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# Investigation of drug release systems for application Probiotic Delivery

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## ABSTRACT

In this paper, the impact of health and safety training on the performance of emergency medical personnel (Emergency 115) has been investigated. In this regard, a descriptive-analytical research method has been used. The statistical population includes all the personnel of the emergency center 115 of the 5th district of Tehran, who were working in different departments such as the central headquarters, urban and road emergency medical centers in 1401 and at the time of conducting this study. The number of people eligible to enter the study was 95. Also, a questionnaire was used to collect data. Validity of the questionnaire was evaluated using the opinions of professors and experts in the field of medical emergency and safety and health, and their reliability was evaluated using Cronbach's alpha method. The results were analyzed using SPSS software. The results show that there is a positive and significant relationship between health and safety training and the performance of emergency medical personnel.

## **Introduction**

One of the criteria for the development of societies is to provide necessary health care to all people. One of the most important pillars of medical care is emergency services, especially the pre-hospital type, which is provided by emergency 115. These cares start from the patient's bedside and end in the emergency department of the hospital (Lawn et al, 2020). These cares are very sensitive and their incorrect performance can even lead to the death of patients. The performance of 115 emergency personnel in providing care outside the hospital relies on critical decisions in unknown conditions and complex technologies. In this case, if a mistake is made, the results will endanger the patient's life (Sahebi et al, 2019).

115 emergency services are provided in a unique medical environment that requires providing care in situations that can be uncontrollable and dangerous. Many of these adverse events, which are expensive for the patient and the emergency medical center, are avoidable. A very important part of quality in health care is safety, which is a priority to ensure and improve the quality of care. Teaching points related to improving safety and health and evaluating them is essential and important (Lambert et al, 2020).

Safety and health training in the workplace can be evaluated in different ways and necessary measures can be taken to improve the conditions. In fact, training on health and safety issues can affect the performance of emergency medical personnel (Brown et al, 2021). Therefore, investigating and evaluating the effect of health and safety training on the performance of emergency medical personnel is a necessary and important matter that will be addressed in this research.

### **1. Literature review**

A study was conducted to investigate the effect of health and safety training on the performance of emergency medical personnel. In this study, 4 out of 10 respondents reported errors in health and safety training. With the participation of the employees, the incident reports are actively and effectively subjected to causal analysis and the results are used to fix the issues and improve the relevant processes. In the meantime, clinical reasoning and teaching points related to increasing patient safety during transportation is known as the most important issue related to patient safety, which improvement means improving the performance of 115 emergency personnel (Musso et al, 2019).

Also, a study has been presented to improve the performance of emergency medical personnel. The results of this study show that based on the principles of medical ethics, usefulness and non-emergency, the emergency organization is obliged to pay attention to safety as a principle in order to increase profits and reduce possible losses and risks (Machitidze and Goshadze, 2023).

Methods of increasing safety have been investigated. This is where the important role of safety is determined. The results have shown that providing health and safety training is very effective in order to make the healthcare and health care process provided by the emergency medical center safer and reduce errors and costs (Strang et al, 2019).

### **2. Research Methodology**

In this study, the research method is descriptive-analytical. The statistical population includes all the personnel of the emergency center 115 of the 5th district of Tehran, who were working in different departments such as the central headquarters, urban and road emergency medical centers in 1401 and at the time of conducting this study. The number of people eligible to enter the study was 95. The studied subjects include all the employees who were involved in the transportation of

patients and injured in planned, contractual, contractual and official employment situations in the headquarters and operational departments and in urban and road bases. Emergency 115 employees were present in the bases in the form of 2-person teams in three work shifts. A questionnaire was used to collect data and information. 38 people completed the questionnaires.

The questionnaire includes two parts of demographic information with 10 questions and 27 main questions. Individual characteristics include questions to evaluate some variables such as age, work experience, education, position, place of service, etc. The questionnaire related to the performance of the medical emergency center personnel also includes questions about the speed of the personnel's actions, improving security, reducing risks and improving the health status of patients or injured persons.

To check the validity of the questionnaire, the questionnaire was presented to 8 professors and experts in the field of medical emergencies and health and safety, and their corrective comments were applied. Also, reliability measurement has been done using Cronbach's alpha method. The results were analyzed using SPSS software. In this study, a 5-point Likert scale was used and scores were given from 1 for very high to 5 for very low.

Descriptive statistics and frequency and average distribution indices were used to report the demographic information of the studied subjects and the relationship between the training of health and safety issues and the performance of the emergency medical center staff. Also, to determine the relationship between the desired variables and safety, Pearson's and Spearman's correlation coefficient tests as well as Chi-square test were used.

### **3. Teaching safety and health tips to emergency personnel 115**

In this section, some of the most important health and safety training points for emergency personnel 115 are introduced:

- 1) Full readiness to perform the mission in every hour of the work shift
- 2) Increasing the speed of action in sending to the mission
- 3) wearing the uniform approved by the emergency department during all working hours (black pants-black shoes-white shirt with arm logo and chest logo and maintaining a neat and tidy appearance)
- 4) Strictly complying with the duties while carrying out the mission and dealing scientifically with the patient and the disease
  
- 5) Detailed examination of patients, control of vital signs such as blood pressure, pulse, breathing, etc.
- 6) Avoiding any treatment without coordination with the doctor of the center
- 7) Compliance with all the trained standards related to how to carry the patient and manage the patients until they reach the treatment center
- 8) Continuous and effective presence at the patient's bedside in the back cabin of the ambulance (while transporting the patient)
- 9) Replacement of central and portable oxygen as soon as it runs out every hour of the day and night
- 10) Checking ambulance water and oil every morning in driverless ambulances

- 11) Registration of cases of shortage of medical and non-medical ambulance equipment and technical defects of the equipment
- 12) Ensuring the health and safety of the equipment and their operation before starting work (laryngoscope-suction-oxygen manometer-stretcher-scope-chair carrying-Ambobag-Ambo connection-Ambo mask, etc.).
- 13) Compliance with the principles of hygiene and cleaning of the base and ambulance, especially during non-office hours and holidays
- 14) Full compliance with traffic rules, especially while returning from the mission.

#### 4. Results

According to the results of this study, which was conducted on completed questionnaires; The average age of the samples was 34.3 years, the lowest age was 21 and the highest was 49 years, and the age group of 27-32 years had the highest frequency. The average work experience was 8.5 years. Table (1) shows the frequency of quantitative variables in 115 emergency personnel in district 5 of Tehran.

*Table (1): frequency of quantitative variables in 115 emergency personnel in district 5 of Tehran*

Variables	Minimum	Maximum	Average	Standard deviation
Age	21	49	34.3	0.6
Work experience	4	15	8.5	0.9
Number of children	0	3	0.5	0.3
Distance to work	0.5	10	5.4	0.3

The frequency of qualitative data of the study among emergency personnel 115 in district 5 of Tehran is shown in table (2).

*Table (2): The frequency of qualitative data of the study among 115 emergency personnel in the 5th district of Tehran*

Demographic variables	Details of demographic variables	Number	Percent	Average	Standard deviation
Education	High school	17	44.7	-	-
	Diploma	7	18.4	3.2	0.14
	Graduate and higher	14	36.9	2.9	0.21
Position	Operational	23	60.5	3.0	0.17
	In charge of the base	4	10.5	3.2	0.24
	Deputy manager	8	21.1	2.8	0.15
	Headquarters	3	7.9	3.3	0.31
Service location	Urban base	21	55.3	3.3	0.26
	Road base	7	18.4	3.1	0.09
	Headquarters	10	26.3	3.2	0.17

Employment status	Plan	9	23.7	2.9	0.28
	Contractual	13	34.2	3.1	0.11
	Treaty	7	18.4	3.2	0.18
	Official	9	23.7	3.3	0.22
Marital status	Single	29	76.3	2.8	0.21
	Married	9	23.7	2.9	0.21
History of errors leading to harm to the patient	as a history	25	65.8	-	-
	Unprecedented	13	34.2	-	-
History of accidents during the mission	Has a history	4	10.5	3.2	0.12
	Unprecedented	34	89.5	3.1	0.15

The results related to the axes of performance evaluation in emergency medical workers are shown in table (3).

According to the results of the test, among the six indicators of personnel performance, the index of cooperation in the organization was significant and had a low mean (3.6) and standard deviation (0.8). Safety in the organization was significant and had a low level with mean (3.5) and standard deviation (0.83). The understanding of management with an average of 3.3 and standard deviation (0.87) was meaningful and had a low level. Job status with an average of 3.1 and standard deviation (0.89) was at a low level and there was a significant relationship. No significant relationship was seen in job satisfaction criteria with an average of 2.9 and standard deviation (0.92) and stress recognition with an average of 2.9 and standard deviation (0.95).

*Table (3): Keys of performance evaluation in emergency medical workers*

Performance axes	Rank	Average	Meaningful	Standard deviation
Perception management	1	3.6	0.00	0.8
Job Satisfaction	2	3.5	0.00	0.83
Cooperation	3	3.3	0.017	0.87
safety	4	3.1	0.017	0.89
Employment status	5	2.9	0.06	0.92
Stress detection	6	2.9	0.07	0.95

## 5. Discussion

The results of the study show that the safety attitude of the personnel of Emergency Department 115 in District 5 of Tehran is at a low level. In this study, a significant relationship was found between the training of safety tips and the performance of 115 emergency workers. The safety attitude of emergency medical staff has been investigated in the same axes as the current study, and the staff's understanding of patient safety is at a low level. Less than half of the personnel had a positive understanding of the cooperation atmosphere, job status and recognition of stress in the workplace. Safety, cooperation, management understanding, job satisfaction and job status have significant differences (Kang et al, 2021).

The self-reporting of the 115 emergency department staff has been done in six areas similar to this research. In this research, using a developed questionnaire, the axes of safety culture, collective work culture, employees' perceptions of management, job conditions, identification of stress and job satisfaction in health management, emergency medical technicians, emergency service safety Medical events, injuries reported by respondents, medical errors and side effects, and safety-compromised behaviors were measured (Mohammadi, 2020).

The great difference in the self-reporting of emergency personnel 115 can be due to the mentality or inappropriate experience of the health and treatment staff in the culture of self-reporting of errors and the way managers deal with error reporting. Also, training employees on safety issues regarding team work can improve the performance of personnel.

## **6. Conclusion**

In this paper, the impact of health and safety training on the performance of emergency medical personnel has been investigated. In this regard, a descriptive-analytical research method has been used. The statistical population includes all the personnel of the emergency center 115 of the 5th district of Tehran, who were working in different departments such as the central headquarters, urban and road emergency medical centers in 1401 and at the time of conducting this study. Also, a questionnaire was used to collect data. Validity of the questionnaire was evaluated using the opinions of professors and experts in the field of

medical emergency and safety and health, and their reliability was evaluated using Cronbach's alpha method. The results were analyzed using SPSS software. The results show that there is a positive and significant relationship between health and safety training and the performance of emergency medical personnel.

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