Occupational Accidents among Hospital Staff

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ABSTRACT

Background: The importance of safety in hospitals can be studied from different angles since hospital is a critical environment for incidents. Assessment of occupational accidents in hospitals can prevent their recurrence and maintain human and financial resources. This study aimed to investigate the occupational accidents among staff in a hospital.

Methods: This cross-sectional descriptive-analytical study was carried out in a hospital in Tehran University of Medical Sciences. Two hundred and thirty staff from various wards of the hospital were recruited by stratified random sampling. Data collection was performed using a researcher-made questionnaire. Data were analyzed by the SPSS-20 software with descriptive statistics, Mann-Whitney and Kruskal-Wallis tests.

Results: The study results revealed that among staff, most of the occupational accidents was related to skin contact with blood or other body fluids and least of them belonged to toxicity with solvents. The results showed significant differences regarding occupational accidents between different groups of gender, years of work experience, organizational position, shift type, and age.

Conclusion: Since most of the occupational accidents happened at least one time among hospital staff, paying attention to prevention of it is necessary. Due to the complex nature of hospitals, management and prevention of occupational accidents require all personnel's willpower and involvement, and hospital management reform.

1. Background

Every year, millions of job accidents occur worldwide and lead to death or temporary or permanent disabilities (Rabi & Jamous 1998). Most occupational accidents are preventable; otherwise, they can result in disability, loss of income, and changes in life quality for workers and their families. Also, they can impact on the countries' productions and economies (Breslin Smith 2006). Accident is an unplanned event and can result in injury. It is an incident that may disrupt normal continuation or development of an activity. It always occurs due to an insecure act or condition, or a combination of the two cases (Halvani 2010). Basically, protection against occupational injuries should be based on a set of principles and regulations, the applications of which will result in the preservation of human and capital resources against different risks and effectively provide tolerance within safe

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working and industrial environments to improve the employees' efficiencies (Helm Seressht & Delpishe 2001).

The importance of safety in hospital can be studied from various angles. Hospital is a critical environment for the incidence of accidents. The presence of flammable materials, medical gases, ionizing radiations, and chemicals demand serious ongoing care for the safety of patients, staff, and the public (Sadaghiani 2001). Rapid industrialization and lack of serious attention to industrial safety principles have increased occupational injury rates in the developing countries. According to the International Labor Organization (ILO), almost one third of deaths occur from occupational accidents (Wadsworth & Simpson 2003).

Based on the principles of safety economy, any diseases or premature deaths have cost and it is essential to assess disease burdens due to premature deaths by monetary measures. True that maintaining and improving health of populations of societies are the duties of governments, protecting and promoting workforce health will put further positive economic impacts on the society as well (Mohammadfam & Zokaei 2007). European Union estimated costs of occupational accidents to have been about 55 billion Euros in 2000, the amount that is even far less than the actual damages (Aghajanlo 2007).

In regional studies conducted in 175 countries, it was found that unfortunately, the system of recording occupational accidents in developing countries is not accurate and thus future occupational costs and necessary preventive planning cannot be predicted and implemented for the different related regions and countries. Yet, in 1998, 350, 000 cases out of a total of 264 million recorded occupational accidents have been resulted in irreversible and fatal injuries (Hämäläinen & Takala 2006). In a global study carried out in 2005, the number of occupational deaths has been estimated to be nearly 312, 000 cases.

In this study, the incidence of occupational accidents was reported to be 9 per 1000 persons in the Middle East (Bentley & Haslam 2001). According to the latest report of Iranian Social Security Organization in 1388, 21, 740 people have been injured due to work accidents which have led to 110 deaths and 234 cases of disability (Economics, 2009). Little research has been done regarding the factors influencing the occurrence of occupational accidents (Benavides & García 2009).

Research on occupational injuries has become a priority, which can lead to accurate identification of the causes and mechanisms intensifying possible incidents, determination of the effectiveness of the existing preventive tools and interventions, and increase of the awareness of media, policy makers, and the society of the undesirable impacts of this phenomenon (Thacker & MacKenzie 2003). In this paper, we intend to investigate the occupational accidents among staff in a hospital.

2. Materials & Methods

This research is a cross-sectional descriptive-analytical study carried out in a selected hospital in Tehran University of Medical Sciences (Jame Women's Hospital) in 2015. The population of study included all staff (except physicians) at this hospital. Two hundred and thirty subjects were selected using a stratified random sampling method.

Data were collected by the use of a researcher-made questionnaire including the following two parts: the first part consisted of demographic variables such as gender, age, years of work experience, and organizational position and the second part contained 18 occupational accidents designated based on the literature review and previous research. Each item rated "not encountered" and "encountered less than 3 times" and "encountered more than 3 times" with hospital accidents. To confirm validity of the questionnaire, the experts' ideas were used and Cronbach's alpha coefficient of 0.81 was calculated for its internal consistency. Data were analyzed using the SPSS-20 software with descriptive statistics and Mann-Whitney and Kruskal-Wallis tests.

3. Results

Of the total study samples, 15.9% and 84.1% of the personnel were male and female, respectively. Based on the age groups, 20% of the individuals were under 30 years, 62.1% were between 30 and 50 years, and the remaining were over 50 years. About 48.3% of staff had under 10 years, 35.7% had 11 to 20 years, and 16.1% had more than 20 years of work experience. The study data showed that 53.7% of staff had circulating shifts.

The frequency distribution of occupational accidents in staff are summarized in Table 1. The results demonstrated that majority of staff (76.1%) had skin contact with blood or other body fluids more than 3 times. Most staff had not encountered with toxicity with solvents (96.5%). Moreover, many of staff experienced needle stick accidents less than 3 times (37%).

Based on Mann-Whitney test, a significant differences were found between male and female regarding the incidents of random exposure to radiation, jumping of a foreign body in the eye, splashing of body fluids in the eye,

Table 1. The frequency distribution of occupational accidents in the study staff (n=230).

Type of accident	Not encountered		Less than 3 times		More than 3 times	
Cutting with sharp pointed objects	102	44.3	39	17	89	38.7
Needlestick somewhere in the body	84	63.5	85	37	61	26.5
Skin contact with blood or other body fluids	36	15.7	19	8.3	175	76.1
Broken dishes or sample slides	151	65.7	31	13.5	48	20.9
Jumping a foreign object in the eye	215	93.5	11	4.8	4	1.7
Spraying chemicals in the eye	135	58.7	45	19.6	50	21.7
Splashing of body fluids in the eye	158	68.7	28	12.2	44	19.1
Eye contact with vapors of disinfectants	89	38.7	8	3.5	133	57.8
Random exposure to radiation	80	34.8	26	11.3	124	53.9
Breathing vapors of disinfectants	71	30.9	1	0.4	158	68.7
Breathing vapors of processing agents	218	94.8	1	0.4	11	4.8
Drug or chemical poisoning	191	83	30	13	9	3.9
Toxicity with solvents	222	96.5	4	1.7	4	1.7
Fall from height	202	87.8	22	9.6	6	2.6
Slipping and falling	124	53.9	66	28.7	40	17.4
Strains caused by heavy objects falling on a part of body	163	70.9	55	23.9	12	5.2
Traumatic back pain due to patient's repositioning	95	41.3	14	6.1	121	52.6
Being beaten or injured by the patient or visitors	208	90.4	11	4.8	11	4.8

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and needle stick somewhere in the body. Furthermore, a significant differences was observed between different work shifts regarding needle stick somewhere in the body, skin contact with blood or other body fluids, splashing body fluids in the eye, breathing vapors of disinfectants, toxicity with solvents, fall from height, slipping and falling down, and traumatic back pain during patient's repositioning.

Also, based on Kruskal-Wallis test, there were significant differences between various organizational positions regarding all types of occupational accidents except for the occurrence of falling from height and being beaten or injured by patients or visitors. Moreover, significant differences were indicated between different groups of work experience years regarding all types of occupational accidents except for jumping of a foreign body in the eye, chemical spraying in the eye, and breathing vapors of processing agents (Table 2).

4. Discussion

The results showed that all staff encountered with at least one of the occupational accidents. Skin contact with blood or other body fluids and toxicity with solvents constituted the most and the least of the personnel's encounters, respectively. In a study "cuts with sharp and pointy objects" and "toxicity with solvents" was reported as the maximum and minimum of the personnel's confrontations, respectively (Joyani & Raadabadi 2011). Mahmoodi found cutting with sharp pointed objects as the highest and chemical and drug poisoning and fall from height as the lowest occupational accident of personnel (Mahmoodi 2006).

The results revealed that gender does not affect the degrees and types of accidents with the exception of 4 incidents. In the study conducted by Joyani and Raadabadi (2011), no significant differences were found between male and female regarding confrontation with occupational accidents except in the case of slipping and falling down. Also, in a study, researchers did not find any association between gender and occupational incidents (Smith & Leggat 2005). Similar studies and the results of this study indicated that gender does not have much influence on the occupational accidents occurred to staff. This result may display that managers do not need to provide separate trainings for males and females to prevent or control hospital accidents.

Table 2. Comparing different groups of gender, age, organizational position, years of work experience and work shift regarding occupational accident (n=230).

Type of accident	Mann-Whitney		Kruskal-Wallis Tests		
	Gender (P-value)	Work shift (P-value)	Age groups (P-value)	Organizational position (P-value)	Work experience (P-value)
Cutting with sharp pointed objects	0.05	0.381	0.003	0.006	0.001
Needlestick somewhere in the body	0.001	0.001	0.006	0.001	0.001
Skin contact with blood or other body fluids	0.90	0.000	0.130	0.001	0.110
Breaking dishes or sample slides	0.326	0.957	0.006	0.001	0.001
Jumping a foreign object in the eye	0.004	0.115	0.159	0.001	0.584
Spraying chemicals in the eye	0.192	0.303	0.040	0.001	0.086
Splashing of body fluids in the eye	0.007	0.003	0.001	0.005	0.001
Eye contact with vapors of disinfectants	0.528	0.348	0.001	0.001	0.004
Random exposure to radiation	0.012	0.097	0.001	0.001	0.001
Breathing vapors of disinfectants	0.035	0.036	0.001	0.001	0.003
Breathing vapors of processing agents	0.593	0.778	0.664	0.001	0.987
Drug or chemical poisoning	0.888	0.631	0.009	0.001	0.001
Toxicity with solvents	0.210	0.002	0.001	0.001	0.006
Fall from height	0.929	0.005	0.001	0.066	0.001
Slipping and falling	0.657	0.017	0.001	0.001	0.001
Strains caused by heavy objects falling on a part of body	1.000	0.897	0.001	0.001	0.001
Traumatic back pain due to patient's repositioning	0.128	0.022	0.001	0.001	0.001
Being beaten or injured by the patient or visitors	0.047	0.89	0.018	0.378	0.006

The current study indicated that people with more experience are more likely to encounter an accident. Moreover, another study showed that there is a direct but incomplete correlation between occupational incidents and years of work experience and this is due to the fact that by increasing work experience more occupational accidents occur to the staff (Nikpour & Karbasian 2001).

The results of a study indicated that years of providing service have a significant relation only with the incidence of slipping and falling down. Additionally, a significant relationship was reported between work shift and traumatic back pain incident during patient's repositioning (Mahmoodi 2006). Furthermore, Joyani and Raadabadi (2011) revealed a significant relationship between the incident of breathing vapors of processing agents and work

shift, while this association was not seen to be significant in other occupational accidents.

People who are involved in night shifts are more likely to face with occupational accidents due to fatigue and lack of concentration. This calls for more attention to shift-arrangement and adjustment of workloads for the related staff. In this study, a significant relation was also found between educational degree and occurrences of the skin contact with patient's blood and body fluids and traumatic back pain during patient's repositioning. This issue necessitates the need for staff training courses and brochures.

Our findings also demonstrated a significant relationship between the personnel's places of working and skin contact with blood or other body fluids, needle stick somewhere in the body, and breaking of dishes or sample slides. Additionally, a study indicated a significant relationship between the individuals' organizational positions and the incidents of cutting with sharp and pointy objects, spraying chemicals in the eye, and eye contact with vapors of disinfectants (Aghajanloo & Niroomand-Zandi 2008).

In conclusion, hospital staffs need specialty training about the skills of maintaining their safety in the workplace. Moreover, it should be noted that hospital managers' special attention to purchasing particular protective equipment's for their staff in hazardous locations can significantly prevent accidents.

Conflict of interest

The authors declare that they have no conflict of interest.

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