Journal of Holistic Nursing and Midwifery

April 2023, Volume 33, Number 2

Original Paper

Violence Against Pre-Hospital Emergency Medical Service Personnel in Guilan Province, Iran: A Cross-sectional Study

Payman Asadi[1], Mohsen Esmaeili[2], Nazanin Noori Roodsari[3], Elham Gheysvandi[4], Enayatollah Homaie Rad[5*]

1. Associate Professor of Emergency Medicine, Guilan Road Trauma Research Center, Guilan University of Medical Sciences, Rasht, Iran.
2. Physicion, Students Research Committee, Guilan Road Trauma Research Center, Guilan University of Medical Sciences, Rasht, Iran.
3. Assistant Professor, Clinical Research Development Unit of Poursina Hospital, Department of Emergency Medicine, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran.
4. Assistant Professor of Health Education and Promotion, Molecular Medicine Research Center, Khomein University of Medical Sciences, Khomein, Iran.
5. Assistant Professor of Health Economics, Social Determinants of Health Research Center (SDHRC), Guilan University of Medical Sciences, Rasht, Iran.

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Citation Asadi P, Esmaeili M, Noori Roodsari N, Gheysvandi E, Homaie Rad E. Violence Against Pre-Hospital Emergency Medical Service Personnel in Guilan Province, Iran: A Cross-sectional Study. J Holist Nurs Midwifery. 2023; 33(2):87-94. https://doi.org/10.32598/jhnm.33.2.2277

Running Title Violence Against Pre-Hospital Emergency Medical Service Personnel

https://doi.org/10.32598/jhnm.33.2.2277

Article info:
Received: 26/6/2021
Accepted: 28/8/2022
Available Online: 01/04/2023

Keywords:
Violence, Emergency medical service, Prehospital emergency care

ABSTRACT

Introduction: The first contact between emergency patients and medical services is carried out by emergency medical services (EMS). EMS personnel must deliver high-quality and high-speed services. This condition might cause high levels of stress and violence in the patients and their companions.

Objective: In this research, we aimed to study the violent acts against pre-hospital EMS personnel in Guilan Province, Iran.

Materials and Methods: This research was a cross-sectional study. A total of 110 EMS personnel working in Guilan Province in the north of Iran were selected using a random selection method between March and June 2020. A researcher-made questionnaire was used to collect the study data from the EMS personnel. The results were analyzed by the Poisson regression.

Results: A total of 144 questionnaires were sent to the personnel, of these 110 were completed. The mean age of the participants was 34.89±3.65 years and all of them were male. About 61.8% of the samples experienced some kind of physical or verbal violence in the past 3 months. All cases of physical violence were perpetrated by men and half of them were done by close relatives of the patients. A significant relationship was found between the marital status of the EMS personnel and the number of physical violence they experienced (β=2.246, 95% CI; 0.058 to 4.446, P=0.032). In addition, the number of experienced physical violence was higher in those staff who worked at road EMS services compare to city or town EMS services (β=1.519,95% CI; 0.092 to 2.934, P=0.001). According to the EMS personnel, most of the attacks were answered calmly. The personnel revealed that the most important reason for not reporting physical violence was the futility of reports and the lack of guidelines for reporting violence.

Conclusion: The findings of this study confirm that pre-hospital EMS are at high risk of workplace violence in Guilan Province which highly affects their health and well-being. Training EMS personnel and strengthening their communication skills are important factors in reducing violence against emergency services technicians.

*** Corresponding Author:**
Enayatollah Homaie Rad, Assistant Professor.
Address: *Social Determinants of Health Research Center (SDHRC), Guilan University of Medical Sciences, Rasht, Iran.*
Tel: *+98 (912) 0558446*
E-mail: *homaierad@gmail.com*

Highlights

- Pre-hospital care emergency medical services are one of the most dangerous jobs in the world.
- Emergency medical services personnel are faced with a lot of work injuries.
- Work-related violence is one of the common risk factors for injuries in emergency medical services personnel.

Plain Language Summary

The first contact between the emergency patients and the medical services is carried out by emergency medical services (EMS). EMS personnel must deliver high-quality and high-speed services. This condition might cause high levels of stress and violence in patients and their companions. In this study, we aimed to explore the frequency and effective underlying factors of violence against EMS personnel. Results of this study showed that 61.8% of the EMS staff experienced some kind of physical or verbal violence in the past 3 months. A significant relationship was found between the marital status of the EMS personnel and the number of physical violence they experienced. In addition, the number of physical violence was higher among those staff who worked at road EMS services (compared to city or town EMS services).

Introduction

In the last decade, a few countries have developed toward industrialization. One of the consequences of development is a dramatic increase in the number of work-related accidents [1]. Iran is not an exception to this consequence too. The reports of the Iranian Legal Medicine Organization show that the number of work-related deaths increased by 17.3% each year till 2014 and then it decreased till 2017, although the actual number of work-related injuries has increased during this period. Pre-hospital care emergency medical services (EMS) are one of the most dangerous works in the world [2].

Due to the nature of their work, EMS personnel are faced with a lot of work injuries. Work-related violence is one of the common risk factors among EMS personnel [3, 4]. The first contact between the patients and the medical services is carried out by EMS. EMS personnel are faced with the stressful condition and should deliver high-speed high-quality services [5]. In many cases and because of the stressful condition, patients and their companions deny receiving enough services and may blame and insult the EMS personnel for that [5]. Work-related violence contains all types of abuse, threat, and misbehaviors that occur in workplaces or work conditions [6]. According to the World Health Organization definition, violence can be divided into physical, mental, sexual, and racial violence [7]. Work-related violence is a global concern and has increased during the last decade [8]. Pre-hospital care EMS is one of the most important parts of health services delivery and has a vital role in saving people's life. Events like violence have long-term effects on EMS personnel and can lead to low attitudes, loss of self-confidence, burnout, job closures, disabilities and changes in occupational status, anxiety, depression, frustration, intermittent headaches, and even stomach problems [9, 10]. EMS personnel are often the first line of treatment for emergency patients with emergency care. This contact can occur anywhere. EMS personnel are called to deal with very sick people, victims of accidents, physical abuse, and sometimes alcoholics or abused people. This group of medical staff will deal with many different patients with various conditions [11]. To have a higher quality EMS, effective communication between the EMS personnel, the patient, and their companions is necessary. However, due to the particular nature of emergency care, this communication might change to some degree of violence [12]. Many studies have been conducted about workplace violence in Guilan Province, Iran [13-15]. However, there is a lack of information about the underlying factors from the perspective of pre-hospital EMS personnel [15-17]. In this study, we aimed to investigate violence against pre-hospital EMS personnel in Guilan Province.

Materials and Methods

This research was a cross-sectional study. A total of 110 EMS personnel working in Guilan Province (144 questionnaires were sent and 110 ones accepted to answer the questions completely), consisting of technicians, drivers, and rescuers in both urban and road EMS

offices were randomly selected. The sample size was calculated using the sample size formula of estimation of a proportion. Based on a similar study [18], workplace violence against EMS personnel was 36.39%. By considering the estimation error of 0.1, the minimum sample size needed was 89 which increased to 110. The inclusion criterion was: working in pre-hospital emergency units under the supervision of Guilan University of Medical Sciences. The exclusion criterion was working on at internship plan. Those staff who work in administrative parts of EMS did not enter the sampling. First, a full list of EMS personnel was prepared from the database, then the samples were randomly selected (simple random sampling) and interviews were conducted. Personnel who work in Guilan Province EMS services were added to the study and those EMS personnel who transferred to other parts of medical services and trainees and students were excluded from the study.

A researcher-made questionnaire was used as a data collection tool in this study. The questionnaire had two parts: personal and violent information. The first part contains personal details such as sex, age, marital status, education level, urban or road services EMS, and the average number of shifts per month. In the second part, violent information, such as the number of violent acts in the past three months before the interview, cause of violence, time of violence, whether the patient was conscious or not, type of violence, gender of the attacker, being reported to the office or not, and the cause of not reporting. Answers were designed in "yes, no" format. To confirm the content validity of the questions, the questionnaires were reviewed and commented on by 5 EMS and health professionals. The questionnaire was in checklist type, so it did not need reliability.

To gather data, two expert interviewers went to the EMS sites and conduct questionnaire-based interviews between March and June 2020. To analyze the study, two different types of models were used.

The first type is using demographic factors. At this level, individual factors related to the number of pre-hospital violence were determined. For this purpose, the relationship between age, sex, level of education, type of work, the type of base (road or urban), the number of average shifts per month as independent variables, and the amount of violence in one month (as dependent variable) were estimated.

The second type was an occupational model. At this level, observations of each EMS personnel about the violence and their characteristics were reported. In this part, characteristics of violence, time, and the incidence of violence in terms of being occurred day or night, whether the patient was conscious or not, the gender of the agent of violence, the predisposing factor of violence (delays in the provision of services, lack of attention to medical emergencies, stress and worries, etc.) were reported.

Data were analyzed using descriptive statistics like mean, frequency, and standard deviations, and to estimate the regression model, the Poisson regression was used because of having count data. All analyses were done using Stata software version 13.1.

Results

A total of 110 EMS personnel participated in this study. All personnel were male, and their mean age was 34.89±3.65 years. About 58.2% had a bachelor's degree and 67.3% were married. Other descriptive characteristics are presented in Table 1.

Table 2 presents the characteristics of physical and verbal violence. About 61.8% of the personnel experienced at least one physical or verbal violence in the past 3 months. In addition, all cases of physical violence were perpetrated by men. The results of the study from the point of view of the attacker showed that the majority of physical violence was done by the patient's close relatives (51.27%).

In addition, 59% of the attacks were responded calmly. About 28.2% also responded physically to the violence. Also, 10.3% of personnel reported the event to their superiors. The personnel revealed that the most important reason for not reporting physical violence was the futility of reporting (67.7%), lack of guidelines for reporting violence (17.6%), and disesteem of violence (11.8%). However, none of the staff blamed themselves for physical violence for the reason of not reporting. Also according to the results, 46.7% of personnel asked the attacker to stop the attack in verbal violence. Also, 41% did not take any action against verbal violence. However, 1.9% of staff reported verbal violence to their superiors. Personnel believed that the most important reason for not reporting verbal violence was the futility of reporting (79.2%), lacking guidelines to report violence (25.7%), and disesteem of violence (13.9%) and 6.9% cited the fear of negative consequences as the reason for not reporting the violence. Furthermore, the futility of reporting was the main reason for not reporting (67.65% for physical violence, and 79.21% for verbal violence).

Table 1. Descriptive statistics

Variables		No. (%)/Mean±SD
Educational status	Under diploma	15(13.6)
	Post Diploma	31(28.2)
	Bachelor degree	64(58.2)
Marital status	Married	74(67.3)
	Single	36(32.7)
Work location	Road EMS*	62(56.4)
	City EMS	48(43.6)
Specialty	EMS technician	56(50.9)
	Others	54(49.1)
Work experience (y)		11.66±3.78
Age (y)		34.89± 3.65
Number of shifts		3.78±0.56

EMS: Emergency Medical Services

Table 2. Descriptive statistics about physical and verbal violence among the study participants

Variables		No. (%)	
		Physical Violence	Verbal Violence
Time of violence	Daylight	19(48.72)	68(63.55)
	Nighttime	20(51.28)	39(36.45)
	Total	39(100)	107(100)
Type of patient	Traumatic	25(64.10)	58(53.70)
	Non- traumatic	14(35.90)	50(46.30)
	Total	39(100)	108(100)
Patient consciousness	Conscious	22(56.41)	92(84.40)
	Unconscious	17(43.59)	17(15.60)
	Total	39(100)	109(100)
Sex of violator	Male	39(100.)	92(83.64)
	Female	0(0.00)	18(16.36)
	Total	39(100)	110(100)
Violator and relation to the patient	Patient	6(15.38)	19(17.43)
	Brother	2(5.13)	6(5.50)
	Sister	0(0.00)	4(3.67)
	Mother	0(0.00)	3(2.75)
	Father	4(10.26)	4(3.67)
	Child	5(12.82)	8(7.34)
	Husband	3(7.69)	3(2.75)
	Friends and others	10(25.64)	23(21.10)
	Without a relationship	6(15.38)	27(24.77)
	Others	3(7.69)	12(11.01)
	Total	39(100)	109(100)

Table 3. The relationship between demographic characteristics of EMS personnel and physical and verbal violence, based on the poisson regression model

Variables	B	SE	95% CI Lower-Upper	P
Physical Violence Model				
Under diploma	References			
Post Diploma	-0.491	0.461	-1.395-0.413	0.516
Bachelor degree	-0.697	0.401	-1.483-0.089	0.388
Work experience	-0.020	0.039	-0.097-0.056	0.624
Married	2.246	1.117	0.058-4.436	0.032
Single	References			
Number of shifts	-0.030	0.064	-0.156-0.095	0.653
Road EMS	1.513	0.725	0.092-2.934	<0.001
City EMS	base			
Technician	0.541	1.264	-1.936-3.019	0.462
Others	References			
Verbal Violence Model				
Under diploma	References			
Post Diploma	1.507	0.718	0.100-2.914	0.012
Bachelor degree	1.716	0.264	1.199-2.234	0.004
Work experience	0.030	0.021	-0.012-0.071	0.147
Married	0.213	0.381	-0.533-0.960	0.478
Single	References			
Number of shifts	0.033	0.038	-0.041-0.108	0.361
Road EMS	0.829	0.078	0.677-0.982	<0.001
City EMS	base			
Technician	0.278	0.19	-0.094-0.651	0.056
Others	References			

In addition, the effective factors of workplace violence (physical and verbal) from the perspective of emergency services personnel were analyzed in this study. The personnel believed that 81.8% of violent acts were due to a lack of knowledge of people about the EMS staff's duties, 34.2% mentioned the utilization of psychoactive drugs and alcohol by the people, and 16.7% attributed that to a lack of training in violence prevention. Also, 14.7% of the causes were considered due to stress and 6% because of the death of the patient. From the personnel perspective, no violence was due to the lack or delay of ambulances.

Table 3 presents the relationship between the demographic characteristics of EMS personnel with the number of physical violence using the Poisson regression model. As shown in Table 3, a significant relationship was found between the marital status of the EMS personnel and the number of physical violence they experience (β=2.246, 95% CI; 0.058 to 4.446, P=0.032). In ad-

dition, the number of experienced physical violence was higher in those staff who worked at road EMS services compared to city or town EMS services (β=1.519, 95% CI; 0.092 to 2.934, P=0.001). However, no significant relationship was found between physical violence and work experience, number of shifts, level of education, and staff occupation.

Also, the relationship between the demographic characteristics of emergency medical technicians with verbal violence was investigated. A significant relationship was found between the level of education of personnel and exposure to verbal violence. In addition, the number of verbal violence for those staff who works at road EMS sites was higher than others (β=0.829, 95% CI; 0.677 to 0.982, P=0.001). However, there was no significant relationship between verbal violence and work experience, marital status, and the number of shifts and occupations.

Discussion

The purpose of this study was to investigate the pattern of violence against medical EMS technicians and its related factors in a pre-hospital emergency in Guilan Province. Findings show that the majority of personnel have experienced workplace violence during the past three months. In a study by Bigham et al., to determine the nature of violence among emergency medical personnel in Canada, 66% of the samples had experienced workplace violence over the past year [3]. In a study by Corbett et al. in the US state of California, 61% of emergency medical personnel experienced workplace violence [19]. In the study of Boyle et al., 87.5% of participants in the survey had experienced violence [20]. In another study conducted in East Azerbaijan Province in Iran, 75% of participants had experienced workplace violence at least once in the past 6 months [21]. Another study in Guilan Province showed that 34.51% of the per-hospital EMS experienced physical violence in 2016 [17]. Comparing the results of the current study with various studies conducted in Iran and other countries of the world indicates a high prevalence of workplace violence among emergency services personnel.

Study results indicated that most of the physical attacks were carried out by the patient's relatives, and the patients themselves were ranked next. The number of physical violence incidents in light and dark times was approximately equal. Given the shorter day in this season and the occurrence of violence, it can be estimated that there was more physical violence in the dark. Most of the physical violence occurred with trauma patients and there was no significant difference between these types of violence and patients' level of consciousness. In the study of Rahmani et al., 58.8% of violence was committed by a patient's family member [21]. The results of the study by Zamanzadeh et al. showed that the majority of physical violence attackers were relatives of patients [22]. In the study by Petzäll et al., 5% of physical violence was reported by patients [23]. In Rafati et al.'s study in Babol, Iran, the most common causes of violence against nurses are patient companions [24]. Comparing the data obtained from the present study and other studies confirmed that the patient's relatives had the highest rates of violence against emergency medical personnel and other health care personnel. The traditional texture of most cities of Guilan Province causes bedside illnesses when all members of the family are present to solve problems together if they are sent to the hospital. This could be a reason for the patient's companions to commit the most violence against emergency medical personnel.

According to the results of the present study, all aggressors in physical violence against emergency services personnel were men. In the Petzall study, about 90% of the attackers were men [23]. In the Dehnadi-Moghaddam et al. study, 62% of cases of violence were done by males, 2% by females, and 31% by both genders [15]. One possible reason for the increase in the ratio of men to women may be that all pre-hospital staff in Guilan Province are male and physical violence also requires the contact of two individuals of the same gender in Iranian culture. Contact with the opposite sex is not allowed in Islamic culture.

Regarding the gender pattern of the attacker in verbal violence, study data showed that men were more likely to engage in verbal violence than women. In the study of Aghilienjad et al., most verbal violence was committed by patients and their companions [13]. In the study of Gerbrich et al., The most frequent perpetrators of non-physical violence were patients and their companions [25]. A significant percentage of violence is committed by people who are unrelated to the patient, which is also due to the low culture of the people and the interference of EMS personnel.

From the perspective of emergency medical technicians, drunkenness and lack of knowledge were the most important reason for violence against EMS personnel. In another study in the south of Iran, the most important reason for this violence was the lack of public awareness of the duties of pre-hospital emergency technicians [26]. In the study by Petzall et al., drug was

the most influencing factor of violence [23]. In a study by Kowalenko et al., nearly half of the causes of violence were drug poisoning [27]. Sheikh-Bardsiri et al. reported low-skilled personnel as one of the main causes of workplace violence [28], but in the Rahmani et al. Study, the lack of public awareness of emergency personnel tasks was reported as the main factor [21]. Thus, it is necessary to improve law enforcement to assist in preventing violent attacks on emergency services personnel.

This study had some limitations. First, the patient's perspectives about the reason for violence could give us better judgments about the reason for violence. We did not access the patients' views. Second, this study had retrospective design and EMS personnel might forget the reason for violence and the characteristics of patients. For future studies, it is suggested to analyze effective factors of violence from the patient's perspective.

The findings of this study confirm that emergency services personnel are at high risk of workplace violence. The government must find some ways to decrease violence among EMS personnel. Training EMS personnel and strengthening their communication skills can be helpful for this purpose. The results of the present study confirmed that technicians do not usually respond to violence against themselves. Improving the quality of health care and the management of health systems and providing security facilities can help reduce workplace violence against emergency medical technicians. Due to the lack of guidelines for reporting violence, the reporting process is not performed properly and technicians are not aware of any protocols to report the causes of workplace violence, so it is suggested to prepare guidelines related to EMS violence.

Ethical Considerations

Compliance with ethical guidelines

The study was approved by the Ethics Committee of Guilan University of Medical Sciences (Code: IR.GUMS.REC.1397.166). Informed consent was obtained from all participants, and they were assured of the confidentiality of their information.

Funding

This research did not receive any grant from funding agencies in the public, commercial, or non-profit sectors.

Authors' contributions

Conceptualization and supervision: Payman Asadi; Writing the original draft, data analysis, and methodology: Enayatollah Homaei Rad; Data collection: Mohsen Esmaeili; Editing the article: Nazanin Nouri-Roodsari; Literature review: Elham Gheysvandi; Reading and approval of the final version of the manuscript: All authors.

Conflict of interest

The authors declared no conflict of interest.

Acknowledgments

The authors would like to thank the authorities of Guilan University of Medical Sciences and the research participants for their support and cooperation.

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