



Review

Occupational fatalities in Jordan



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ABSTRACT

Objective: Occupational fatalities are a worldwide problem. Certain occupations pose a greater risk than others. Recent statistics on global occupational injuries and diseases that might lead to temporary or permanent disability and even worse might lead to death, are staggering. The purpose of this study was to estimate the death rates from occupational injuries in Jordan over a period of four years; to estimate occupational fatality rate that results from accidental injuries and identify the most risky concurrent occupations with the type of injuries, the age and nationality of the victims.

Method: A total of 88 work related fatalities were admitted to three hospitals in Amman through 2008–2012 and were examined by a forensic (occupational) physician at the time. They were categorized according to, age, nationality, occupation, type of injury and were all tested for toxic substances.

Results: The occupation with the most fatalities was construction (44%); falling from a height was the commonest type of accident (44%) and head injuries were the leading injury type (21.6%); 9.1% of the deaths were positive for alcohol. Moreover, 22.7% of deaths were between ages of 25–29. Consequently, the mean occupational fatality rate was 2 per 100,000 workers during 2008–2012.

Conclusion: Constructions and other types of occupations are more extensive problems than what is usually anticipated, especially when safety precautions are not effective or implemented. They may cause injuries and death, which will have a socioeconomic burden on families, society, governments and industries. Not to mention the grief that is associated with the death of a worker at his work site to all concerned parties.

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1. Introduction

Occupational injuries and fatalities have become a major interest for countries and companies especially in the last decade, due to the cost of such accidents and the subsequent loss of 4% of the gross domestic product worldwide; as well as the socioeconomic burden that results from work related diseases and injuries.^{1,2}

According to the ILO (International Labor Organization), an occupational accident is an incident that occurs in the course of work and results in a fatal or non-fatal injury. Among the world's 2.7 billion workers at least 2 million deaths per year are attributable to occupational diseases and injuries; meanwhile, the WHO (World Health Organization) estimated that occupational injuries result in approximately 330,000 deaths per year per 2.7 billion workers.^{3–5}

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In the Middle East and in developing countries, mortality rates tend to be higher.⁵

Work-related injuries are frequently separated into three groups, injuries that occur in traffic incidents, injuries that occur while traveling to or from work (commuting injury) and injuries that occur in the course of work.^{1,2,4}

The ILO leading causes of occupational deaths are obstructive pulmonary diseases followed by unintentional injuries and lung cancer. Some sectors or occupations like agriculture and construction, are more hazardous than others, being responsible for 8.8% of the global burden of mortality.^{5,6} One of the determinants in occupational hazards is age, especially with young and inexperienced workers at greater risk when training and supervision are inadequate, but also among elderly workers who sustain greater risks than their younger peers because of decline in physical and cognitive abilities. Hazards are magnified among migrants in some countries.^{5–7}

According to Jordanian Law, all occupational fatalities are considered as medico-legal deaths and a full autopsy and toxicological screen should be done. This is a necessary procedure either to determine the responsibility of the employer or because the insurance or social security compensation depends on it. In an earlier period, 1980–1993, the Jordanian occupational fatality rate was 25 per 100,000 per year from a study mainly relying on social security figures.⁸

However, in our study we aim to:

- 1) review all cases of occupational fatalities that were registered in the forensic laboratory in three hospitals in Amman to determine the type of occupational fatalities and their occurrence and see whether the mortality rate has changed due to the change in the Jordanian industrial advancement,
- 2) Describe the major pattern of injuries that caused the death. We believe that work place fatal and non-fatal injuries produce a tremendous load on workers, their families and society when few resources exist for injury prevention, treatment and rehabilitation.

After all, occupational health should be achieved by the endorsement and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations, by providing safe working conditions for each worker in his or her work site.

2. Methods

This study was conducted through February 2008–November 2012 and relied on the forensic entries for deaths in three major Hospitals in Amman, these were Jordan University Hospital (JUH), Prince Hamzeh Hospital (PHH) and Prince Faisal Hospital (PFH) respectively. These three hospitals had reported a total of 1676 traumatic injury deaths that were examined by forensic physicians in that five year period; out of these deaths a total of 88 deaths were identified as occupational deaths resulting from accidents; none of the deaths were due to occupational diseases. Fatality ages ranged between 15 and 50 years. Cases were examined according to age, gender, leading cause of death, injury pattern, type of occupation as well as nationality of the deceased. Toxicological tests were carried out in all deaths to see whether these deaths had occurred due to drug abuse or alcohol intake during the course of work. Gas Chromatography/flame ionization detector (GC/FID) was used to test alcohol levels; Gas Chromatography/Mass spectroscopy (GC/MS) was used to test drug levels in biological samples obtained.

Data on the annual average estimate of the Jordanian work force was obtained from the ministry of labor. Exclusion criteria: all deaths included in this paper were medico-legal cases related to work. Permission to report the results was approved by the Institutional Review Board, Ethics Committee of JHU (J IRB/2014/1).

3. Statistical analysis

This was a descriptive modeling study. The required data were collected on the basis of research purposes using a checklist. The list of variables in the study included report number, gender, age, date of death, nationality, occupation, type of death, consequence of the death, cause of death, and laboratory reports. Data were analyzed using “SPSS 17”, descriptive statistics, Chi-square and Trend analyses were used as appropriate.

4. Results

This study investigated characteristics of occupational fatalities in Jordan during the period 2008 to 2012. Upon forensic

Table 1
Upon forensic examination, 99% of the deaths were males.

Gender	n (%)
Male	87 (98.86)
Female	1 (1.14)
Total	88 (100)

examination, 99% of the deaths were males (Table 1) and the leading age group was 25–29 years (22.7%), followed by 35–39 years (18.2%) and 18–24 years (17.0%). However, the average age of occupational fatalities was 33.08 years (Table 2).

The highest rate of fatality was in August (10.2%), followed by October (9.1%).

However, in 37 cases (42.0%), there was no data of the month available (Table 3A and Table 3B).

Construction workers in addition to governmental, military, security and police force workers constituted the two major groups in this study, with 44.3% and 17%, respectively (Table 4). The highest cause of death was falling from a height (44.3%), followed by electrocution (17%), falling objects directly on the victim (17%), being hit by a vehicle and collapse of soil dumps (5.7%) (Table 5).

Head injury was the commonest type of injury among occupational fatalities (21.6%), followed by thoracic and abdominal organ injuries (18.2%) of the cases examined. Moreover, 17% of deaths were caused by multiple injuries and electrocution. Pulmonary thromboembolism was the cause of death in (4.5%) of fatalities (Table 6).

The percentage distribution of laboratory investigation toxicology reports showed that alcohols and potential poisons were negative in 54.5% of the death. There was no sample sent in 21.6% of cases.

The presence of ethyl alcohol/poison was detected in 9.1% (Table 7).

Occupational fatality rate is defined as the number of occupational fatal death per 100,000 persons employed in all sectors.

$$[= (\text{No of fatal death}/\text{total workers}) * 100000]$$

$$= (88/4431794) * 100000 = 1.99$$

Through the study period from 2008 to 2012 from the three hospitals the mean calculated occupational fatality rate was 2 per 100,000 (Table 8).

Table 2
Age of occupational fatalities. The leading age group is 25–29 years (22.7%), followed by 35–39 years (18.2%) and 18–24 years (17.0%). However, the average age of occupational fatalities was 33.08 years old.

Age interval	n (%)
<18	1 (1.1)
18–24	15 (17.0)
25–29	20 (22.7)
30–34	14 (15.9)
35–39	16 (18.2)
40–44	11 (12.5)
45–49	9 (6.8)
50 and above	5 (5.7)
Total	88 (100)

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