



## Retrospective study of the mortality of occupational accidents in the Gharb region of Morocco

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### Abstract

Insecurity" at work can lead to a risk of injury, disability or loss of life. Mortality remains a reliable and sensitive indicator of disparities between sex, between regions, between social groups and their variations over time. The purpose of our work is to develop the state of place of fatal work accidents in the Gharb region. The study is based on 1384 accidents, of which 88.87% (n = 1230) are male and 11.13% (n = 154) are female. Of all the casualties, the mortality rate is 2% (n = 28), however, the temporal evolution shows an increase in the rate between 2010 and 2015, with a maximum posted in 2015. This situation is attributed to cutting-edge applications of the newly introduced laws by the Ministry of Trusteeship. These prerogatives remain insufficient to face the transgressions, hand in hand so to fight there.

**Keywords:** insecurity, work accident, mortality, evolution, Gharb of Morocco

### 1. Introduction

The definition of an accident at work can vary from one country to another, but generally it can be defined as "... An accident at work, whatever the cause, is considered to have been an accident. or on the occasion of work for any employee or worker, in any capacity or place whatsoever, for one or more employers or managers. "The types of work accident are: 1 / Manipulations of object 2 / Falls from full feet or height 3 / Road accidents or mission accidents [1].

Moreover, in recent years, accidents at work have rapidly increased in frequency [2,3]. This increase is mainly due to the massive creation of new businesses and companies in the country [2,3]. But this is not the only cause: the basic protection systems that companies had to insure are neither imposed by the employer nor respected by the majority of employees. For example, in Morocco, the death rate of victims of work accidents has become worrying. In fact, according to an article published in the February 14 edition of the daily "L'Economiste" (2016) [4] some 3,000 workers die each year as a result of an industrial accident. In addition, with 47.8 fatal occupational injuries per 100,000 workers, Morocco has become the country where the risk of accidents at work is highest in the region "Middle East and North Africa" (MENA).

The daily explains that the situation of safety at work remains worrying in Morocco, knowing that the risk of industrial accidents in this country remains the highest in the MENA region, according to data from the International Labor Office [3,5].

In addition, according to the Insurance and Social Security Supervisory Authority (ACAPS, 2017) [6], between (2005 and 2014), each year, an average of 43,153 occupational accidents are reported in the Kingdom. This figure is not exhaustive and would actually be higher because of the extent of the informal in some high-risk occupational sectors such as construction and public works. Indeed, according to the Office of the High

Commissioner for Planning of Morocco reported that the informal sector contributes 11.5% of national GDP (The daily "The Economist", edition of Friday, October 14, 2016) [4].

Worldwide, according to the report of the International Labor Organization (ILO) published in late (2011) [7], 317 million employees are injured every year at their place of work, an average of 850,000 accidents per day.

It should be noted that the impact of the claims may not only have disastrous consequences for the person concerned, but also on the company's activity and that the registration of causes of death is mainly motivated by prevention: identifying and quantifying the causes of death that can be addressed to reduce avoidable mortality [2,3,8].

Thus, the objective of this study is to establish a profile of death following an accident at work.

### 2. Materials and Methods

The study we conducted is conducted on 1384 employees in the public and / or private sector. These cases are recorded between 2001 and 2016 by the authorities of the Ministry in the Gharb region. After filtering on Excel, we transferred the data to SPSS support (trial version). These variables are of a socio-demographic nature and in relation to the accident (place of exercise, state of gravity, etc.). The matrix is subjected to a set of descriptive and / or differential statistical analysis such as: independence Chi-square test, correlation).

### 3. Results

#### 3.1 Epidemiological characteristics of the victims of work accidents: between 2001 and 2015

The study we conducted is carried out on 1384 accidents of which 88.87% (n = 1230) are male and 11.13% (n = 154) are female. Of all the casualties, the recorded mortality rate is 2% (n = 28). The temporal evolution of the number of deaths following an accident at work during the study period (2001 to 2015) is shown in Table (1). The results of this analysis show

two phases, the first is between 2001 and 2009 where the mortality rate is zero, this could be explained by the fact that companies do not declare their victims, the second phase, beyond 2009, knows a prior change of the industrial establishments following the instructions recommended by the

ministry of supervision. Indeed, from 2010, the mortality rate fluctuates between 0.79% recorded in 2013 and 3% posted in 2015. This increase is attributed to the efforts undertaken by the authorities, by adapting the prescribed laws to the conditions of the occurrence of the accident while exercising.

**Table 1:** Evolution of the number of deaths during the study years

Year	Number of victims per year	Number of deaths per year	Rate of mortality (in percentage)
2001	2	0	0.00 %
2002	1	0	0.00 %
2008	1	0	0.00 %
2009	8	0	0.00 %
2010	67	2	2.99 %
2011	394	8	2.03 %
2012	108	2	1.85 %
2013	127	1	0.79 %
2014	452	8	1.77 %
2015	233	7	3.00 %
Total	1393	28	2.01 %

**3.2 Relationship between death and sex**

In order to look for a possible link between death and sex, we used a chi-square independence test. The results are shown in Table (2). This table shows that the overall case fatality rate is 2%, and although the Chi-square independence test did not show a significant difference, it shows a slight difference in

the case-fatality rate between the two sexes (Chi-square = 0.31). On the other hand, the rate is 2.60% (4: 154) for females and 1.93% (24: 1243) for males. On the other hand, the odds ratio is 0.74, in a confidence interval of 0.25 and 2.16.

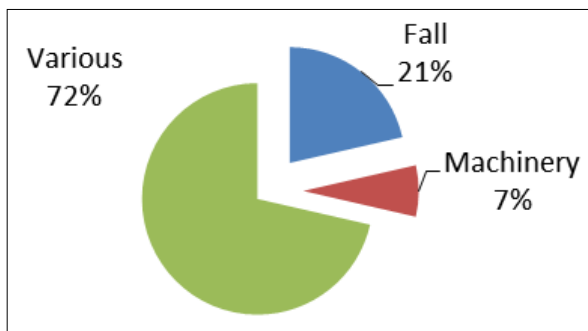
**Table 2:** Epidemiological Characteristics of Deaths of Victims of Work Accidents

	Deceased	Not deceased	Total	Case fatality rate	Chi-squared	Odds ratio	IC on 95%
Men	24	1219	1243	1.93 %	0.31	0.74	0.25 - 2.16
Women	4	150	154	2.60 %			
Total	28	1369	1397	2 %			

It remains to be noted that all the deceased cases were declared by the employer, this shows the interest given by the managers of the companies to the instructions that make up the law that manages the prerogatives of work accidents in Morocco.

**3.3 Causes that lead to death**

The results concerning the direct or indirect causes that are of the death of the victims are in the Figure (1). The results of this analysis show that 21% were victims of machine manipulation or inattention and 72% died of various causes.



**Fig 1:** Distribution of deceased according to causes of death

In addition, the building and industrial sectors recorded the highest death rates with a rate of 35.71% for each sector. In

addition, accident victims in the industry sector, more than 50% of those that was totally incapacitated.

**4. Discussion**

The published figures on occupational accidents show that "insecurity" at work - the risk of injury, disability or loss of life - is quantitatively very important; Mortality remains a reliable and sensitive indicator of disparities between sex, between regions, between social groups and their variations over time [2, 9]. It should be noted that the frequency of fatal accidents or simply those followed by a stop has been multiplied by 5 over the past 45 years, which partly explains the needs to seek a solution of this phenomenon [10]. In France, according to statistical sources of the National Fund for sickness insurance of employed workers (CNAMTS), in (2009) [11], 695019 people were victims of a work accident of which 538 died, which represents a rate of 0.77 for thousand. This rate remains sufficiently lower than ours, which was 2 %. Similarly, according to a report provided by the Tunisian Institute of Health and Safety at Work (ISST) in (2005) [12], the number of fatal work accidents reported in 1995 is 221 deaths and in 2005 only 212 victims. On the other hand, a significant drop in the accident frequency index from 43.2% in 1995 to 33.3% in 2005 [12]. These accidents resulted in 1,012,676 lost workdays, with an average of 23 days off work per accident (2005).

Otherwise, in Morocco, the building sector is responsible for

13% of work-related accidents<sup>[2]</sup>. Thus, as in many countries of the world, this sector is a sector highly exposed to accidents at work. In Quebec (Canada), for example, building has long been one of the three most risky industrial sectors, preceded by mining and forestry<sup>[13]</sup>, the prevalence rate in this sector is almost three times higher than in the other economic sectors (24.8% compared to 9%)<sup>[14]</sup> and fatal accidents account for 18% of deaths while workers do not represent only 4.3% strength<sup>[15]</sup>. However, in some countries, sectors other than the building are at the top of the list of risks. In Malaysia, for example, the transport sector has the highest incidence of fatal injuries (35.1 / 100 000), followed by agriculture (30.5 / 100 000) and building (19, 3 / 100,000)<sup>[16]</sup>.

Moreover, the links between work and the mortality have not, however, been studied in Morocco in greater detail than they are for example in Great Britain. This study shows that of the 28 deaths per work accident in the Gharb region of Morocco between 2001 and 2015, 24 were men and 4 were women. On the surface, these deaths were more numerous among men because they were more numerous in the study population. However, in reality, these differences in death rate by sex show a female excess mortality, of 2.60% in women versus 1.93% in men as confirmed by Valin (1981)<sup>[17]</sup>.

Similarly, the consequences of these work-related accidents are socio-economic and moral on the population and for some developing countries; the cost can reach 10% of GDP<sup>[18]</sup>. The causes of these varied accidents. In a study conducted on an electricity distribution company showed that the leading causes of fatal accidents are negligence of workers (malpractice) was the cause of 75% of deaths<sup>[19]</sup>. It should be noted that heat, stress and stress are the main factors in this negligence<sup>[2, 19]</sup>.

## 5. Conclusion

The insecurity at work can lead to a risk of injury, disability or loss of life. The average value of 2 %, the mortality rate among rated work-related injuries is considered high. In addition, this average hides higher values in certain years, notably the values recorded during 2010 (2.99 %) and 2015 (3 %). In contrast, a low rate of 0.79 % was recorded in 2013. This difference in mortality rates could be attributed to the efforts made by the courts, adapting the prescribed laws to the conditions of the occurrence of the accident during exercise. Also, note that the results showed that there is a significant difference between lethality rates between the two sexes.

The results of the direct or indirect causes causing the deaths of the victims show that the falls first followed by the false manipulations or the lack of inattention to a machine are considered as the most deadly causes. However, despite the serious moral and socio-economic consequences of high death rates among registered work-related accidents, the link between certain working conditions and these high rates, the phenomenon has not been sufficiently studied to develop a preventive strategy for these workers. types of accidents throughout Morocco.

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