

Causes of Work Accidents Experienced by Healthcare Workers: A Retrospective Five-Year Study

Sağlık Çalışanlarının Yaşadığı İş Kazalarının Sebepleri: Retrospektif Beş Yıllık Bir Çalışma

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ABSTRACT

Occupational accidents are health and safety issues specific to working life. The person, place and time characteristics of work accidents can be examined. Examination of these points will be beneficial in preventing accidents. The aim of this study is to investigate the causes of occupational accidents the healthcare workers in a children's hospital are exposed to.

In this descriptive study, healthcare workers who experienced occupational accidents in a children's hospital, were included. Occupational accident forms of the Hospital Occupational Health and Safety Unit between 2015 and 2019 were analyzed retrospectively.

A total of 100 occupational accidents were reported in the last five years. The mean age of the employees who were exposed to occupational accidents was 32.6±8.5 years. 63% of the employees were women. The mean years of employment of the employees was 8.7±7.3 years. In terms of profession, 70% of the employees were nurses and 19% were cleaning staff. 45% of the occupational accidents occurred in intensive care units and 26% in pediatric clinics. 60% of the accidents occurred in the morning hours. 72% of occupational accidents were needlestick injuries, 9% were falling or bumping, 8% were exposure to blood and other infectious fluids. Most of the needlestick injuries in nurses occurred while applying treatment, drawing blood, establishing vascular access and due to patient movement, respectively.

In conclusion, the most common occupational accidents in hospitals are needlestick injuries. Among the employees, those who are exposed to work-related injuries most frequently are nurses and cleaning staff.

Keywords: Hospital, Medical Staff, Needlestick injuries, Occupational Accidents

ÖZ

İş kazaları, çalışma hayatına özgü sağlık ve güvenlik konularıdır. İş kazalarının kişi, yer ve zaman özellikleri incelenebilir. Bu noktaların incelenmesi kazaların önlenmesi çalışmalarında yarar sağlayacaktır. Bu çalışma, bir çocuk hastanesinde çalışan sağlık çalışanlarının maruz kaldığı iş kazalarının nedenlerini araştırmak amacıyla yapılmıştır.

Tanımlayıcı tipteki bu çalışmaya bir çocuk hastanesindeki iş kazası geçiren sağlık çalışanları kapsamaktadır. Hastane İş Sağlığı ve Güvenliği Birimi'nin 2015- 2019 yılları arasındaki iş kazası formları retrospektif olarak incelenmiştir.

Son beş yılda toplam 100 iş kazası bildirilmiştir. İş kazasına maruz kalan çalışanların yaş ortalaması 32,6±8,5'dir. Çalışanların %63'u kadındır. Çalışanların ortalama çalışma süresi 8,7±7,3 yıldır. Mesleklerine göre çalışanların %70'i hemşire, %19'u temizlik personellerinden oluşmaktadır. İş kazaların %45'i yoğun bakımlarda, %26'sı çocuk servislerinde olmuştur. Bu iş kazaların %60'ı sabah saatlerinde meydana gelmiştir. İş kazaların %72'si iğne batması, %9'u düşme- çarpma, %8'i kan ve diğer enfekte sıvı sıçraması nedeniyle olmuştur. Hemşirelerde en sık iğne batması nedenleri sırasıyla tedavi uygularken, kan alırken, damar yolu açarken ve hasta hareketi nedeniyle olmuştur.

Sonuç olarak, hastanede iş kazalarının çoğunu iğne batmalarını oluşturmaktadır. Çalışanlardan en sık hemşireler ve temizlik personeli iş kazalarına maruz kalmaktadır.

Anahtar Kelimeler: Hastane, İğne Batması Yaralanmaları, İş Kazaları, Sağlık Çalışanları

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INTRODUCTION

Occupational accidents are one of the most important issues of working life in Turkey as well as worldwide. Occupational accidents are health and safety issues specific to working life.¹ According to the International Labor Organization, occupational accident is defined as "An unexpected and unplanned occurrence, including acts of violence, arising out of or in connection with work, which results in one or more workers incurring a personal injury, disease or death".² Most of the studies on occupational accidents experienced by healthcare professionals are related to exposure to blood and body fluids and needlestick injuries (NSIs).³⁻⁶ Injuries caused by a needlestick or sharp instruments that come in contact with biological materials obtained from patients, pose a risk of exposing healthcare workers (HCWs) to infections such as hepatitis B, hepatitis C and HIV.^{7, 8} However, healthcare personnel are

not only exposed to biological risk factors. HCWs may be exposed to many dangers such as biological, chemical, physical, ergonomic and psychosocial hazards.⁹ In order to evaluate the occupational accidents and employee safety problems that HCWs are exposed to and to contribute to the process of seeking solutions, it is important that HCWs evaluate employee safety practices and identify occupational accidents they are exposed to.¹⁰ General epidemiological (person, place and time) characteristics of occupational accidents may be examined. These features indicate the risk groups or risky situations in accidents. Examining these features will be beneficial in preventing accidents.¹

The aim of this study is to investigate the causes of occupational accidents the HCWs in a children's hospital are exposed to.

MATERIALS AND METHODS

In this descriptive study, HCWs who experienced occupational accidents in Diyarbakır Children's Hospital, were included. The branch hospital consisting of pediatric clinics has a total capacity of 442 beds, 52 of which in the neonatal intensive care unit and 41 in the pediatric intensive care unit. Approximately 750,000 patients are examined and 25,000 patients receive inpatient treatment annually. Approximately 1100 people work in the hospital. According to the Occupational Health and Safety Law in Turkey, the employer is obliged to keep records of all occupational accidents and notify the Social Security Institution within three working days after the accident.¹¹ Occupational accident data are collected through the occupational accident and occupational disease notification form at the hospital. This form consists of four parts. The first part includes the characteristics of the workplace, the number and distribution of the employees. The second part includes personal data, demographic characteristics

and working style of the casualty. The third section includes information about the accident (time and place of the accident, type of injury, the cause of the accident and the work environment). The fourth section is related to occupational diseases. Occupational accident forms of the Hospital Occupational Health and Safety Unit between 2015 and 2019 were analyzed retrospectively. Person, place and time characteristics of occupational accidents were examined. Violence incidents that were given a white code and not reported as work accidents were not included in the study.

Statistical Analyses

The obtained data were analyzed using the SPSS.21 software. Number, percentage and average values are given as descriptive statistics.

Aspect of Research Ethics

Ethical approval for the study was obtained from the Ethics Committee of

Health Sciences University Gazi Yaşargil Training and Research Hospital (Approval date: 12/02/2021, approval number: 672).

Limitations of the Study

The data of our study is limited to occupational accidents reported to the

hospital's occupational health and safety unit. If one person is appointed to be in charge of occupational health and safety in each unit of the hospital, missing reports in such cases may decrease.

RESULTS AND DISCUSSION

A total of 100 occupational accidents have been reported to the hospital Occupational Health and Safety Unit in the last 5 years (2015-2019). The average age of employees exposed to work accidents is 32.6 ± 8.5 (20-55) years. 63.0% of the employees are women. According to the education level, 10.0% of the employees are primary school graduates, 7.0% secondary school and 80.0% are university graduates. As the number of years of employment increased, the rate of occupational accidents decreased. Occupational accidents were mostly seen in employees with working time less than 5 years (35.0%), while the least occupational accidents were seen in employees with a working time of over 20 years (10%). In terms of profession, 70% of the employees were nurses and 19% were cleaning staff (Table 1).

According to the statistics of the Social Security Institution 422,463 employees had an occupational accident in Turkey in 2019. 7078 (1.7%) of them were healthcare workers. Approximately 80% of all of the employees who had an occupational accident in Turkey were male, and approximately 75% of the HCWs were female. 65.5% of the HCWs who had an occupational accident were nurses, 6.6% were doctors and 2.7% were midwives.¹² In a study conducted in Brunei, 79.7% of the HCWs who suffered from sharp tool injuries were women and 53% were nurses.¹³ In the study of Saadeh et al., needlestick and sharp tool injuries occurred most frequently to nurses (39.7%) and cleaning staff (36.3%).⁶ In a study conducted in Istanbul, it was determined that 64% (9) of the NSIs occurred to cleaning staff members and 36% (5) to nurses.¹⁴ In a study conducted in Poland, it was determined

that nurses/midwives were exposed to blood the most (41.2%).⁷

In our study, it was determined that 63% of the HCWs who had an occupational accident were women. In this regard, our results were consistent with the official statistics in Turkey and the results of the study of Win et al.¹²⁻¹³

Table 1. Demographic Characteristics of Healthcare Workers Who Had an Occupational Accident (N=100)

Variables	%	
Gender	Male	37.0
	Female	63.0
Age	20-24 years old	12.0
	25-29 years old	32.0
	30-34 years old	21.0
	35-39 years old	12.0
	40-44 years old	12.0
	45 years and older	11.0
Education status	Primary school	10.0
	Middle School	7.0
	High school	3.0
	University	80.0
Job title	Nurse-Midwife	70.0
	Cleaning staff	19.0
	Other staff *	11.0
Years of employment	0-4 years	35.0
	5-9 years	28.0
	10-14 years	14.0
	15-19 years	13.0
	20 years and above	10.0

*Laboratory Technician, Anesthesia Technician, Doctor, Emergency Medical Technician, Clinical Support

While most studies in the literature reported that among health care personnel,

nurses were exposed to occupational accidents the most, very few studies on cleaning staff were found.^{5-7, 13-15} In a study conducted in a hospital in Brazil, it was found that 13.6% of cleaning staff had an occupational accident.¹⁵ In our study, in terms of profession, occupational accidents were seen most frequently in nurses (70%), similar to other studies. The second group who had occupational accidents most frequently was cleaning staff (19%). These results were consistent with the study of Saadeh et al.⁶

It was found that 45% of the occupational accidents occurred in intensive care units,

and 26% in inpatient units. When occupational accidents were evaluated in terms of time of occurrence, 35% had occurred between 10:00-12:00 in the morning and 25% had occurred between 13:00-15:00 in the afternoon. 72% of the accidents were NSIs, 9% were falling or bumping, 8% were exposure to blood and other infectious fluids. In terms of injuries by body parts, 68% were hand injuries, 10% body, 10% foot or leg, 9% face or eye injuries. In consequence of occupational accidents, 10% of the employees had been incapacitated for at least 1 day (Table 2).

Table 2. Distribution of Occupational Accidents Experienced by Healthcare Workers (N = 100)

Variables		%
Units in which the accidents occurred	Intensive Care Unit	45.0
	Inpatient Unit	26.0
	Other medical fields*	19.0
	Administrative Units **	6.0
Time of the accidents	08:00 - 10:00 in the morning	12.0
	10:00- 12:00 in the morning	35.0
	13:00-15:00 in the afternoon	25.0
	Other	28.0
Causes of the accidents	Needlestick injuries	72.0
	Falling - bumping	9.0
	Blood and other infected fluid splashes	8.0
	Exposure to blood and other infectious fluids	3.0
	Unstable object falling on the employee	3.0
Injuries by body part	Exposure to chemicals	5.0
	Hand	68.0
	Body	10.0
	Foot-leg	10.0
	Face and eye	9.0
Incapacity for work	Head	3.0
	Yes	10.0
	No	90.0

*: Blood collection unit, Laboratory, Polyclinic, Operating room, etc.

**: Archive, Warehouse etc.

The most important feature of accidents in terms of personal characteristics is that younger employees and those with less work experience are more likely to suffer from

accidents.¹ According to the statistics of the Social Security Institution, 7.1% of the HCWs had been incapacitated for at least 1

day, in consequence of occupational accident in 2019.¹²

In our study, it was determined that 10% of the employees received incapacity reports at least for 1 day. The rate of incapacity for work was above the average in Turkey. This may be due to the fact that the study was conducted in an extensive branch hospital. In our study, it was found that as the number of years of experience increased, occupational accidents were observed less frequently. It was determined that occupational accidents were most frequently seen in employees who had been working in the hospital less than 5 years (35%) and least frequently in

employees who had been working in the hospital for more than 20 years (10%). This shows that occupational health and safety training of new employees should not be overlooked.

The most common causes of NSIs are presented in Table 3. According to the table, most of the NSIs in nurses occurred while applying treatment, drawing blood, establishing vascular access and due to patient movement, respectively. Cleaning staff members were injured most frequently during cleaning, due to used needles left around.

Table 3. Causes of Needlestick Injuries Involving Healthcare and Cleaning Staff

	Causes of Needlestick Injuries	Number	%**
Healthcare Personnel* (n = 63)	During treatment	20	31.7
	While drawing blood	18	28.6
	While establishing vascular access	8	12.7
	Patient movement	4	6.3
	Due to a used needle left around	4	6.3
	While trying to open or close a needle cover	3	4.8
	While disposing a needle into the medical waste container	3	4.8
	While changing a urine drainage bag	1	1.6
	Due to accidentally dropping a needle	1	1.6
	Due to the syringe plunger getting stuck	1	1.6
Cleaning Staff (n =9)	Due to a used needle left around	4	44.5
	While collecting garbage	3	33.3
	Due to a needle thrown in the waste bag	2	22.2

*: Nurse, Anesthesia Technician, Doctor, Laborant

** : The column percentage is given.

In studies conducted in different countries, it was found that 9.7% to 67.8% of HCWs were exposed to NSIs. According to these studies, 27% to 50% of NSIs were not reported or reported with missing information.^{8,16-19} The most common reason for not reporting such injuries is the perception that there is a low risk of infection (51-87%).^{16, 18} In the study of Katsevman et al., it was determined that one of the most important reasons for not reporting NSIs was that the employee perceived the injury as insignificant and that the patient was

evaluated as low-risk.¹⁹ In the study of Valsan et al. on occupational exposure to pathogens, it was found that 93.6% of the HCWs had a needlestick injury and 6.4% were exposed to splashes. It was determined that most of the NSIs occurred in medical settings (34.9%), during morning shifts (51.3%) and while recapping used needles (43.6%).⁵ Amini et al. found that most of the NSIs occurred in the emergency departments. 71% of the NSIs were caused by injection needles.¹⁷ In the study of Gomes et al., it was determined that 81% of the occupational accidents among cleaning staff members

were due to sharp tool injuries.¹⁵ In a study conducted in Brazil, it was found that 83% of the occupational accidents were caused by sharp tools and in 81% of them, upper extremities were injured.²⁰

In our study, 72% of the occupational accidents were due to needles, 9% were falling or bumping, 8% were due to exposure to blood and other infectious fluids. Most of the accidents occurred during the morning shifts (60%) and in the intensive care unit (45%). It was determined that most of the NSIs in nurses occurred while applying treatment and drawing blood, while cleaning

staff members were injured most frequently during cleaning, due to used needles left around. Hands were the most frequently affected body part (68%). In our study, similar to other studies, the highest numbers of injuries were caused by needles; however, other occupational accidents such as falling or bumping were also observed. This situation was thought to be due to the recording of other occupational accidents that occurred in the hospital environment, in addition to the accidents that occurred during patient care in our study.

CONCLUSION AND RECOMMENDATIONS

Most of the occupational accidents in the hospital were caused by needles. Among all employees, nurses and cleaning staff members were exposed to occupational accidents the most. Most of the NSIs in nurses occurred while applying treatment, drawing blood, establishing vascular access and due to movements of pediatric patients. Cleaning staff members were injured most frequently during garbage collection, due to needles thrown in the waste bags and due to used needles left around. Since needles are likely to be contaminated, NSIs pose a serious risk of infection for healthcare workers. To reduce the risks of such infections, it is important to periodically train HCWs about pathogens transmitted through contact with blood and body fluids, to raise awareness, to vaccinate vulnerable employees and to encourage the use of personal protective equipment.

It may be beneficial to keep regular records of occupational accidents, including near

miss incidents, to take the necessary precautions by determining the place and time of the accidents and the people involved. Precautions that may help prevent injuries include: reminding HCWs to always wear gloves when treating patient and to dispose used needles by throwing them into sharps disposal containers without recapping them, preventing exposed needles from being thrown into the waste bins, placing visual reminders about using sharps disposal containers. In addition, measures should be taken by the institution in order to prevent exposure to occupational accidents. Establishing aseptic units in children's hospitals, where half-dose ampoules or vials are frequently used, may be a good strategy to reduce NSIs, which are the most frequently seen injuries among healthcare workers. Aseptic units will help reduce the risk of contamination of ampoules and HCWs will not be exposed to NSIs during the preparation of medication for injection.

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