

# Assessing the knowledge of Guilan Pre-Hospital emergency personnel (EMS) from safety principles

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## ABSTRACT

Occupational injuries are not limited to factories and industries, and there are other work environments that require special attention due to their properties, including these environments, hospitals and health centers and emergency services, which are due to the nature of the services provided. And, recently, the advancement of medical technology requires state of the art knowledge about occupational safety, which ignores it, so that people at high risk are at risk. According to the US Department of Labor, health care personnel are twice as likely to be injured, injured, and ill for professional careers, and the rate of occupational injuries is 16.8% versus 4.8% in the industry. Therefore, due to the importance of the function of the medical staff and especially the trainee's personnel in the emergency department, in order to maintain their health, this study was designed and conducted to evaluate the knowledge of Guilan pre-hospital emergency personnel (EMS) of occupational safety principles in 2018. In this research, the research population consists of all personnel of the emergency pre-hospital staff of Rasht city (EMS). In this study, data collection tools are a questionnaire and Data analysis is done using the SPSS 21 software. Findings of the research, especially Attraction and hospital and safety in electrical issues have been weak. Also, in response to the issues of carrying heavy duty emergency duties and preventing the handling of sharp materials, employees' information was at a desirable level, but most of them were not aware of the standard use of anti-proliferation tools.

**Keywords:** Pre-hospital emergency hospital, awareness, occupational safety.

## Introduction

The study of occupational health, the proportion of personnel and its relation with work and work environment <sup>[1, 2]</sup>. Initially, the scope of the job is limited to damage or occupational insurance that is related to work, working conditions, or work environment <sup>[3, 4]</sup>. Gradually, studies have shown that the three factors mentioned above are also factors contributing to inhumane illnesses, and therefore the scope of occupational health has expanded <sup>[5]</sup>. Occupational injuries are not limited to factories and industries, and there are other work environments that require special attention due to their properties, including these environments, hospitals and health centers and

emergencies, due to the nature of the services in which And recently seeking the advancement of medical technology, requires up-to-date knowledge about occupational safety principles, which ignores them, at very high risk workers <sup>[6-8]</sup>. In order to achieve the ideal conditions and to eliminate the problems in the workplace, which hospitals and emergency centers are also part of, we must first increase the knowledge and knowledge of the personnel about work damage <sup>[9]</sup>. Principles of occupational safety primarily reduce occupational hazards and occupational exposure to workplace safety in the workplace and prevent and minimize injuries and occupational hazards, and strive to improve the status of the staff <sup>[10, 11]</sup>.

In a 2010 study by Shelley et al., Almost all EMS emergency staff and staff members reported worrying about the risk of developing HIV and hepatitis. EMS personnel working in health care settings have not had enough knowledge and knowledge about the dangers of work, so to increase this level of awareness, it is advisable to regularly hold classes <sup>[12]</sup>. In the study of patricia Et al. In 2004, all health care workers were at risk of exposure to infectious diseases caused by work, and the most common cause of these diseases was transfusion of blood-

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borne pathogens following occupational exposure to blood or other liquids. The body was the main pathway for transmission of infectious diseases in this group [13]. In the study of Mohammadi et al. In 2006, in all cases L factors that can be harmful to people who have jobs are employed disease [14]. Research in Hosseini et al, in 1394 in Iran, is not a nurses' activity that is unique to the management of patients, but the necessity of providing the necessary safety in fulfilling tasks in line with his satisfaction has been considered. Educational needs assessment on safety principles to prevent occupational hazards also provides more opportunity to achieve this goal [15].

Cross-sectional findings show that hepatitis B is the most common occupational disease in health care workers. Since midwives are infected in 25% of normal delivery, body fluids or blood, the aim of this study was to determine and compare the level of knowledge and application of safety principles in preventing hepatitis B infection in Tehran in 2002. Has been. Therefore, in order to raise the level of knowledge and application of safety principles in midwives, conduct retraining courses and to promote the knowledge and application of safety principles in midwifery students, the establishment of a unit of training for prevention of occupational diseases and the application of safety principles is recommended [16].

The statistics show that the most commonly classified non-infectious diseases among health care workers are injuries to the musculoskeletal system that arise during the maintenance and dislocation of patients [12]. Lifting patients is one of the biggest problems for nurses, especially emergency staff, which can damage their muscles [14]. This problem is the most prevalent and most costly type of occupational injury in health care personnel, and the annual number of absenteeism is reported very high [6-8]. Estimates show that around 35 million people work in health systems around the world, of which about 18.5 million are doctors, nurses and emergency staff, the largest working group in this system. Are considered [9]. In our country, according to statistics obtained from the Nursing Directorate, by 2011, the total number of health care personnel in the country was 50052 [14].

According to the US Department of Labor, health care personnel double the cost of injuries, injuries and occupational diseases by twice as many as 16.8% of the workforce, compared with 4.8% in industry [4, 17]. Occupational injuries may seem to be slightly lower in health care personnel, but the cost of health care and treatment costs the same number of injured people averaging over millions of dollars each year [18], so protecting healthcare personnel against occupational hazards is a fact that pays special attention and makes appropriate decisions. Because health care personnel have reached the stage of recovery over time for years, national capital and educational facilities, and maintaining their health is a kind of preservation of national capita [6].

The level of awareness of health personnel about occupational hazards and, consequently, the extent to which safety principles are used to prevent occupational diseases by them. If the occupational safety and health organization says that through the

safe and safe operation of the occupation and the use of equipment Suitable personal protection can reduce the number of injuries and occupational diseases [19, 20]. But research into this goal in health care staff is a major part of their involvement in safety plans and occupational hazards prevention. Therefore, due to the importance of the performance of health care personnel and especially emergency personnel in their health, this study was designed to evaluate the knowledge of Guilan pre-hospital emergency personnel (EMS) of occupational safety principles in 1397.

## Methods

This cross-sectional descriptive study was conducted to investigate the work of emergency personnel in the pre-hospital of Rasht, which consists of 16 bases and contains 91 personnel. (Personnel include technicians, rescuers and drivers based on urban and road bases). In this study, the data collection tool was a questionnaire which has been validated and validated in Rezaei and others. The questionnaire consists of three parts: the first part contains personal characteristics, and the second part contains the job specifications, and the third part consists of 26 questions of knowledge consisting of 3 questions in three options (at all, to some extent, completely) and three questions of 5 options (very weak, Weak, moderate, good, very good) and five questions were presented as two options (yes, no), the rest were designed as four options, of which 4 options had only one correct answer option. The third part of the questionnaire, which consists of awareness-raising, has 26 questions, some of these four-choice questions [16], a number of two options, yes, no (five), a number of three options at all, up Some, completely (three), three questions were expressed as five options (very weak, weak, moderate, good, very good). In questions that have four options or no, the correct answer is a score and the wrong answer is zero, and in questions with the terms at all, to some extent, are completely zero, one, two, respectively, and in the five questions Very weak and poorly zero score, average of a score, good and very good two and two are considered. Therefore, according to the number of questions and scores, the scale of the score of the awareness-raising questionnaire was between 0-33.

After collecting data, the data entered the spss software version 21. The average score, standard deviation, minimum, maximum, and confidence interval of 95% were used to describe the mean score. Frequency and percentage of frequency and confidence interval of 95% were used to determine the awareness of the situation. In order to compare the knowledge score according to individual, social and occupational variables such as distribution of knowledge score, the normal distribution did not follow  $p < 0.05$  (based on the ks test). For comparison, Mann-Whitney and Corissial Wallis tests were used and the direction The correlation between the knowledge score and the quantitative variables studied (eg, age, work experience, etc.) and the number of shifts were used for

Spearman's correlation coefficient test. The significance level of the tests was considered with  $P < 0.05$ .

## Results:

In this study, 90 pre-hospital emergency staff (EMS) of Rasht city were studied in terms of awareness of safety principles. The mean and standard deviation of the age of the samples was  $8.9 \pm 37$  years, the smallest studied person was 25 years old and the largest person was 60 years old. Most of the samples were in the age group of 30 to 40 years old. In terms of gender, the majority of men were 95.6% and 82.2% (74 persons) were married. In terms of education, the majority (48.9) were graduated. In the study of the majority of the job status, the emergency medical technicians (48.9%), rescuers (27.8%) and nurses (12.2%) were respectively. In the study of the number of children, the mean and standard deviation of the number of children ( $1.03 \pm 0.84$ ) and the majority of samples (48.9%) had one child. In terms of overall work experience, the mean and standard deviation ( $10.89 \pm 5.88$ ) years were the lowest in 0.3 years (four months) and the highest was 27 years. In examining the work experience in the current post, the mean and standard deviation were equal to ( $7.5 \pm 5.4$ ). Most of the 115 employees had a job experience of 10 to 15 years old. Most of the samples studied were in the job shift program (92.2%), according to the samples, none of them had used cigarettes. In the study of the history of the disease, 35 people were ill, 15 (16.7%) were musculoskeletal, 7 (7.8%) had hypertension, one had skin disease, and 2 (2.2%) to other Diseases have been affected. In the survey of the number of staff shifts, the mean and standard deviation was equal to ( $12.1 \pm 4.1$ ) shift, the lowest shift was zero and the highest was 26 shifts. In assessing the level of awareness of EMS staff in relation to occupational safety

principles, shows that the range (0-33) of the score can be obtained based on the awareness-awareness scale and standard deviation of knowledge score in Personnel 115 in relation to Occupational safety principles are equal to ( $24.5 \pm 4.3$ ). The minimum score is 13, and the highest score is 32. Based on the knowledge level, poor knowledge status was 0%, average knowledge was 27.8%, good knowledge status was 72.2%, with a 95% confidence interval of generalization among the community (62.7% -80.7%). In this study, the score below 33.3% of the maximum earned score was considered as poor, between (66.63%) as medium awareness and high score of 66.6% as a good knowledge.

According to the information provided, the highest percentage of response in terms of the terms (excessive noise in the workplace and its damage, the effect of the color of the wall and the room on the lighting of the work environment and activities that need to sit on the chair, which is to reduce the complications of skeletal Muscle should be taken into account) and the lowest percentage of responses to phrases (conditions for ventilation in the operating room, health education in the field of collection, transportation, disposal and disposal of hospital waste and safety in electrical issues). Also, the highest percentage of responses to phrases (awareness of the correct ways of carrying and lifting the burden and the patient, whether you are fully aware of the instructions, first aid, and emergency tasks), how to prevent injuries caused by You have enough information on needles, sharps and wraps, as well as basic preventive and preventive measures), and the lowest percentage of responses to phrases (the safety instructions for dealing with unauthorized exposure, the use of hydraulic equipment for the relocation of patients, your awareness of Use of standard equipment).

**Table 1: Comparison of knowledge score in terms of individual and educational variables**

p*	Knowledge score				
	Median	Standard Deviation	Mean		
0.730	25.00	3.24	25.55	Less than 30 years	age category
	25.00	4.46	24.12	30 to 40 years	
	25.00	4.07	24.76	40 to 50 years	
	24.50	5.34	23.75	50 and above	
0.814	25.00	4.33	24.48	Man	Sex
	24.50	1.89	25.25	Female	
0.4	25.00	4.98	25.13	Single	marital status
	25.00	4.10	24.38	Married	
0.935	25.00	4.43	24.92	No child	Categorize the number of children
	24.00	3.98	24.36	One child	
	25.00	4.73	24.36	Two children and more	
0.483	25.00	4.44	24.54	Diploma	Education level
	27.00	5.51	24.68	Associate Degree	
	25.00	3.67	24.61	Bachelor	
	22.00	1.53	21.67	Masters degree and higher	

\*Mann Whitney U Test, Kruskal Wallise

According to the table above, the knowledge score according to age group, sex, marriage, number of children and educational

level did not show a significant difference ( $P < 0.05$ ).

**Table 2: Comparison of knowledge score in terms of personnel variables**

P*	Knowledge score				
	Median	Standard Deviation	Mean		
0.117	24.00	4.36	23.12	Rescuer	job title
	26.00	3.44	26.27	Nurse	
	24.50	4.37	24.41	Emergency technician	
	31.00	.00	31.00	Hey	
	27.00	1.53	26.67	Surgical Technologist	
	24.00	2.31	25.33	Dispatch Expert	
	23.50	3.54	23.50	Anesthesiologist	
0.658	27.00	4.39	25.33	Musculoskeletal	History of disease
	23.00	5.79	22.14	blood pressure	
	23.00	.	23.00	Skin	
	25.00	5.66	25.00	Others	
	25.00	4.06	24.58	No history of disease	
0.661	24.00	2.71	24.17	Working day	Work schedule
	25.00	4.35	24.54	work shift	
0.659	25.00	3.46	24.66	Under 5 years old	Category work history in the current post
	27.00	5.40	25.06	5 to 10 years	
	24.50	4.42	24.13	10 years and older	
0.681	25.00	3.55	25.17	Under 5 years old	General work record categories
	26.00	4.89	24.76	5 to 10 years	
	24.00	4.05	23.84	10 to 15 years	
	25.00	4.66	24.74	15 years and more	

\*Mann Whitney U Test, Kruskal Wallise

There was no significant difference in the knowledge base based on job information, history of disease, work program, work history and general work history ( $P < 0.05$ ).

**Table 3: Correlation of knowledge score with quantitative variables studied**

Knowledge score		Correlation	
-0.149	The correlation coefficient	Age	Spearman correlation coefficient
0.161	Significant level (P)		
90	Number		
-0.077	The correlation coefficient	number of children	
0.473	Significant level (P)		
90	Number		
-0.021	The correlation coefficient	Work experience in the current post	
0.841	Significant level (P)		
90	Number		
-0.063	The correlation coefficient	Your general career history	
0.554	Significant level (P)		
90	Number		
0.042	The correlation coefficient	Number of shifts	
0.697	Significant level (P)		
90	Number		

According to the above table and Spearman correlation coefficient, there was no significant correlation between age, number of subjects, work history in current post, general work history and number ( $P > 0.05$ ).

## Discussion

Today, attention is paid to the burnout of health workers. Given the fact that health care professionals are closely related

to the health and safety of individuals, their problems constitute an important part of the government's concern and the health care community.

Because in most emergency situations, emergency staff is the first person to attend, it is very important to identify the risk of burnout. The services of these staff include telephone access, pre-hospital care provision, definitive care in the hospital, medical response to natural disasters, planning and provision of medical services in community gatherings and the transfer of patients between health centers. Studies have shown that the occupational stress of these services is remarkable because these employees are often the first to be involved in a variety of emergency situations from heavy vehicle accidents and natural disasters to minor injuries and illnesses.

Professionals of any position or type of organization that they are working in are expected to perform their jobs in difficult, unpredictable and variable conditions. They may have long hours of work with limited information, assistance, supervision, and resources to carry out their mission. During their work, they may be exposed to dangers such as infectious organisms, emotional stress, fatigue, physical violence, occupational injuries, accidents, disciplinary actions, and liability [21]. The mental and physical stress of the staff is important when it comes to provoking patients, relieving the anxious injuries, and loving ones concerned and ensuring that proper care is maintained when arriving at an accident site. Occupational burnout is one of the most important inevitable consequences of occupational stress and will continue to persist as long as this stress is not eliminated [19, 22]. It has been shown that the risk of burnout among health care workers is high [23]. Obviously, EMS's emergency services staff are no exception.

Also, the damage caused by exposure to sharp and wound devices as well as blood and secretions of the patient's body is one of the most important occupational risks for health care workers who put them at risk of exposure to blood-borne viruses and AIDS [24]. Occupational exposure to hepatitis C, B, especially contact with blood-borne pathogens, is defined by each method of percutaneous injury (cuts with the tea-winning body), as well as mucous membranes (such as the eyes) and non-healthy skin [25]. Extremely important factors affecting occupational exposure can be high stress, high workload, lack of safe medical equipment and a high number of patients compared to nursing staff [26]. Emergency department employees are at higher risk of occupational injuries than other departments. The speed and extreme work of the emergency department, the fatigue and high tension of the staff, and the handling of the blood and body secretion of emergency patients are among the reasons why it increases the risk of occupational exposure in the employees of these sectors [26]. Although standard precautions have been introduced since 1987 [27], and despite evidence of increased risk of exposure to blood and body fluids due to non-use of precautionary safeguards, and the reduction of these risks through compliance with these standards it is abundant [28]. In developing countries, due to limited protective equipment, a shortage of staff and more

congestion in emergency departments, and the lack of sufficient training for employees to protect themselves during high-risk medical operations, is much higher [29]. Studies in Iran have shown that the standard precautions are very low and at an unsatisfactory level. Also, in studies aimed at determining the level of awareness, attitude and practice of standard precautions among health care staff, although their level of awareness and attitude was acceptable, but the practice of standard precautions was very low and disappointing [20]. In other similar studies, there has always been a weak correlation between knowledge and attitudes on the one hand and action on the other hand, which could be due to lack of motivation, lack of adequate and effective training, and lack of equipment. Related studies have shown that failure to comply with these measures is related to lack of awareness, time constraints and the risk of a patient's life in emergency situations and amnesia [30, 31].

Guilan Pre-Hospital Emergency Personnel (EMS), according to demographic variables, was the majority of men in occupational safety in the year 1397, with an average age of 30 to 40 years old, the majority of them had a bachelor's degree and were married, and the status of a medical emergency technician (48.9%), Rescuers (27.8%) and nurses (12.2%), and half of the samples had 1 child who had a work experience of 10 to 15 years old. None had any smoking, and none of them responded poorly to the questionnaire questions. 27.8% had moderate knowledge and 72.2% had good knowledge. In the study of oliviera et al. Regarding the awareness of the members of the pre-hospital omental members of safety issues, the level of awareness was well above 70%, but the level of practice was lower than this ratio according to the knowledge principles [13, 31, 32].

There was no significant relationship between the level of knowledge of personnel and the safety principles in terms of the variables mentioned above (all P-value > 0.05). In a study conducted by Rabie et al. In Rasht to examine the knowledge and attitudes of general dentists in Rasht about AIDS and hepatitis, there was a significant difference between men and women in terms of knowledge level, which was higher in women, while of course it is also important to note that in the current study, the majority of male staffers were not, therefore, the correct criterion of gender disparity [33]. Also, in a study by Nekoveh Moghadam et al. In evaluating the prevalence of occupational hazards and the factors affecting it in the nurses of non-teaching hospitals of Sirjan and Baft, there was a relationship between sex, education, work experience and hospital, with the frequency of physical complications among staff and between frequency Knowledge about the type of employment was found to be meaningful. However, in the present study, there was no significant difference in the level of knowledge based on post, work experience, sex, education, and history of disease in the present study [34]. The results of this study in relation to the relationship between age-awareness and the study of Rostami and colleagues in the study of the frequency of hazardous health behaviors in the medical emergencies of educational hospitals of Isfahan University of

Medical Sciences in which the age-related study was associated with increased risk behaviors and higher education Relative to the low risk behavior. In general, according to the results of the research, the relative frequency of hazardous health behaviors due to non-observance of standard precautions when dealing with medical emergencies in educational hospitals of Isfahan University of Medical Sciences is unacceptably high. The availability of protective facilities and awareness-raising programs will help to meet these precautions<sup>[31]</sup>.

In the study of Lalgani et al in 2017, the pre-hospital emergency department staff's knowledge of crisis management was 2.2% too high, 10.2% high, 48.4% moderate and 39.2% low. Statistical analysis revealed that there was a direct relationship between education level, participation in crisis maneuver and membership in crisis committee with knowledge of people from crisis management. The results of the study indicate that the pre-hospital emergency department staff has a relatively low knowledge of crisis management and its related factors, which requires training and exercises to raise awareness in order to prepare for and deal with the risks<sup>[35]</sup>.

## Conclusion

According to the findings of the research, the knowledge score according to age group, gender, marital status, number of children and educational level did not have a significant difference. The majority of people in the community have a good level of knowledge about job security. Awareness of occupational protection against workplace noise and excessive sitting activities that may result in musculoskeletal complications are better than others, and most people are most familiar with environmental health knowledge such as air conditioning principles and issues. Waste-related waste, in particular hospital waste and safety, has weakened in electrical issues. Also, in response to heavy load handling and emergency tasks and to prevent the handling of sharp information materials, the staff was at the optimal level, but most of them did not have the knowledge about the use of standard equipment and exposure to unauthorized exposure.

Application of the findings: The level of awareness of health personnel about occupational hazards and, consequently, the extent to which safety principles are used to prevent occupational diseases by them, should be considered, as the occupational safety and health organization says, through safe and safe operation. Occupation and the use of appropriate personal protective equipment can reduce the number of injuries and occupational diseases<sup>[15, 19, 30, 33, 35]</sup>. But research into this goal in health care staff is a major part of their involvement in safety plans and occupational hazards prevention. Therefore, due to the importance of the performance of health personnel and especially emergency staff in their health, this study was designed and conducted to assess the knowledge of Gilan pre-hospital emergency personnel (EMS) from occupational safety principles in 1397.

The results indicate that the majority of personnel in the city of Rasht are well aware of job security. However, inappropriate information from individuals regarding safety issues from exposure to electrical hazards, environmental health<sup>[36, 37]</sup>, and hazardous waste disposal methods has also been obtained. Particularly, by presenting the results of the study to Guilan University of Medical Sciences and other relevant organizations, to benefit from the planning for interventions to influence the awareness of this group.

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