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WORK RELATED INJURIES AND EXPOSURES AMONG EMERGENCY MEDICAL SERVICE PERSONNEL DUE TO INTERIOR DESIGN OF AMBULANCE

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Abstract
The aim of this study is to investigate work-related injuries, exposures and their reasons that 112 Emergency Medical Services (EMS) personnel encounter during the treatment and care of the patient, depending on the ergonomics of the interior design of an ambulance. A questionnaire was designated to identify the challenges faced by 112 EMS personnel. A pilot study was conducted to determine the convenience of the questionnaire. After confirming the questionnaire, it was applied to a total of 90 voluntary participants in 13 stations of EMS in Eskişehir between June and July 2017. Data was analyzed by using SPSS 24 packet program. According to the findings, the participants were exposed to; problems due to hit on sharp corners (87%), problems due to slamming of the door (83%), exposures in treatment on the stretcher (69%), stuck during stretcher movement (%64), unable to reach the patient (at sitting position) during intervention in the ambulance (59%) and waste box problem (59%). Of the exposures faced, 83% are due to interior design framework, 82% are because of narrowness of the cabin and 81% are due to the fact that the layout of interior compartment was not ergonomic. According to the results of analysis obtained by the questionnaire data, it is essential to make some improvements in terms of ergonomics in the ambulance interior design in order to make working conditions of ambulance staff of 112 EMS more eligible.
Keywords: Ambulance, emergency medical services, work-related injuries, ambulance interior design, ergonomic design.

AMBULANSIN İÇ TASARIMI NEDENİYLE ACİL SAĞLIK HİZMETLERİ PERSONELİ ARASINDA İŞLE İLGİLİ YARALANMALAR VE ZORLUKLAR

Bu çalışmada, 112 Acil Sağlık Hizmetleri (ASH) çalışanlarının hastaya tedavi ve bakım uygulama esnasında, ambulans kabininin tasarımının ergonomikliğine bağlı olarak karşılaştıkları işle ilgili yaralanmalar, zorlanmalar ve bunların nedenlerinin araştırılması amaçlanmıştır. 112 ASH çalışanlarının karşılaştıkları zorlukların tespiti amacıyla bir anket tasarlanmıştır. Anket sorularının uygunluğu için pilot çalışma yapılmıştır. Amaca uygunluğu anlaşıldıktan sonra, Eskişehir ilinde ASH'nin 13 istasyonunda, Haziran – Temmuz 2017 aylarında toplam 90 gönüllü katılımcıya uygulanmıştır. SPSS 24 paket programı kullanılarak veriler analiz edilmiştir. Bulgulara göre ankete katılanların, %87'si sivri köşelere çarpma, %83'ü kapı çarpması, %69'u sedyede tedavide zorlanma, %64'ü sedye hareketinde sıkışma, %59'u hastaya müdahale sırasında (otururken) kolun hastaya uzanamaması ve %59'u çöp kutusu sorunu yaşamaktadırlar. Yaşanan zorlukların %83'ü iç tasarımın yapısından, %82'si kabin içi alan darlığından, %82'si sistem yetersizliğinden, %81'i ambulans kabinin iç yerleşiminin ergonomik olmayışından kaynaklanmaktadır. Anket verileri ile elde edilen analiz sonuçlarına göre 112 ASH ambulans çalışanların, çalışma şartlarını daha elverişli hale getirmek için ambulans iç tasarımında ergonomik açıdan bazı geliştirmelerin yapılması gerekmektedir.
Anahtar Kelimeler: Ambulans, acil sağlık hizmetleri, işle ilgili yaralanmalar, ambulans iç tasarımı, ergonomik dizayn.

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Introduction

In parallel with the rapid development in the world, Emergency Medical Services (EMS) have also made great progress in our country. The rapid development in modern medicine, along with the increase in the possibilities of technological medical devices, cause demand and expectations of growing and developing society for emergency health needs to increase (1). This development and growth in the health sector directly affect emergency health services and health personnel is exposed to occupational risks and work accidents due to the reasons of the nature of the service (2).

Ambulance services within EMS units are available for 7 days (24 hours) in challenging conditions. Employees of this unit are exposed to a wide range of risks, including musculoskeletal disorders, circulatory problems, allergies, violence and stress.

In working life, people face with many challenging factors, such as movements that force body, trauma caused by repetitive movements, heavy physical work, disproportionate or inappropriate use of body parts. Medical staff are also at risk of physical trauma like other industry workers. As in other sectors, they are exposed to musculoskeletal system disorders and serious injuries due to work accidents. In the research conducted by Alçelik et al. (3), it was found that medical staff in Turkey had back pain (52.9%), shoulder pain (38.2%), neck pain (38.2%) and arm pain (30.8%). Among medical staff, ambulance workers have the highest risk in terms of musculoskeletal system injuries (4).

Ambulance teams apply medical treatment before or after taking a patient into the ambulance. During transfer of the patient, in the case of an Acute Myocardial Infarction (heart attack), the personnel has to move in the ambulance if the patient comes through a dangerous heart rhythm and needs to be shocked, called Ventricular Fibrillation. In such cases, it is not possible for the personnel to do these interventions to the patient with their seat belt attached and without moving from their seats. During such operations, staff are exposed to a great deal of risks if the ambulance brakes suddenly or manoeuvres unexpectedly, such as difficulty during treatment due to the position and size imperfection of the seats while treating patients, personnel and patient injuries as a result of hitting on sharp corners and risk of infectious diseases because the materials used during treatment are not thrown quickly due to the wrong location of garbage.

112 EMS personnel, who has an essential position in human life, work with ceaseless efforts despite the risks in the workplace. They aim to achieve success using all medical knowledge, experience and medical equipment while performing their duties. 112 EMS personnel working actively on the field face with work accidents such as hitting arm and leg on sharp corners, jamming while the rear door is closed, impaction of arm and leg during the movement of stretcher in the ambulance, pinprick, falling of the monitor, closing of the drawers. The importance degree of such difficulties needs to be determined with a questionnaire study.

In the related literature, there are many studies on ambulances and/or personnel carried out for different purposes, in both national and international areas. Studies have been performed on some topics, such as the design of an ambulance patient room, the layout of medical equipment (5-7), the ergonomic evaluation of equipment (8-9), safety precautions (10), physical strain (ergonomic risk assessment) (9, 11-13), the musculoskeletal disorders (14, 15) due to workplace conditions, the risk factors that personnel are exposed to (2, 16,17). EMS staff are exposed to a wide range of occupational risks including infectious diseases, accidents and work-related injuries (18-24), and etc. In recent studies, the purpose of Miller (21)'s study

was to synthesize data sources to understand the major workplace dangers facing EMS providers. Characteristics of the most common causes of injury and fatalities were described and compared. The results signed that the biggest mortal threat to private EMS personnel is vehicular incidents. Reichard et al. (22) examined Ohio workers' compensation injury claims among state insured ambulance service workers working for private employers from 2001 to 2011. Kılıç et al. (23) conducted a study to determine the relationship between work-related stress and the risk of anxiety and depression of personnel of emergency stations. Harthi and Rachman (24) presented a literature review to identify work-related injuries and exposures amongst paramedics and emergency medical technicians, along with their consequences, injury events, and the factors that cause them.

In this study, it is aimed to identify work-related injuries, and exposures among 112 EMS staff due to the fact that the ambulance interior equipment is not ergonomic.

Materials and Method

In order to determine work-related injuries, exposures among 112 EMS personnel and their reasons, questions were formed consulting to the ambulance staff in Eskişehir and the final form of the questionnaire was developed after making a pilot study with experienced experts.

Prior to starting the fieldwork, Ethics approval for this study was obtained from "Eskisehir Osmangazi University Non-Interventional Clinical Investigations Ethics Committee" in May 2017. Permission was taken from Head of 112 EMS in Eskişehir.

The questions about work-related injuries and exposures among EMS personnel were taken from experts working at ambulances. The questionnaire including demographic information (gender, age, experience and profession), station and ambulance information and 15 questions was designed. The questions and suitability of the questionnaire were tested with a pilot study applying to 10 voluntary participants, and then final version was designed as to satisfy well understanding. Between June and July 2017, the questionnaire (appendix) was conducted to 90 voluntary participants (doctors, paramedics, EMTs (Emergency Medical Technician), drivers) out of total 173 personnel who were on active duty in ambulances visiting each of 13 stations located in Eskişehir 112 EMS and explaining the purpose of the study. During the filling of the questionnaire, evidence was obtained for voluntary participation with an informed consent form along with the survey questions.

Data was loaded into SPSS 24 program and average, standard deviation and frequency distribution were calculated. SPSS 24 "One Way ANOVA : Post Hoc Multiple Comparison" Tukey test analysis was performed to determine whether there was a significant difference between the results and gender, age category, stations with 95% confidence level. $p<0.05$ was considered statistically significant.

Results

Gender, age, profession and experience and distribution of station and ambulance models of 90 volunteer participants in the survey were given in Table 1. Of the participants 57% were women and 43% men. The majority (86%) were between the ages of 20-40. Approximately 47% had 6-10 years of experience and 46% were in service for 1-5 years.

Table 1: General Information (n=90).

Category	Property	Frequency
Gender	Woman	51
	Man	39
Age	< 20	1
	20-29	36
	30-39	41
	40-49	6
	50-59	6
Profession	Doctors	5
	Paramedic	37
	EMT	37
	Driver	11
Experience	0-6 Months	1
	7-12 Months	4
	1-5 Years	11
	6-10 Years	42
	11-21 Years	23
	21 Year and over	9
Working time in station	0-6 Months	10
	7-12 Months	8
	1-5 Years	41
	6-10 Years	22
	11-20 Years	9
Station	Odunpazarı 1 – 8 (7 stations)	40
	Tepebaşı 1 – 7 (6 stations)	50
Ambulance Brand and Model	A 2012 – 2016	65
	B 2014 - 2016	25

The frequencies of work-related injuries and exposures among EMS staff are given in Table 2. In addition to 15 items given in the questionnaire, 6 more problems were reported. In order to give a better understanding of the layout of equipment, stretcher, seat etc. in the ambulance, schematic view was given in Figure 1. According to the analysis results, the most commonly work-related injuries and exposures were found as ;

- *Hitting arm, leg etc. on the sharp corners (%87)*
- *Slamming of the rear door during transfer of the patient into the ambulance with the stretcher (%83)*
- *Difficulty in treatment as the stretcher is positioned on the left side (%69).*

Table 2. Most common exposures (n=90)

Difficulties	Total Frequency*	Never (0)	Rarely (1-2 a year)	Sometimes (4-5 times a year)	Often (1-2 a month)	Always (1-2 a week)
Hitting arm, leg etc. on sharp corners	78	12	20	24	21	13
Slamming of the rear door while transporting the patient to or from the ambulance	75	15	27	22	22	4
As the stretcher is on the left side, difficulty in treatment	62	28	23	15	14	10
Jam of arm and leg due to the movement of the stretcher	58	32	19	21	12	6
Failing to reach the patient during intervention	53	37	23	8	14	8
Failing to reach the waste box due to its location	53	37	36	7	3	7

***(*)**It is the sum of the others except 'Never'.*

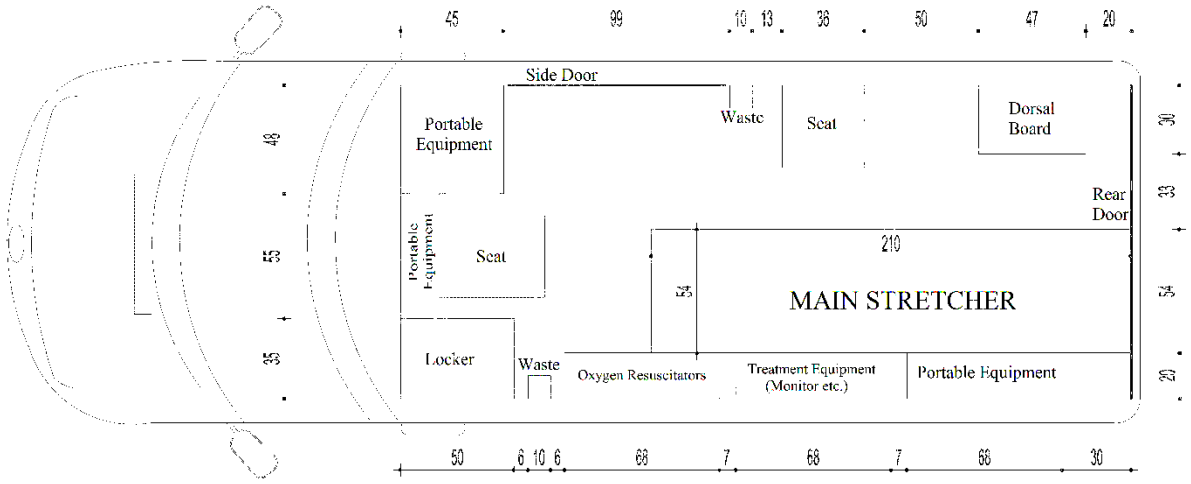

Figure 1: Plan view of layout of the patient compartment.

The reasons that staff are exposed to were mostly (~ 80%) a) the narrowness of the area, b) the structure of interior design, c) ergonomics and d) system deficiency (Table 3). These were the most important reasons of hitting on sharp corners and door slamming. In addition, narrowness of the area, as expected, is also seen as a reason for the difficulty of treatment in the stretcher.

Table 3: The reasons of exposures.

Reason of difficulty	Frequency
Faulty layout of materials	66
Deficient equipment	56
Narrowness of area	**74**
Structure of interior design (sharp corners)	**75**
Unsuitability of design to ergonomic measurements	**73**
Shakes because of system deficiency in the ambulance	**74**
Negligence of personnel	35
Carelessness	49
Lack of experience	35

The detailed analysis is required for the most commonly three exposures.

Hitting on the sharp corners

During treatment and transportation process, on active duty in the ambulance, medical staff hit their heads etc. on sharp corners such as cabinet edges, drawer edges, ambulance side wall edges, device edges (Figure 2), which leads to physical injury.

Of the personnel, 87% suffer from the hitting on sharp corners. Of the participants who experienced this problem, 82% think that this was caused due to the narrowness of area, %82 due to system deficiency and 81% due to the lack of ergonomic interior design. Frequencies of the participants exposing to this problem are given in Table 4.

Figure 2: Sharp corners in the cabin.

Table 4: Frequencies for the problem of hitting on sharp corners.

	Frequency				
Interval	**Never**	**Rarely**	**Sometimes**	**Often**	**Always**
0-6 Months	0	0	0	0	1
7-12 Months	0	1	0	2	1
1-5 Years	1	1	5	3	1
6-10 Years	4	12	9	11	6
11-20 Years	3	4	8	4	4
21- and over	4	2	2	1	0

While employees who experience problem of hitting on sharp corners had maximum interval of 11-20 years, it was observed that it decreased in participants who had interval of 21 years and over and that they began to act cautiously as interval increases. At the level of 5% significance, no significant difference was found between experience categories by performing Tukey test anaysis.

SPSS 24.0 Tukey test analysis was performed to determine whether there is a significant difference between the results in gender and occupation categories with 95% confidence level. In the situation of hitting on sharp corners; it was found that there was a significant difference between women and men ($p \sim 0.04 < 0.05$), and that women experienced this accident more often. In general, women are generally shorter than men so it is understood that women were more careless during treatment. Although there was no significant difference between the accidents (except drivers), paramedics and EMT, medical staff stated that they were more likely to experience this problem.

Slamming of the rear door

Before the patient is carried to the hospital emergency room from the ambulance, the rear door used to take the main stretcher down is opened by the driver. Unless the door opens 90°, it hits personnel by closing back. Seriousness and urgency of the case of sometimes does not allow the full opening of the door, and it is requested that the patient be transferred to emergency service as soon as possible. In that case, the door may close back. Of the personnel 83% had the problem of slamming of the rear door. While one of the most important and life-saving conditions in 112 EMS is

to use time effectively, wasting time to fix the door, thus causing difficulty in carrying the patient is one of the important problems.

Of the participants 36% rarely, 29% sometimes, 29% frequently and 5% often meet with this problem. Of the participants who experience a door impact problem 44% have 6-10 years of experience with the highest rate.

The reasons for problems are given in Table 5. The exposures were mostly due to the narrowness of area (%87), the structure of interior design (%85), the lack of suitability of the design with the ergonomic measures, and shakes caused by system deficiency (%84).

Table 5: The reasons for the problem of slamming door.

Reason	Frequency
Faulty location of materials	57
Deficient equipment	50
Narrowness of area	65
Structure of interior design (sharp corners)	64
Unsuitability of design with ergonomic measurements	63
Shakes because of system deficiency	63
Negligence of personnel	31
Carelessness	40
Lack of experience	28

Difficulty in treatment on the stretcher

There is a mechanism (sledge) under the main stretcher in the ambulance. It is placed in a way that the patient can be treated from his/her left side while performing an intervention in the ambulance by means of ambulance interior design. Of the personnel 69% had difficulty in using equipment or getting medical equipment on the left side of the ambulance.

The main stretcher can be moved to the right or left during intervention to patient or cabin cleaning. It is difficult to do this when the patient is on the stretcher. Also, the stretcher is not in fixed position after the latch is pressed and the stretcher is moved. After the stretcher is moved to the right or left again at a certain distance, the locking mechanism is placed back and fixed. This may cause the team members' feet to get caught. The rate of the staff to be met stretcher movement problem was 64%. When the distribution of those is analyzed in the category of experience, it is concluded that it was not related to experience. However, 29% (6 out of 21 people) of the staff with 11-20 years of experience frequently experience this situation. The reason of the problem according to 83% and 85% of the staff was system deficiency and ergonomic deficiency, respectively.

Discussion

According to the analysis results, the most commonly work-related injuries and exposures among staff were found as hitting arm, leg etc. on the sharp corners (%87), slamming of the rear door during transfer of the patient into the ambulance with the stretcher (%83) and difficulty in treatment as the stretcher is positioned on the left side (%69). Of the exposures, 83% were due to structure of interior design, 82% narrowness of internal space, 82% system deficiency,

and 81% non-ergonomic layout of ambulance cabin.

In related literature, in national and international field, there were very few studies concerning ambulances and/or staff that address the exposures and reflect a number of issues determined due to the lack of ergonomic design of equipment. Yusuff et al. (16) stated that 60% of the personnel had difficulties in the narrowness of workspace, 43% in reaching to treat the patient and 57% in reaching the equipment. In our study, it was seen that the narrowness of area causes other difficulties by 82% and reaching the patient was seen as a difficulty rate of 59%. The results are close to each other. In the study of Gilad and Byran (8), the findings revealed that 74% of paramedics stated that the location of the paramedic's seat was inefficient, 94% the bench was uncomfortable, 77% bench and stretcher were too far from each other and 86% of them affirmed that they needed something to prevent shaking while the vehicle was moving. To reduce the physical difficulties, the staff are exposed to during the intervention in the ambulance, by applying the principles of micro-movement study, the position of the stretcher (angular change) was determined so that three employees could reach everywhere without difficulty. In our study, 59% of the staff expressed that they had difficulty in reaching the patients. Although the rate is different, the results overlap significantly. Byran and Gilad (10) suggested a proposal which would prevent staff from bending during the intervention, by projecting stretcher mounted on a lifting apparatus.

Yılmaz (18) determined the types, frequency and results of the work accidents exposed by the health personnel in 112 ambulances by making a questionnaire study with a total of 141 people (doctors, health officers, paramedics, EMTs and drivers) with face-to-face interviews. In the study, it was determined that

- *39% of them were pinned while they are on duty, and the incident occured frequently (%47,5) in the ambulance on the move, when such a work accident took place,*
- *71.6% of them reported contact of blood or body fluids with eye*
- *Those who had a work accident (pinprick, sharp object injury, contact of blood or body fluids with eye etc.) accounted for 41.0% of these accidents because the ambulance was on the move.*

In our study, 58% (52 participants) of the staff reported that they had a needlestick injury as work accident, but most of them said that they exposed to this accident 1-2 a year. Bulut (2) made OSH risk assessment using the FMEA technique to identify the risks which ambulance workers were exposed to. There were 61 risks identified in the study and those similar to our findings are not using seat belt or forgetting to use it (high risk), sharp object injury and pinprick due to improper use or because of equipment (high risk), inappropriate use of medical waste boxes (moderate risk), non-ergonomic layout of the patient compartment (moderate risk) and non-ergonomic seat (moderate risk). It is obviously seen that the findings coincide with each other.

If there is a lot of traffic, the pedestrian and drivers do not follow the rules of traffic, and people try to follow an ambulance from behind, it causes the ambulance driver to maneuver suddenly or to brake in panic. There are seat belts in the cabin of the ambulance, but there are cases that the belt has to be unfastened and staff have to stand up to intervene the patient. In such cases, doctors, paramedics or EMT working in the patient compartment may encounter traumatic events like falling or hitting on somewhere. In such a case, the presence of sharp corners carries a risk to the staff in charge. Of the staff, 87% expressed the problem of hitting his/her arm and leg etc. to sharp corners. The sharp edges in the cabin could be covered with a soft covering and the damage would be minimized in case of impact.

While the patient is carried to the emergency department, the rear door is opened by the driver to get the stretcher down. If the door does not open 90 °, it closes back and hits the staff. Of the staff 83% had the problem of slamming of the rear door. It is advisable to use door hydraulics to prevent rear doors from closing. Door hydraulics allow door to close automatically and slowly. Likewise, the closed door opens slowly. There are hydraulic door systems whose initial speed and closing speed can be adjustable. They differ depending on where they are installed, their closing angles and closing speeds. Thus, when the door is released, it opens and closes automatically.

As the stretcher is on the left side of the ambulances, there are difficulties in getting the equipment and supplies on the left side of the ambulance during treatment. It is possible to shift the stretcher to the right. With the lock system on the stretcher pedals, the self-locking mechanism should be placed when weight is removed from the pedals. The personnel shift the stretcher by pedalling in an emergency situation and a fixed system can be designed by locking the stretcher when weight is removed from the pedals.

The personnel fail to perform the treatment in the ambulance while the seat belt is fastened (%59). Since the internal capacity of the ambulances and the size of the stretcher is rigid, the seat width must be adjusted by taking anthropometric measurements while the staff are sitting on the seat. Thus, after the size of the seat is determined, the seat is adjusted to move to the right and to the left with the seat's pedals through the sliding mechanism installed in the ambulance for the treatment seat next to the patient and the seat becomes movable to lift up and down according to the size of the personnel. Staff can immobilize the seat to right-left and up-down when needed. However, it is necessary to unfasten the seat belt and probable stand up from the seat for treatments such as taking equipment from the shelf, inoculating and cardiac massage. In this case, since the ambulance is in motion, the personnel would most probably have an accident. In such a case, a waist belt (Figure 3) around 50-60 cm long should be used which is attached to the clasps on the roof of the ambulance to prevent skidding in the event of impact.

Figure 3: A waist belt in an ambulance.

Conclusion

In this study, it is aimed to investigate the exposures encountered by ambulance personnel due to the ergonomics of the internal layout of the ambulance during the treatment and care of the patient and their reasons. Obviously, it is the first attempt conducted in the national and international areas to evaluate with a questionnaire, the difficulties exposed to personnel due to lack of ergonomic design of ambulance interior equipment.

The major limitation to this study is the generalizability. The number of valid questionnaires was 90, which was 527% of all the personnel in Eskişehir; this sample is significant for the city. The limitation is that the results may not be generalized to other cities in the country. However, in terms of the scores, population is not a drawback; it is known that a work-related injure can take more higher frequency than an ambulance in other city. This is not a dilemma.

112 EMS constitute the most important part of the prehospital emergency medicine in our country as well as in other countries. In all kinds of life-threatening cases, the patient is interfered with the right, effective and appropriate treatment as soon as possible to prevent the situation from deteriorating. The fact that the ambulance personnel do not have the luxury of repeating a mistake and that even the smallest mistake is likely to lead to a disability or a deterioration of the current situation in the best possible way reveal the importance of the job performed by the personnel working in this system. Moreover, since it is time that matters, the work must be done both urgently and carefully.

Another difficulty is that the service given to the patient is performed in a mobile and moving environment, that is, in an ambulance. Apart from these, troublesome situations such as physical, psychological violence of the patient and/or their relatives, troubles caused by traffic problems increase the workload and the stress of the pre-hospital emergency medical personnel. The first factor that the staff should pay attention while carrying out this life saving effort is crime scene safety, their own and patient safety.

Appendix: Ergonomıc Evaluation of İnterior Layout of Ambulance

In this questionnaire, it is aimed to determine the difficulties encountered during a treatment to a patient in an ambulance and the difficulties resulting from layout and design of the equipment in ambulance.

Gender

[ ] Female [ ] Male

Age

[ ] Under 20 [ ] 20-29 [ ] 30-39
[ ] 40-49 [ ] 50-59 [ ] 60 and over

Profession

[ ] Doctor [ ] Paramedic [ ] EMT [ ] Driver

How long have you worked in this job?

[ ] O-6 MONTHS [ ] 7-12 MONTHS [ ] 1-5 YEARS
[ ] 6-10 YEARS [ ] 11-20 YEARS [ ] 21 YEARS AND OVER

Mark the workstation you are currently on duty.

[ ] Odunpazarı 1 [ ] Odunpazarı 2 [ ] Odunpazarı 3 [ ] Odunpazarı 4
[ ] Odunpazarı 5 [ ] Odunpazar 6 [ ] Odunpazarı 8
[ ] Tepebaşı 1 [ ] Tepebaşı 2 [ ] Tepebaşı 3 [ ] Tepebaşı 4
[ ] Tepebaşı 6 [ ] Tepebaşı 7

How long have you worked in this station?

[ ] 0-6 MONTHS [ ] 7-12 MONTHS [ ] 1-5 YEARS
[ ] 6-10 YEARS [ ] 11-20 YEARS [ ] 21 YEARS AND OVER

Which ambulance model do you work in?

[ ] 2012 A [ ] 2013 A [ ] 2014 A [ ] 2015 A
[ ] 2014 B [ ] 2015 B [ ] 2016 B [ ] 2016 A

Please indicate the difficulties experienced in the ambulance given below according to your frequency of experiencing

	Never (0)	Rarely (1-2 a year)	Sometimes (4-5 times a year	Often (1-2 a month)	Always (1-2 a week)
Pinprick	[ ]	[ ]	[ ]	[ ]	[ ]
Scissor cut	[ ]	[ ]	[ ]	[ ]	[ ]
Hitting the head against the top of the ambulance	[ ]	[ ]	[ ]	[ ]	[ ]
Slamming of the rear door while dropping off the stretcher or transferring the patient into ambulance	[ ]	[ ]	[ ]	[ ]	[ ]
Hitting arm, leg etc on sharp corners	[ ]	[ ]	[ ]	[ ]	[ ]
Hitting head on the backboard (for ambulances which is placed on the top)	[ ]	[ ]	[ ]	[ ]	[ ]
Dropping the monitor on you	[ ]	[ ]	[ ]	[ ]	[ ]
Difficulty in treatment as the stretcher is on the left side	[ ]	[ ]	[ ]	[ ]	[ ]
Failing to reach the patient in the sitting position during intervention	[ ]	[ ]	[ ]	[ ]	[ ]
Difficulties during removal and insertion of the scoop stretcher	[ ]	[ ]	[ ]	[ ]	[ ]

Serum hangers are exposed (the serum hangers next to the stretcher are not fixed and they are moveable. They can be used as a damaging device by aggressive patients).	[ ]	[ ]	[ ]	[ ]	[ ]
Jamming arms, legs etc. due to interior movement of the stretcher	[ ]	[ ]	[ ]	[ ]	[ ]
Hitting arms, legs, etc. as oxygen and ventilatorare out of the cabinet	[ ]	[ ]	[ ]	[ ]	[ ]
Risk of deflagration since oxygen is exposed	[ ]	[ ]	[ ]	[ ]	[ ]
Difficulty in using sphygmomanometer mounted over the monitor	[ ]	[ ]	[ ]	[ ]	[ ]
Other (Specify)	[ ]	[ ]	[ ]	[ ]	[ ]
Other (Specify)	[ ]	[ ]	[ ]	[ ]	[ ]

Some reasons for the difficulties mentioned in the previous question are given below. If you think they involve the difficulties you have experienced, mark the option 'yes', if not, mark the option 'no'.

	Yes	No
Faulty layout of material	[ ]	[ ]
Deficient equipment	[ ]	[ ]
Narrowness of area	[ ]	[ ]
Structure of interior design (sharp corners)	[ ]	[ ]
Unsuitability of design to ergonomic measurements (uncomfortable workspace)	[ ]	[ ]
Shaking because of system deficiency in the ambulance	[ ]	[ ]
Negligence of personnel	[ ]	[ ]
Carelessness	[ ]	[ ]
Lack of experience	[ ]	[ ]
Other (Specify)	[ ]	[ ]

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