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RESEARCH ARTICLE

EVALUATION OF THE OCCUPATIONAL ACCIDENTS TO THE "KARTAL DR. LÜTFİ KIRDAR CITY HOSPITAL EMERGENCY SERVICE" IN 2019

2019 YILINDA KARTAL DR. LÜTFİ KIRDAR ŞEHİR HASTANESİ ACİL SERVİSİNE İNTİKAL EDEN İŞ KAZALARININ DEĞERLENDİRİLMESİ

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ABSTRACT

New concepts such as employee health, occupational diseases and workplace risks, which emerged as a result of the development processes of the new age, have led to the emergence of a new phenomenon called occupational health and safety in working life. Today, occupational health and safety maintains its importance more. Because more than 3.2 million people die each year as a result of work-related accidents and diseases. In addition, 160 million new cases of occupational diseases and 300 million non-fatal occupational accidents occur every year. Therefore, occupational health and safety is a global problem. One of the most important indicators of occupational health and safety is the rate of injuries and fatal occupational accidents at the workplace. The most practical way to determine the rate of occupational accidents across the country or city is to calculate the rates of occupational accidents referred to hospital emergencies. In this context, this study aimed to determine the rates of occupational accidents and occupational diseases transferred to Kartal Dr. Lütfi Kırdar City Hospital in 2019. According to the results of the study, 35.45% of work accidents are injury cases. The rate of those who applied with the complaint of post-traumatic pain referred to the emergency room is 16.3%. The total rate of fracture cases to work accidents is 13.50%. The ratio of burn cases to general work accident emergencies is 13.34% and the rate of eye-related injury cases is 6.32%. The fact that the results belong to our region, the results obtained from these data will contribute to the prevention of accidents, contributing to the audits on this issue, and the emergency service personnel to have knowledge about occupational accidents in advance.

Keywords: İstanbul, Occupational accidents, Occupational safety, Emergency services, First aid, Occupational accidents statistics

ÖZET

Yeni çağın gelişim süreçlerinin bir sonucu olarak ortaya çıkan çalışan sağlığı, meslek hastalıkları ve çalışma alanı riskleri gibi yeni kavramlar, çalışma hayatında iş sağlığı ve güvenliği diye yeni bir olgunun ortaya çıkmasına neden olmuştur. Günümüzde de iş sağlığı ve güvenliği önemini daha fazla korumaktadır. Zira her yıl işle ilgili kaza ve hastalıklar sonucunda 3,2 milyondan fazla kişi hayatını kaybetmektedir. Ayrıca her yıl 160 milyon yeni meslek hastalığı vakası ile 300 milyon ölümcül olmayan iş kazası meydana gelmektedir. Bu nedenle iş sağlığı ve güvenliği küresel boyutta bir sorundur. İş sağlığı ve güvenliği ile ilgili en önemli göstergelerden biri iş yerinde meydana gelen yaralanmalı ve ölümlü iş kazalarının oranıdır. Ülke veya şehir genelinde iş kazalarının oranını tespit etmenin en pratik yolu hastane acillerine intikal eden iş kazalarının oranlarını hesaplamaktan geçmektedir. Bu bağlamda bu çalışma 2019 yılında içinde Kartal Dr. Lütfi Kırdar Şehir Hastanesine intikal eden iş kazaları ve meslek hastalıklarının oranlarını tespit etmeyi amaçlamıştır. Çalışma sonuçlarına göre iş kazalarından %35,45'ini yaralanma vakaları oluşturmaktadır. Acile intikal eden travma sonrası ağrı şikayeti ile başvuranların oranları ise % 16,3'dür. Kırık vakalarının iş kazalarına toplam oranı %13,50'dir. Yanık vakalarının genel iş kazası acillerine oranı %13,34'dür ve göz ile ilgili yaralanma vakalarının oranı % 6.32'dir. Sonuçların bölgemize ait veriler olması, bu verilerden elde edilen sonuçların kazaların önlenmesi, bu konudaki denetimlere katkı sağlanması, acil servis personelinin iş kazaları konusunda önceden hazırlı olması konusunda bilgi sahibi olmasına katkı sağlayacaktır.

Anahtar kelimeler: İstanbul, İş kazaları, İş güvenliği, Acil servis, İlk yardım, İş kazaları istatistikleri

1. INTRODUCTION

Due to the developing economy and diversified business branches since the industrial revolution, many new professions have been created and people have started to migrate from rural to urban areas. Communities formed as a result of this mobility and reorganization, the formation of cities and the fact that people spend most of the day in production and service buildings have revealed new health problems, accident risks and occupational diseases. New concepts such as employee health, occupational diseases and workplace risks that emerged as a result of the development processes of the new era have led to the emergence of a new phenomenon called occupational health and safety in working life. In this context, occupational health and

safety has a global significance. Every year, more than 3.2 million people die as a result of work-related accidents and diseases. In addition, 160 million new cases of occupational diseases and 300 million non-fatal occupational accidents occur every year. The economic burden created by work-related diseases and deaths and the loss of productivity constitute 4% of global GDP (1). Therefore, ensuring and promoting a safe and healthy work environment should be a priority. Turkey has a relatively young population. As of 2014, the total population of the country is 77,695,904 (2). The total workforce is 29 million and the unemployment rate is 9.9%. Although occupational accidents have declined steadily over the last two decades, the figures for 2013 were almost three times higher than the previous year (3). In order to contribute to this issue, an Employee Health and Safety Unit was established under the Ministry of Health in our ministry in 2010. In addition, with the Decree Law No. 663 issued in 2011 (Regarding the Organization and Duties of the Ministry of Health and its Affiliates), the Department of Employee Health and Safety was established. The duties of this department include the control of occupational diseases and occupational accidents, workplace health and safety, training and projects (4,5). In addition, guiding information is provided to the ministry and hospital emergency units regarding these and similar studies.

It is very important to make statistics of workplace accidents and diseases in our region in order to contribute to the national economy and occupational health and safety studies and to provide data to the relevant departments of the ministries, and to determine the distribution of diseases and accidents by occupational groups and employee ages and other working parameters. For this reason, determining the rates of occupational accidents occurring in our working area and determining the risky business lines will provide a comparison of our rates with other countries and cities. In this way, our strengths and weaknesses will be revealed and we will be informed about the necessary precautions.

2. MATERIALS AND METHODS

During 2019, the occupational accidents that were transferred to the "Kartal Dr. Lütfi Kırdar City Hospital Emergency Service" were evaluated by the approval of the ethics committee of the same hospital, dated 14/10/2020 and numbered 2020/514/187/4, and their statistical analyzes were made. Records of 3762 occupational accident cases were used in the evaluation. Emergency service patient evaluation forms, patient follow-up files, and forensic case forms prepared in the emergency department for occupational accident cases were used in the study. Before the evaluation, demographic characteristics of the patients such as age and gender were determined. Hours of the day that the accident occurred were evaluated, thus attempting to identify risky time periods for accidents. Mechanisms such as trauma, burns, intoxication, and electric shock caused by occupational accidents, injury areas (head, chest, abdomen, spinal, etc.), and in which extremity the injury occurred were determined by statistical analysis. Categorical and continuous data were used in the evaluation.

Due to the wide variety of occupational accidents, occupational accidents were divided into main categories such as trauma, burns, fractures, dislocations, injuries, eye injuries and pain. In the tables, the rates of these main categories to general occupational accidents are given. Tables also give the rates of sub-category diseases belonging to the main categories.

In addition, the average age of the employees who had occupational accidents, the female / male ratio, the shift in which the accidents occurred more, and the accident occurrence rate by day of the week were calculated.

3. RESULTS

6.32% of the cases referred to the emergency department are eye injuries including foreign body, conjunctivitis and corneal abrasion (Table. 1).

Table 1. Eye injury rates

Case group	ICD Name of case	Number fo case	Total of group	Ratio in group case (%)	Ratio in total case (%)
Eye injuries and foreign body in the eye	Other disorders of the eyelid	9	236	3,81	6,32
	Other inflammation of the eyelid	1		0,42	
	Eye and orbital injury	63		26,69	
	Foreign body in the eye	111		47,03	
	Other disorders of the cornea	38		16,10	
	Lacrimal system disorders	12		5,08	
	Retinal detachment and tears	2		0,85	

The total rate of fracture cases to work accidents is 13.50%. 1.99% of the fractures are in the rib, 1.39% in the spine, 0.60% in the acetabulum, 21.60% in the foot, 11.31% in the calf and knee, 35.91% in the wrist and hand 1.59% in femur, 0.99% in face and head bones, 0.79% in coccyx, 1.39% in lumbar vertebrae, 2.98% in shoulder and upper arm, 20% , 63 in the forearm, 0.6% in the pubis and 0.2% in the sacrum bone (Table 2).

Table 2. Rates of fracture cases

Case group	ICD Name of case	Number of case	Total of group	Ratio in group case (%)	Ratio in total case (%)
Bone fracture	Acetabular fracture	3	504	0,60	13,50
	Foot fracture, excluding ankle	106		21,03	
	Fracture of the calf, including knee	57		11,31	
	Fracture at wrist and hand level	181		35,91	
	Femur fracture	8		1,59	
	Rib fracture	8		1,59	
	Fractures of the rib (s), sternum, and thoracic spine	2		0,40	
	Fractures of the head and facial bones	5		0,99	
	Coccyx fracture	4		0,79	
	Lumbar vertebra fracture	7		1,39	
	Shoulder and upper arm fractures	15		2,98	
	Forearm fracture	104		20,63	
	Pubis fracture	3		0,60	
	Sacrum fracture	1		0,20	

Of the injuries, 71.28% finger, hand and wrist, 1.66% arm and upper arm, 0.38% shoulder, 1.06% head, 6.32% eye / eyelid and circumference, 2.95% Knee and leg, 0.08% abdominal and pelvic area, 2.35% foot and ankle wounds were observed (Table 3). 35.45% of occupational accidents coming to the emergency department are injury cases.

Table 3. Injury rates

Case group	ICD Name of case	Number of case	Total of group	Ratio in group case (%)	Ratio in total case (%)
The injury	Firearm fire other and unspecified, mode of action not determined	1	1323	0,08	35,45
	Superficial injury to the ankle and foot	28		2,12	
	Muscle and tendon injury at the calf level	3		0,23	
	Calf crush injury	2		0,15	
	Open wound of the calf	39		2,95	
	Open wound to the head	5		0,38	
	Crushing injury to the head	1		0,08	
	Contact with a blade, sword, or wedge	28		2,12	
	Being beaten, shot, kicked, bent, bittened by another person	16		1,21	
	Superficial injuries of more than one body area	38		2,87	
	Other disorders of the nose and nasal sinuses	2		0,15	
	Being squeezed, caught, crushed, pressed between objects	2		0,15	
	Striking objects or other collisions with them	61		4,61	
	Localized swelling, mass and lump of skin and subcutaneous tissue	2		0,15	
	Injury of blood vessels at wrist and hand level	3		0,23	
	Muscle and tendon injury at wrist and hand level	42		3,17	
	Open wound of the wrist and hand	943		71,28	
	Intracranial injury	2		0,15	
	Open wound of the hip and thigh	18		1,36	
	Superficial injury of the hip and thigh	1		0,08	
	Superficial injuries of the abdomen, waist, and pelvis	1		0,08	
	Contact with sharp glass	4		0,30	
	Contact with sharp object, the mode of occurrence is not determined	3		0,23	
	Contact with a blunt object, the mode of occurrence is not determined	4		0,30	
	Superficial injury leg and calf	11		0,83	
	Open shoulder wound	2		0,15	

	Open wound for forearm	20		1,51	
	Pelvic organ injury	1		0,08	
	Nail disorders	3		0,23	
	Superficial injury to the thorax	3		0,23	
	Open wound in the upper arm	5		0,38	
	Foreign body or object entering through the skin	23		1,74	
	Superficial head injury	6		0,45	

Other cases are 0.26% infection and 5.47% trauma. Soft tissue damage is the most common 90.20% in trauma cases (Table 4).

Table 4. Comparison and rates of traumas

Case group	ICD Name of case	Number of case	Total of group	Ratio in group case (%)	Ratio in total case (%)
Trauma	Bursopathies, other	2	204	0,98	5,47
	Internal disorder of the knee	2		0,98	
	Other joint disorders, not elsewhere classified	2		0,98	
	Complications of internal orthopedic prosthetic devices, implants and grafts	2		0,98	
	Other intervertebral disc disorders	1		0,49	
	Injury of intrathoracic organs other and unspecified	1		0,49	
	Other localized connective tissue disorders	1		0,49	
	Muscle and tendon injury at forearm level	3		1,47	
	Bleeding from the respiratory tract	2		0,98	
	Other disorders of the urinary system	4		1,96	
	Soft tissue disorder, unspecified	184		90,20	

Post-traumatic pain is 85.38% joint pain, 3.49% back pain, 0.66% abdominal and pelvic pain (Table 5).

Table 5. Proportions of patients with complaints of pain referred to emergency services

Case group	ICD Name of case	Number fo case	Total of group	Ratio in group case (%)	Ratio in total case (%)
Pain	Abdominal and pelvic pain	4	602	0,66	16,13
	Pain, unspecified	63		10,47	
	Dorsalgia	21		3,49	
	Limb pain	514		85,38	

In occupational accidents referred to the emergency department, 1.26% infection, 0.16% allergy, 0.24% poisoning, 0.29% electric shock and 0.03% hearing loss were observed. The most common infections are those related to the eye. Skin-related ones are at the forefront of allergy cases. Poisoning mostly occurred by inhalation of toxic gases (Table 6).

Table 6.Infection, Allergy, Poisoning, Electric Shock and Hearing Loss Rates

Case group	ICD Name of case	Number of case	Total of group	Ratio in group case (%)	Ratio in total case (%)
Infection	Acute upper respiratory tract infections, multiple and unspecified sites	1	47	2,13	1,26
	Other local infections of skin and subcutaneous tissue	3		6,38	
	Dermatitis, other	1		2,13	
	Infectious diseases, other and unspecified	6		12,77	
	Iridocyclitis	2		4,26	
	Keratitis	5		10,64	
	Conjunctivitis	26		55,32	
	Osteomyelitis	1		2,13	
	Fever of unknown origin	1		2,13	
	Other zoonotic bacterial diseases, not elsewhere classified	1		2,13	
Allergy	Allergy, unspecified	4	6	66,67	0,16
	Allergic contact dermatitis	2		33,33	
Poisoning	Smoke, fire and flame exposure other, specified	2	9	22,22	0,24
	Exposure to gases and other vapors and accidental poisoning	2		22,22	
	Toxic effect of carbon monoxide	1		11,11	
	Toxic effect of corrosive corrosive substances	1		11,11	

	Attack with pesticides	1		11,11	
	Biting and being bitten by non-poisonous insect and arthropod	2		22,22	
Electric shock	Exposure to power lines	11	11	100,00	0,29
Hearing loss	Hearing loss, other	1	1	100,00	0,03

The ratio of burn cases to general work accident emergencies is 13.34%. Among the burns, first-degree burns are most common, affecting 10% of the body. Their rate is 56%. The rate of burns affecting one or more body parts is 31.73%. The rate of hand burns is 3.61%, the rate of second degree burns is 4.02%, and the rate of third degree burns is 0.6% (Table 7).

Table 7. Rates of burn incidents

Case group	ICD Name of case	Number of case	Total of group	Ratio in group case (%)	Ratio in total case (%)
Burn	Burns and corrosion in the head and neck	2	498	0,40	13,34
	Burns and corrosion of more than one body area	158		31,73	
	Other effects of external causes	2		0,40	
	Burns and corrosion of the wrist and hand	18		3,61	
	Body burns and corrosion	2		0,40	
	Burning and corrosion of the hip and lower limb, excluding ankle and foot	3		0,60	
	Burns and corrosion of the shoulder and upper extremity, excluding wrist and hand	10		2,01	
	Burns involving less than 10% of the body surface	280		56,22	
	Burns involving less than 20% of the body surface	20		4,02	
	Burns that involve less than 30% of the body surface	3		0,60	

The rate of those who come to the emergency department with neurological problems is 0.54%. The main ones are impaired brain functions, vertigo, nausea and vomiting, epilepsy, headache, cerebral infarction. The rates of neurological disorders are close to each other.

Table 8.Rate of neurological cases referred to emergency service

Case group	ICD Name of case	Number of case	Total of group	Ratio in group case (%)	Ratio in total case (%)
Neurological Disorders	Headache	2	20	10,00	0,54
	Dizziness (vertigo)	5		25,00	
	Other disorders of the brain	4		20,00	
	Nausea and vomiting	3		15,00	
	Epilepsy	2		10,00	
	Cerebral infarction	1		5,00	
	Cerebrovascular disease sequelae	2		10,00	
	Vestibular dysfunction	1		5,00	

The ratio of work accidents to all work accidents is 0.72%. 48.15% of the dislocations are ankle dislocations, 37.4% wrist dislocations, 7.41% shoulder and arm dislocations, and 7.41% knee joint dislocations. After falling, soft tissue damage is mostly caused by falls from the same level. Its rate is 82.38%. The rate of falling from different levels is 14.34% and the rate of falling from the stairs is 3.28%. The ratio of falls to general work accidents is 6.54% (Table 9).

Table 9.Rate of dislocations and soft tissue injuries

Case group	ICD Name of case	Number fo case	Total of group	Ratio in group case (%)	Ratio in total case (%)
Joint dislocation	Dislocation of joints and ligaments at ankle and foot level,	13	27	48,15	0,72
	Dislocations, sprains and strains of knee joints and ligaments	2		7,41	
	Dislocations, sprains and strains of joints and ligaments at the wrist and hand level	10		37,04	
	Dislocations, sprains and strains of the shoulder girdle joints and ligaments	2		7,41	
Post-fall soft tissue damage	Don't fall from the same level, other	201	244	82,38	6,54
	Don't fall from one level to another	35		14,34	
	Falling from stairs and steps	8		3,28	

15.6% of the employees who had a work accident were women and 84.4% were men. Age ranges of the cases varied between 13 and 64 years, and the mean age was determined as 37.29 ± 11.29. The distribution of occupational accidents by age is 3.4% in the 13-20 age range, 28.29% in the 20 - 30 age range, 27.12% in the 30 - 40 age range, 26.7% in the 40 - 50 age range and 50 - 64 years old It was detected as 14.35% in the range. It was observed that the occupational accidents did not change significantly according to the days of the week, but mostly occurred at 19% on Saturday, 6% on Sunday, 14% on Monday, 13% on Tuesday, 14% on Wednesday, 14% on Thursday, and 14% on Friday. Most of the accidents were 50.73% during the day shift between 08:00 and 16:00, 40.73% between 16:00 and 00:00 in the evening shift and 8.52% during the night shift from 00:00 to 08:00. It has been observed to occur between the hours.

4. DISCUSSION

35.45% of occupational accidents coming to the emergency department are injury cases. The rate of those who applied with the complaint of pain referred to the emergency room is 16.3%. The total rate of fracture cases to work accidents is 13.50%. The ratio of burn cases to general work accident emergencies is 13.34%. 6.32% of the cases referred to the emergency service are eye injuries including foreign body, conjunctivitis and corneal abrasion. Trauma cases have a high rate among occupational accidents with 5.47%. The rate of dislocation cases to all work accidents is 0.72%. In occupational accidents referred to the emergency department, 1.26% infection, 0.16% allergy, 0.24% intoxication, 0.29% electric shock and 0.03% hearing loss were observed. The rate of those with neurological problems is 0.54%.

According to TUIK 2014 data, almost 50% of the injuries seen in patients are simple wounds and superficial injuries. In our study, the superficial injury rate was determined as 35.45%.

Trauma-related fractures, injuries and sprains are the most common 61% of occupational accidents referred to "Kartal Dr. Lütfi Kırdar City Hospital Emergency Service". Kadıoğlu et al. (2016) found this rate as 96.4% in a similar study they conducted in the province of Kütahya, Karakurt et al. (2013) found 62% of extremity injuries in their study in Adana.

In this practice, 1.99% of the fractures were in the rib, 1.39% in the spine, 0.60% in the acetabulum, 21.60% in the foot, 11.31% in the calf and knee, 35.91% in the wrist. and hand, 1.59% in femur, 0.99% in face and head bones, 0.79% in coccyx, 1.39% in lumbar vertebra, 2.98% in shoulder and upper arm, 20.63% was seen in the forearm, 0.6% in the pubis and 0.2% in the sacrum bone.

In our study, 60% of upper extremity injuries were seen. Karakurt et al. (2013), this rate was 46%, and Dağlı et al. (2012) found it as 65% in their research. Similarly, Kalemoğlu et al. (2006) included 552 occupational accident cases, 43% of upper extremity injuries, Kıran et al. (2006), the rate of upper extremity injury 41%, Erdemli et al. (2017) observed that it was 45%.

Satar (2004) stated in his study that 58% of the cases were between 12:00 and 20:00 when the application hours to the emergency service were evaluated. In this study, the times when the most injuries occur were during the day shift with a rate of 50.73%. It has been determined that 22% of workers in the machinery-automotive sector are exposed to work accidents more frequently. Incision injury was identified as finger amputation (82 patients, 28%).

According to the research of Özkan (2010), the most common injury mechanism that applied to the emergency room was found to be entangled in the machine with 31.5%. This was followed by injury with a blunt object with 21.5%, falling from a height with 18.9%, injury with a penetrating knife with 17%, foreign body intrusion into the eye with 3.9% and others. Similarly, in this study, cases of injuries as a result of falling 6.54% were found. It was stated that isolated extremity injury (74.2%) was the most injured body part. Multiple body injuries (8.5%), facial injuries (5.5%), head and neck injuries (4.6%) followed respectively.

5. CONCLUSION

It is very important to make the statistics of workplace accidents and diseases in order to contribute to the national economy and occupational health and safety studies and to provide data to the relevant units of the ministries, and to work on the distribution of diseases and accidents by occupational groups and employee ages and other working parameters. In this context, Ceylan (2011, 2014), Camkurt (2007), Yardım (2007), Kadıoğlu (2016), Karakurt (2012,2013), Dağlı (2012), Erdemli (2017) studies are available. In addition, there are valuable data and information in the Turkish institution data (2017), SSI statistics (2017). The data we obtained as a result of the study are similar to the findings of the researchers mentioned above. The

different results obtained may be due to different industries and risk factors in the regions of the researchers. The data we have obtained as a result of this research and the results obtained from these data will contribute to the prevention of accidents, to contribute to the audits on this issue, to the emergency service personnel to be informed about occupational accidents in advance.

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