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Pre Hospital Cutting-Punching Tool Injuries At Emergency Health Services: Konya Sample

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Abstract

Introduction: Pre-hospital emergency healthcare workers are teams that go to thescene in case of emergency illness or injuryand start medicalcare.The reasons including the necessity to intervene in a narrow area, the movement of the ambulance and the rapid behavior increase the risk of injury with a cutting tool compared to the health care professionals.Objective of our study is to determine penetrating stab wound rate and reasons of health personnel employed at pre-hospital emergency health services.

Material/Method: This descriptive study was performed between January and April 2017.Konya 112 emergency service personnel were composed the universe of the study. The study data were prepared by researches without composing any sample was applied to 246 people who accepted to attend survey. SPSS 20 program was used to analyze the data.Significance level was determined as 0.05.

Findings and Conclusion: Totally 246 people attended to the study.15.0% of attendants to the survey had penetrating stab wounds.Women have more wounding risk than men(p=0,038);employed personnel at the centers have more wounding risk than employed personnel at the district center(p=0,010). No significant relation was found among age group, profession and wounding situation.43,2% personnel having penetrating stab wounds had only once,32.4% had twice,24.7% had injured more times.43.2% of wounds occurred in the vehicle is mobile.Branule caused wound in 56.7% rate and its 75.7% was contaminated.

Ambulance personnel's wounding rate was found considerably high.Wounding occurred mostly in ambulance.At the provided trainings, it should be emphasized that interventions should be done at the scene then the vehicle should move.

Key Words: Sharp objects, Injuring, Emergency Health Services

Introduction

Pre-hospital emergency health services cover the emergency health services provided until the patient / injured is delivered to the scene of the patient.[1] The basis of pre-hospital emergency health services in our country was established as 077 Hızır Emergency Department within the municipalities of Ankara, Izmir and Istanbul. Presently, pre-hospital emergency health services are carried out in the center by the Ministry of Health General Directorate of Emergency Services, and in the provinces by the units affiliated to the Provincial Ambulance Service Command and Control Center Head Office. Emergency medicine technician (ATT), ambulance and emergency care technician (AABT), nurse, health officer and drivers work in ambulances.

In Turkey; in case of emergency illness and injury in an area or province, the emergency call for an ambulance request is made to a single center. For our country, the phone number of this call center is 112. This number can be reached in any time by phone, free of charge. When 112 is called for an ambulance request, the call center staff will answer the call on the phone. ATT, AABT and call-handling personnel in call centers health units direct the nearest / most appropriate ambulance team to the scene. Ambulance team going to the scene makes the necessary intervention to the patient / injured at the scene and provides the transfer of the patient to the hospital if deemed necessary.[2]

People who work in pre-hospital emergency health services often make quick decisions when they go to the scene, act quickly and provide medical care to critical patients between the eyes of curious or stressed people in the environment. This makes ambulance employees a more disadvantaged group in terms of occupational health and safety than other healthcare professionals.

Abroad pre-hospital emergency medical services due to a stressful job due to the nature of the job "high risk" is defined as occupational group, ambulance transport operations in Turkey "people other jobs related to health" as a different headline evaluated hospitals hazard classification is differ-

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ent from running a "dangerous "as has been adopted.[3,4]

Risks that pre-hospital emergency healthcare workers face; It can be classified as ergonomic risks, physical risks, chemical risks, biological risks, environmental risks, psychosocial risks, other risks.

As a result of the studies, it has been shown that healthcare workers have 10 times more infectious diseases than other civilian employees.[5] These infection factors, which pose a threat to healthcare professionals, can be grouped into two main groups. The first group is the factors that are transmitted by contact with blood and bloody body fluids (from open wound, mucous membranes or skin with needle sticking). The other group is the respiratory-borne disease factors.

Any type of penetrating injury is an important risk factor for healthcare workers to spread blood-borne pathogens. Centers forDisease Control and Prevention (CDC) according to the estimates; percutaneous injuries in healthcare workers with approximately 385 000 injector needles and other cutting tools each year, and an average of 1000 injuries each day. Cutting-piercing tool injuries are primarily associated with Hepatitis B virus (HBV), Hepatitis C virus (HCV) and Human immunodeficiency Virus (HIV) occupational transmission. The risk of HIV that may develop after the needle sting after the infected patient is 0.3%, the risk of HCV is 3%, and the risk of HBV is reported as 6-30%.

Despite the fact that the vast majority of cutting tools used in the field of health are disposable reduced the risk for patients, it still continues to pose a risk to healthcare professionals.

Causes of intervention in a narrow area, lack of detailed information about the patient, movement of the ambulance, rapid behavior, insufficiency of light sources, lack of time for ambulance disinfection are the risk of infection due to respiratory, contact, needle sting, and injuries with cutting tools for pre-hospital emergency healthcare workers.[6,7] The purpose of our study is to determine the rate and causes of sharp piercing device injuries of those working in pre-hospital emergency health services.

Materials and Methods

This descriptive study was conducted between January and April 2017 for Konya Provincial Ambulance Command and Control Center (KKM) Chief Physicians. Between these dates, a total of 948 people wereactively working in the institution. KKM, administrative unit, logistics unit and training unit employees are not included in the study because there is no contact with the patient, and ambulance drivers are not involved in the treatment and injection processes. The universe of the research was accepted as 616. The study data were collectedface-to-face to all those who agreed to participate in the survey prepared by the researchers without any sampling.

In order to obtain the data of the research, a "Data Collection Form" was prepared by the researchers using the literature. The first part of the form consisted of questions to obtain data on the sociodemographic characteristics of employees such as age, gender, occupation, duration of employment in the institution, unit where they work. The second part consists of questions about injury experience, frequency, application-causing injury, medical instrument causing injury, contamination status of the instrument, and third part of the data related to the reporting status of the injury and the reasons for the failure.

During the evaluation of the data, the units where the people work were evaluated as central and district emergency health stations, occupational groups as Emergency Medical Technician (ATT), Paramedic-Emergency and Ambulance Technician (AABT) and Health Officer (SM) / Nurse.

Necessary public and ethical permissions were obtained for the research. SPSS 20 program was used in the analysis of the data. Statistics are given as numbers and rates (%). Independence checks among the variables that show categorical features were made with chi square test. Significance level was taken as 0.05.

Results

A total of 246 people participated in the study. 49.2% (n=121) of the participants in the study were women, 50.8% (n=125) were men, and 49.2% were under 20 years of age. Considering their distribution according to occupational groups, 66.3% were ATT, 20.3% were AABT and 13.4% were nurses / health officers. 50.4% of the participants were 6 or more and 64.6% of them were working in district stations (Table 1).

15.0% of the people who participated in the study were exposed to cutting-piercing tool injuries during their work in Konya emergency health services. 43.3% of those exposed to injuries stated that they were injured once, 32.4% twice, 18.9% 3 times and 5.4% 4 times with a cutting-piercing tool (Table 2).

When looking at the distribution of injury exposure according to the variables with the cutting-piercing tool; women had higher injury rates than men ($p = 0.038$), those working in the city center compared to those working in districts ($p = 0.010$), and those working for 6 years or more had less injury than those working for less ($p = 0.007$). There was no significant relationship between age group, occupation and injury status (Table 3).

75.7% of the penetrating device injuries occurred in the ambulance, 16.2% at the scene and 8.1% at the hospital (Table 4).

Considering the distribution of the exposure of the cutting tool to injury, according to the medical equipment causing the injury; 56.8% (n=21) of injuries occurred with injections and 21.6% (n=8) with injector needle tip. Of the

Table 1. Distribution of the participants in the study according to their socio-demographic characteristics

VARIABLES		n	%
Gender	**Women**	121	49,2
	Male	125	50,8
Age Group	**Under 20**	121	49,2
	20-29 Age	98	39,8
	30-39 Age	21	8,5
	40-49 Age	5	2,0
	50-59 Age	1	0,4
Profession	**ATT**	163	66,3
	AABT	50	20,3
	Health officer/ Nurse	33	13,4
Working Time	**0-3 Years**	45	18,3
	3-6 Years	77	31,3
	6 Years and above	124	50,4
Worked Unit	**Central Station**	87	35,4
	County Station	159	64,6
Total		**246**	**100**

Table 2. Frequency of Persons Exposed to Cutting-Drilling Tool Injury

		n	%
Injury exposure	**Yes**	37	15,0
	No	209	85,0
	Total	246	100
Injury frequency	**1 time**	16	43,3
	2 times	12	32,4
	3 times	7	18,9
	4 times	2	5,4
Total		37	100

37 injured people, 75.7% (n=26) stated that the equipment they were injured was contaminated, and 89.2% knew that the equipment was used (Table 5).

When distribution of injuries by time of injurywas evaluated, it was seen that the most common injury occurred most frequently at the time of use (46.0%) (Table 6).

Discussion

Gülen et al. in their studies for 1401 health personnel (1099 ATT and 302 AABT) working in 195 emergency health services stations in Istanbul; found that 52.2% of the workers were injured with a needle and 22.5% were injured with a sharp instrument.[8] 43.2% (n=389) stated that they injured more than once, 6.0% (n=54) twice, and 3.0% (n=27) more than twice. In astudy carried out by Akkaya et al. found that 56% of the participants were subjected to cutting piercing injuries, and the most common reason was the needle sting.[9] Uysal et al. found the rate of injury with a piercing device as 66.1% and the most common injury rate as 42.0% with nee-

Table 3. Distribution of exposure to injury by cutting-piercing tool by variables

		Yes n (%)	No n (%)	Chi square	p
Gender	**Woman**	24 (9,8)	97 (39,4)	4,283	0,038
	Man	13 (5,3)	112 (45,5)		
Age Group	**Under 20**	17 (6,9)	104 (42,3)	1,546	0,818
	20-29 Age	16 (6,5)	82 (33,3)		
	30-39 Age	4 (1,6)	17 (6,9)		
	40-49 Age	0 (0,0)	5 (2,0)		
	50-59 Age	0 (0,0)	1 (0,4)		
Profession	**ATT**	24 (9,8)	139 (56,5)	0,576	0,750
	SITA	9 (3,7)	41 (16,7)		
	SM / NURSE	4 (1,6)	29 (11,8)		
Working Time	**0-3 Years**	0	45 (18,3)	9,977	0,007
	3-6 Years	13 (5,3)	64 (26,0)		
	6 Years and above	24 (9,8)	100 (40,7)		
Worked Unit	**Central Station**	20 (8,1)	67 (27,2)	6,654	0,010
	County Station	17 (6,9)	142 (57,7)		
Total		**37 (15,0)**	**209 (85,0)**		

Table 4. Distribution of the cutting-edge tool injuries by location

	n	%
At the scene	6	16,2
While the vehicle is stationary in the ambulance	12	32,4
While the vehicle is in motion in an ambulance	16	43,3
At hospital	3	8,1
Total	**37**	**100**

Table 5. Distribution of the cutting and piercing tool injuries by medical equipment.

		n	%
Medical equipment causing injury	**Needle Tip (Injector)**	8	21,6
	Needle Tip (Inlet)	21	56,8
	Other	8	21,6
Equipment contamination status	**Contaminated**	28	75,7
	Not contaminated	9	24,3
Knowing the source of the equipment used	**Yes**	33	89,2
	No	4	10,2
Total		**37**	**100,0**

Table 6. Distribution of the cutting and piercing tool injuries by time of injury.

	n	%
During use	17	46,0
Before disposal after use	12	32,4
During the throw	5	13,5
After cleaning	1	2,7
After improper disposal	2	5,4
Total	**37**	**100,0**

dle-piercing in a study conducted by a research and application hospital staff.[10] Merih et al. freported the rate of injury to nurses as 22.8% in their studies in 2009.[11] In our study, the rate of injury with a cutting-piercing tool was found to be 15%.

In their study, Gülenet al. stated that 55.3% of the injuries occurred during the intervention and 34.7% of them were in the ambulance. The injury rate decreased with increasing age (p = 0.02, r = -0.63). Similarly, the injury rate decreased as the working time increased in 112 (p = 0.01, r = -0.43). It is noteworthy that the rate of injury has decreased over the years. In our study, contrary to this, more injuries were detected in those working 6 years or more. We can explain this by employing employees who are considered more experienced in the city center where there are more cases.

Gülen B et al.reported that 30.9% (n=278) of the injuries were in ambulance course, 25.6% (n=231) were moving fast, 15.6% (n=141) due to carelessness, 13.2% (n=119), due to the patient's movement, 11.5% (n=104) stated that the medical device was caused by the wrong destruction. In our study, while 75.7% of injuries were in the ambulance, the rate was 43.3% in cases where the ambulance was mobile.

10.5% of work-related injuries were reported to management in the work of Gülen B et al. 54.2% of the participants were trained to prevent work-related injuries.

Goel V et al. found that 476 reported injuries occurred with the highest rate of needle tip in their study on employees working in a tertiary care facility in North India. Injury rate in men (59.9%) was higher than women's injury rate (40.1%).[12]

Isaraet al. in a needle injury study at a hospital in Nigeria,80% of doctors and 70% of nurses determined that they were injured. They found that injuries were the most often 38% of the patient's motion, 26% during the re-fitting of the cap after use and 62% of the individuals did not report the injury.[13]

In the studies conducted by Amini M et al. in Iran-Tehran education and research hospitals, they found that the injuries occurred mostly with injector tips and that women had higher injuries than men. They found the rate of injury reporting as 33.5%.[14]

The striking factor in this study and similar studies made earlier emphasized that injuries are mostly caused by injectors and injections. Again, the fact that there are more injuries in the ambulance both in motion and in the interventions before moving is another remarkable reason.

In this context, the necessary precautions must be taken by the institutions in order to create a culture of employee safety in employees and to provide employees with high motivation, effective, fast and superior service in safe environments. Especially in terms of occupational health and safety, it is important to expand the use of personal protective equipment, and to procure and control it by institutions. The staff working in the ambulance should be given training about the diseases transmitted by blood, and the algorithm taught as a result of such an injury should be recommended to apply to a health institution as soon as possible and the in-service training should be updated periodically.

In addition, since the majority of injuries are in the ambulance and crime scene, it is thought that training pre-hospital healthcare workers on crisis management will reduce injuries with a positive effect on case and risk management.

One of the most important risks for emergency health professionals is ergonomic problems. To meet the protective properties of personal protective equipment to a high level, especially the gloves, vascular access markers, the safety of injectors / interactors equipped with safety will minimize injuries.

Some of the most important risks of those working in the emergency healthcare sector are the difficulty of coping with a large number of cases, long-term working conditions, the possibility of exposure to violence, monotonation and wear, and this creates a basis for injuries by reducing the work efficiency of the employees. Since this wear negatively affects the health of emergency workers, taking measures to increase motivation by institutions will positively affect occupational health. The evaluation of injuries within the scope of occupational disease will also have a positive impact on the future business life of employees.

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