However, it is recommended to organize training courses as clinical scenarios in order to increase and update the information on the criminal and penal codes relevant to the profession. Therefore, it is suggested to identify the legal challenges of pre-hospital emergency workers.

Keywords:

Knowledge, Attitude, Laws, Medical services, Prehospital emergency care

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Introduction

The knowledge of the rules and regulations governing a job and profession grants a person the opportunity to gain more power [1]. Since careers related to medical sciences are required to play a role in promoting the health of society, they must comply with the rules of compliance, responsibility, and accountability [2]. In the health team, the first encounter with new legal cases occurs with prehospital emergency staff [3]. Despite the efforts of physicians, nurses, and other employees of the healthcare sector, and in spite of extensive facilities, the level of dissatisfaction and complaints from patients has increased, leading to numerous legal cases against nurses and other medical staff [4]. Prehospital care is typically provided via the emergency medical system (EMS), which deals with a wide variety of illnesses, including communicable infections, non-communicable diseases, childbirth, and traumas. All of these conditions may be reported to the EMS in the acute phase or in their natural manifestations [5]. The EMS is part of the community and functions as an emergency response network. It has a moral obligation to respond to emergencies regardless of the patient's earning potential or social status. Care should not be unfairly confined to a particular group or class of people [6]. Today, because of patients' increasing knowledge of their rights to receive safe care, nurses face legal issues in this respect. It is evident that to provide safe care, nurses must be aware of professional rules and regulations to protect themselves and their patients [7]. The law always regulates relations and how to treat each other, and obeying the law is one of the inevitable subjects in all social relations [8]. Extensive professional rules outline the practice and boundaries of each profession; thus, familiarizing workers with the rules governing their profession can prevent faults and help maintain the quality of services [9]. The EMS is the first level of healthcare provided in emergency medical wards outside the hospital [10]. Its goal is to provide care, guarantee the immediate transfer of patients, and reduce mortality. Under unpredictable hazardous care settings, prehospital emergency workers often face conditions that expose them to extreme pressure for making decisions, particularly when confronted with ethical challenges [11]. Compared to other paramedical specialists, EMS workers have to deal with different decision-making conditions in terms of the medical care context. Suing for the faults of the medical team and the medical staff is one of the most critical stressors in the professional lives of doctors and health team personnel, and failure to pay attention to the factors behind its outbreak

has adverse effects on the quality of services provided by the health team and indirectly affects people's health [12]. When a member of the health team faces a legal complaint from a patient, they may distrust their beliefs and feel their social dignity is at risk, which induces anxiety, depression, and even illness [13]. Most studies regarding nursing care have reported deficiencies in this respect and recommended the need for effective training for nurses [14]. Having knowledge about a subject enhances attitudes toward that subject, and carrying out any responsibility properly demands a positive attitude toward that subject [15]. Therefore, the first step to avoid falling into legal traps is to have the necessary knowledge about the law. [7]. Asci et al. reported that 25% of EMS staff had no knowledge of how to protect and report legal evidence [16]. Legal aspects refer to how different issues pertain to the law [17]. One of the main reasons for the increase in complaints against medical staff is their lack of awareness of legal issues, professional regulations, and their responsibilities toward patients. With the advancement of medicine and the increasing complexity of ethical issues, familiarity with relevant laws seems essential. Since pre-hospital emergency personnel across the country face challenges such as medical errors, negligence, and patient complaints, acquiring specialized knowledge in this field is crucial. Familiarity with these regulations not only improves the quality of services but also protects patients' rights. Therefore, given the importance of this issue and the lack of research in this area, the present study aimed to examine the knowledge and attitudes of pre-hospital emergency personnel at [Mazandaran University of Medical Sciences](#) regarding professional laws.

Materials and Methods

This research is analytical and cross-sectional. The study's statistical community included all emergency medical staff working in urban, roadside, air, and coastal headquarters, as well as the personnel of 115 emergency service centers and the emergency staff of Mazandaran Province in Iran.

Pursuant to the study's goal, the sampling method was census. The study's inclusion criteria were having at least an associate degree, at least one year of work experience, and presenting informed consent to participate in the study. The exclusion criteria included reluctance to participate in the study and not fully completing the questionnaires.

The primary collected data included the demographic information form, age, gender, marital status, education, the record of being summoned to judicial authorities, the history of participation in training workshops, and professional information such as work experience, service base, position in the workplace, type of shift, and employment type.

To evaluate the level of knowledge, a 40-item researcher-built questionnaire was developed, with scoring as follows: 1 point for every correct answer and 0 point for every incorrect answer. The second part of the attitude questionnaire consisted of 10 items, with scoring done on a 5-point Likert scale ranging from absolutely agree (5 points) to absolutely disagree (1 point), which evaluated the attitude of EMS workers towards compliance with professional rules and regulations (supplementary file). Overall, higher scores in knowledges and attitude indicated a more favorable status.

The questionnaire's face validity and content validity were measured through experts' opinions (from 10 faculty members with extensive experience in EMS) and using CVI and CVR indices ($CVR > 0.6$, $CVI > 0.79$). In addition, the questionnaire's reliability was examined using Cronbach's α and test-re-test methods (with 30 EMS employees) after 2 weeks. The Cronbach α coefficient was estimated at 0.79 for knowledge and 0.7 for attitude.

In the stage of gathering information, after coordination, it is necessary for researchers to enter the relevant units, introduce the research units, state the purpose of the research, and obtain their consent to participate in the research. They obtained the signature of a written consent form.

To analyze the data, Mean $\pm$ SD, frequency, and percentage were used to describe quantitative and qualitative variables. The Kolmogorov-Smirnov test was employed to test for normality. When the normality test was verified, independent t-test, analysis of variance (ANOVA), multiple linear regression, and the Pearson correlation coefficient were employed for statistical inference. SPSS software, version 22 was used for analysis, and a significance level of 0.05 was taken into account.

Results

This study consisted of 267 participants, with a mean age of 33.31 ± 6.99 years, and a minimum and maximum age of 23 and 53 years, respectively. The majority of the participants were male (88%) and married (79.8%). Table 1 displays the other descriptive information. Additionally, the participants' mean work experience was

6.42 ± 8.96 years, with a minimum of 1 month and a maximum of 28 years.

The mean score of knowledge was 31.28 ± 5.38 , with a minimum and maximum score of 18 and 40. Finally, 22.1% of the staff had average knowledge (13.3-26.7), and 77.9% had satisfactory knowledge (26.8-40). Additionally, the mean score of attitudes was 34.79 ± 4.66 , with a minimum and maximum score of 21 and 46. In terms of attitude level, 44.6% were at the average level (16.7-33.3), and 55.4% were at the satisfactory level (33.4-50). Tables 2 and 3 depicts the relationship between the scores of knowledge and attitude, and the study variables were analyzed univariately. As the Table indicates, the variables of education, service base, presence in judicial authorities, age, and work experience duration had a meaningful association with the score of knowledge. Moreover, the variables of marital status, education, type of employment, service base, presence in judicial authorities, age, and work experience duration had a significant relationship with the score of attitudes. A significant correlation coefficient (0.35) was also reported between the scores of knowledges and attitude, and the increasing score of knowledge led to an increase in the attitude score.

Table 4 reports the factors affecting the knowledge score using linear regression. An increase of one year in age results in a knowledge score increase of 0.15. The mean knowledge score of individuals with a bachelor's degree and higher education was reported as 3.30 and 2.42 units more than that of participants with an associate degree. Contractual personnel had a lower knowledge score (2.34 units) than registered personnel. Additionally, nurses with rotating shifts had a lower knowledge score (1.48 units) than those with fixed shifts. The knowledge scores of staff and air-coastal workers were 3.62 and 4.94 units lower than those of urban base personnel, respectively. The knowledge of personnel with a record of attending judicial authorities received a lower score (2.26 units). Other variables revealed no significant relationship with the knowledge score.

Table 5 displays the factors influencing the attitude score using linear regression. The mean attitude score for participants with higher education was 2.99 units higher than that of those with an associate degree. The staff who had contractual, temporary, and planned employment received lower attitude scores (2.31, 4.27, and 2.44 units, respectively) than the registered workers. The mean attitude score of the staff with a history of attending judicial authorities was 2.32 units lower than that of others. Other variables revealed no significant relationship with the attitude score.

Table 1. Participants' descriptive information

Variables		No. (%)
Gender	Man	235(88)
	Woman	32(12)
Marital status	Married	213(79.8)
	Single	54(20.2)
Education	Associate degree	84(31.5)
	Bachelor's degree	147(55.1)
	Higher education	36(13.4)
Employment type	Registered	119(44.6)
	Temporary	65(24.3)
	Contractual	35(13.1)
	Corporate	23(8.6)
	Planned forces	25(9.4)
Shift type	Fixed	94(35.7)
	Rotating	169(64.3)
Insurance coverage	No	18(6.8)
	Yes	247(93.2)
Service base	Urban	109(41.1)
	Roadside	106(39.8)
	Staff	22(8.2)
	Emergency service center of 115	12(4.5)
	Other (air-costal)	17(6.4)
Attendance at judicial authorities	No	175(65.8)
	Yes	91(43.2)
Information collection source	Cyberspace	102(38.5)
	Article	29(10.9)
	Conference	33(12.5)
	The heads of departments	101(25.1)
Workshop participation	No	67(25.1)
	Yes	200(74.9)

Table 2. Relationship between knowledge and attitude and study variables

Qualitative Variables		Knowledge		Attitude	
		Mean±SD	P	Mean±SD	P
Gender	Man	31.48±5.35	0.095 ⁺	34.78±4.71	0.945 ⁺
	Woman	29.8±5.24		34.84±4.31	
Marital status	Married	31.59±5.28	0.066 ⁺	35.13±4.44	0.019 ⁺
	Single	30.08±5.54		33.46±5.26	
Education	Associate degree	28.92±5.31	<0.001 ⁺	33.18±4.45	<0.001 ⁺
	Bachelor's degree	32.53±4.76		35.08±4.64	
	Master's degree	32.53±4.76		37.36±3.8	
	Higher education	31.68±6.03		37.36±3.8	
Employment type	Registered	32.24±5.47	0.051 ⁺	36.5±4.34	<0.001 ⁺
	Temporary	30.83±5.47		33.68±5.29	
	Contractual	29.38±4.72		32.6±3.82	
	Corporate	30.35±4.75		33.35±2.87	
	Planned forces	31.36±5.23		33.92±4.15	
Shift type	Fixed	31.89±5.8	0.271 ⁺	35.33±4.8	0.159 ⁺
	Rotating	30.93±5.1		34.48±4.61	
Insurance coverage	No	31.72±6.51	0.741 ⁺	36.5±3.97	0.110 ⁺
	Yes	31.29±5.28		34.68±4.7	
Service base	Urban	31.99±5.2	<0.001 ⁺	35±4.41	0.004 ⁺
	Roadside	31.51±5.24		34.87±4.96	
	Staff	32.77±6.11		36.95±4.86	
	Medical service center of 115	27.42±2.64		31.42±3.03	
	Other (air-coastal)	26.47±3.89		32.65±3.3	
Attendance at judicial authorities	No	32.5±5.19	<0.001 ⁺	35.75±4.72	<0.001 ⁺
	Yes	29.01±4.91		33±3.95	
Information collection source	Cyberspace	30.17±5.66	0.050 ⁺	34.23±4.67	0.050 ⁺
	Article	31.21±6.41		33.41±5.38	
	Conference	32.06±5.26		34.61±5.57	
	The heads of departments	32.21±4.55		35.67±3.84	
Workshop participation	No	31.46±5.16	0.756 ⁺	34.6±4.5	0.696 ⁺
	Yes	31.22±5.36		34.86±7.2	

⁺The independent t-test, ⁺ANOVA.

Table 3. Relationship between knowledge and attitude and study variables

Quantitative Variables	r	P	r	P
Age	0.26	<0.001 ⁺⁺	0.26	<0.001 ⁺⁺
Work experience duration	0.22	<0.001 ⁺⁺	0.35	<0.001 ⁺⁺
Knowledge	-	-	0.54	<0.001 ⁺⁺

⁺⁺The Pearson correlation coefficient test.

Discussion

The current research was conducted to investigate the knowledge and attitude of prehospital emergency workers regarding professional rules and regulations at [Mazandaran University of Medical Sciences](#). The findings revealed that 77.9% of the workers had satisfactory knowledge and 55.4% had a good attitude level. No study was found addressing the knowledge and attitude of prehospital emergency workers. Araghian et al. reported that the knowledge and attitude of nurses were at a satisfactory level concerning legal issues in medical training centers of [Mazandaran University of Medical Sciences](#) [18]. However, in a study conducted in 2018 on the knowledge and attitude of nurses about legal aspects, only 49% of nurses had poor knowledge and

44% had moderate knowledge [19]. A positive attitude and knowledge about legal issues lead them to perform their duties within the framework of regulations, obeying which results in fewer consequences for technicians. In this respect, they can defend themselves by resorting to the law, but referring to the law or considering moral values in decision-making depends on the circumstances at the scene. Due to reasons such as pressure from relatives, ensuring security, and lack of support from the system, emergency service workers were sometimes forced to transfer patients and perform interventions that were beyond the confines of their responsibility. For instance, as a result of a patient's family request at a scene, some EMS personnel performed interventions and CPR despite signs of imminent death or in cases where the family knows that the patient doesn't need CPR [20]. Thus,

Table 4. Factors influencing score of knowledge by multiple linear regression

Variables		B	SE	P
Education	Age	0.15	0.06	0.007
	Associate degree	3.30	0.74	<0.001
	Bachelor's degree	2.42	1.07	0.025
	Higher education			
Employment type	Registered	-2.34	1.01	0.020
	Contractual			
Shift type	Fixed	-1.48	0.67	0.029
	Rotating			
Service base	Urban			
	Staff	-3.62	1.33	0.007
	Air-coastal	-4.94	1.49	0.001
Attendance at judicial authorities	No	-2.26	0.66	0.010
	Yes			

Table 5. Factors influencing score of attitude using multiple linear regression

Variables		B	SE	P
Education	Associate degree	2.99	0.91	0.001
	Higher than bachelor's degree			
Employment type	Registered	-2.31	0.66	0.001
	Temporary			
	Contractual			
	Planned forces			
Attendance at judicial authorities	No	-2.32	0.58	<0.001
	Yes			

strict adherence to the law can sometimes be contrary to the requests of patients, families, and even the personnel's inner feelings. To avoid the consequences of their decisions, nurses sometimes prefer to be law-abiding rather than listen to their inner voice [21].

According to the study findings, the variables of education, service base, attendance at judicial authorities, age, and work experience duration were significantly associated with the knowledge score. Additionally, the variables of marital status, education, type of employment, service base, presence in judicial authorities, age, and work experience length had a significant relationship with the attitude score. No study has been conducted in this regard on prehospital emergency workers for comparison, but in a study conducted by Malarvizhi et al., the nurses' knowledge level displayed a significant relationship ($P<0.05$) with the variables of age, education, work experience, and organizational position ($P>0.05$) [22].

In the study by Araghian et al., the nurses' age and clinical experience had a critical relationship with attitude, such that as age or work experience increased, the nurses' attitude score also increased [18]. The results of the research by Rashidi et al. indicate that the mean score of knowledge in subjects over 40 was significantly higher than that of those under 40. It is expected that with increasing age, the necessity and importance of knowledge about professional laws will become more evident for nurses, prompting them to make greater efforts to enhance their professional knowledge in this area. Furthermore, the mean score of knowledge in ICU nurses with work experience of 8 years or more was significantly higher than the mean score of knowledge of nurses with less than eight years of work experience [23].

The results of the study by Omid et al. indicate no significant relationship between age and work experience and knowledge about professional rules among midwives in the maternity ward [24]. In research performed by Maring et al. in the specialized ward of Obstetrics and Gynecology in India, a relationship was found between clinical history in the Obstetrics and Gynecology ward and the level of knowledge about professional rules [25].

The present study reported that the education of prehospital emergency workers had a tangible relationship with their knowledge and attitude. The mean score of knowledge for subjects with a bachelor's degree and higher education was 3.30 and 2.42 units higher than that of participants with an associate degree. The mean score of attitudes for subjects with higher education was 2.99 units higher than that of those with an associate degree. In the study by Ibrahim et al., nurses with a master's degree had more knowledge about professional rules than those with a diploma [26].

In this research, contractual personnel had a lower score of knowledge (2.34 units) than registered personnel. Those with temporary, contractual, and planned force employment received lower scores of attitudes (2.31, 4.27, and 2.44 units, respectively) than registered personnel. The study by Malarvishi et al. indicates that the knowledge level of nurses was significantly associated with variables, such as age, education, work experience, and organizational position ($P<0.05$) [22]. In addition, a meaningful correlation coefficient (0.35) was reported between the scores of knowledge and attitude of prehospital emergency workers, indicating that an increase in the score of knowledge results in a higher score of attitude. Also, nurses working in rotating shifts

had a lower score of knowledge (1.48 units) than those with fixed shifts, the results of which are consistent with the study of Sedghi Sabet et al. [8], who investigated the status of knowledge and adherence to legal aspects and its pertinent factors among nurses, which can result from greater interaction between coworkers and managers and a higher number of experienced nurses working in morning shifts.

The knowledge scores of the staff and air-coastal workers were 3.62 and 4.94 units lower than that of urban base workers, respectively. More studies are required in this area due to the lack of similar studies.

The knowledge score of personnel with a history of attending judicial authorities was lower (2.26 units). Other variables did not reveal any significant relationship with the score of knowledge. The mean score of attitudes for personnel who had a history of attending judicial authorities was 2.32 units lower than that of others. Other variables showed no significant relationship with the score of attitudes. It appears that nurses with lower knowledge are more involved in legal cases, which necessitates further studies to prove this claim.

The results of a qualitative study conducted on the challenges of prehospital emergency workers in 2023 showed that management challenges, professional problems, and cultural barriers are among the main concerns of EMS workers. Additionally, lack of organizational support and ambiguity in professional roles and duties in their performance are considered very important [27]. There is a need to create a comprehensive plan to reduce the legal challenges faced by pre-hospital emergency workers.

In the current study, data collection was done through self-reporting, which may affect data validity. It is recommended to conduct a qualitative study about the legal challenges of personnel working in emergency medical centers.

This study was conducted on emergency medical staff working in urban, roadside, and air-coastal headquarters, as well as the personnel of 115 emergency service centers and the emergency staff of Mazandaran Province. It is recommended to conduct further studies in other universities of medical sciences.

Conclusion

Regarding the satisfactory level of knowledge and attitude of pre-hospital emergency workers in the present

study, it is still necessary for them to increase their legal information. Since prehospital emergency personnel's knowledge of professional rules is a must to provide safe health care, the senior executives are advised to take the necessary intervention measures in order to raise their knowledge and hold re-training courses based on novel educational methods so that to have sufficient up-to-date knowledge about professional rules. It is also recommended that the cases of complaints sued against pre-hospital emergency workers in judicial courts be considered in the form of a scenario being deeply analyzed in terms of faults in permanent educational programmers. Conducting qualitative research can help understand the challenges faced by pre-hospital emergency workers regarding professional legal and penal laws. Regarding the satisfactory level of knowledge and attitude of prehospital emergency workers in the present study, it is still necessary for them to increase their legal information. Since prehospital emergency personnel's knowledge of professional rules is essential to providing safe health care, senior executives are advised to take the necessary intervention measures to enhance their knowledge and hold re-training courses based on novel educational methods to ensure they have sufficient up-to-date knowledge about professional rules. It is also recommended that the cases of complaints filed against pre-hospital emergency workers in judicial courts be considered in the form of scenarios that are deeply analyzed in terms of faults in permanent educational programs. Moreover, they are advised to conduct qualitative research to identify the challenges faced by prehospital emergency workers regarding professional legal and penal laws.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Ethics Committee of Mazandaran University of Medical Sciences, Sari, Iran (Code:IR.MAZUMS.REC.1400.127). The researcher was introduced to the head of pre-hospital emergency and research in Mazandaran Province and the confidentiality of the information was ensured. The researcher respected honesty and trust in data collection and use of sources.

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Authors' contributions

Study design: Tahereh Yaghoubi and Abdul Jalil Karagholi; Data collection and data analysis: Abolfazl Hossein Nataj, Abdul Jalil Karagholi and Fereshteh Araghian Mojarad; Preparing the manuscript: Tahereh Yaghoubi and Fereshteh Araghian Mojarad; Final approval: All authors.

Conflict of interest

The authors declared no conflict of interest.

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