Risk Perception and Occupational Accidents among a Group of Egyptian Construction Workers in a Construction Company in Cairo- 2018

Thesis

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Manar Ellaban

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List of Abbreviations

Abb.	Meaning
ISO	International Organization for Standardization
OSHA	Occupational Safety and Health Administration
PASS11	Power analysis and sample size software
PMI	Project Management Institute
PPEs	Personal protective equipments
SPSS	Statistical package for the social sciences

Abstract

Background: Construction sector is one of the main pillars of the global economy, even though it is a risky business in which fatal and non-fatal occupational injuries occur frequently. Information about workers' awareness about health and safety hazards, risk perception and safe work practices can help to understand where to apply prevention strategies. Unfortunately, construction sites are workplaces with limited access for research; studies at work level represent 2.28% of all available research. ***Objectives****:* To **estimate** the perception of construction workers to the occupational hazards, to **identify** types of common occupational accidents involving construction workers in an Egyptian company and to **identify** the workers' personal and work related characteristics determinants on their risk perception. ***Material and methods***: A cross sectional study was conducted among construction workers in one of the projects in Cairo. During the period from January to August 2018; a sample of **104** workers were interviewed using a structured questionnaire inquiring about socio-demographic characteristics, work related variables together with assessment of workers' risk perception. ***Results*:** the majority of the workers had low risk perception for falls, contact with chemicals, struck by objects, sharp objects, manual lifting, repetitive movements and heat stress, while the noise was reported as " no or acceptable risk category". The study identified age, health and safety training, working hours and the use of PPEs as significantly related factors to risk perception. ***Conclusion:*** risk perception among studied workers in average is low. Older age, prolonged working hours, lack of training and not wearing PPEs are significant risk factors shaping workers' perception. ***Recommendation:*** safety training and change of work environment may improve workers' perception toward occupational accidents and subsequently reduce the risk of injuries.

Key words: Construction workers – Risk – Perception – Accidents– Safety.

INTRODUCTION

The construction industry is an economic investment and its relationship with the economic development is well stated. Construction workers represent around 180 million people, or 7% of global employment ***(Abbas and Zalat, 2013).***

The construction sector in Egypt is one of the main contributors to the country's economy and one of its fastest-growing sectors. It is fueled by the continuously increasing demand for housing and by the country's large infrastructure projects. It makes up around 70% of casual wage workers ***(Abbas and Zalat, 2013).***

However, construction industry is a very hazardous industry in which fatal and non-fatal occupational injuries occur frequently due to its unique nature. Construction sites are ranked as the second most dangerous place to work, after mining workplaces ***(ILO, 2005).*** It is characterized by dynamic and temporary nature, use of different resources, poor working conditions, transitory employment, dangerous environments (e.g. noise, vibration, dust, handling of cargo and direct exposure to weather). Also, it requires coordination of different contractors and sub-contractors that may result in increased risk of injury. Additionally, the size and complexity of construction projects are increasing which raise the risks ***(El- Sayegh, 2008; Pinto et al., 2011).***

Several researches show that major causes of accidents are related to the unique environment of the construction industry, human behavior, rough worksite conditions, and poor safety management ***(El-Sayegh, 2008)***. The leading causes of construction workers' fatalities were falls, struck by objects, electrocution and caught-in/between. In 2016, these four hazards resulted in 63.7% of the construction workers' fatalities in USA. According to Occupational Safety and Health Administration (OSHA), **e**liminating them would save 631 American workers' lives yearly ***(OSHA, 2017)***.

Globally, in 2016, it was estimated that 21% of occupational fatalities recorded in the construction ***(OSHA, 2017)***. Among Egyptian construction workers, approximately 13% of work- related deaths and 18% of occupational injuries were recorded ***(Abbas and Zalat, 2013)***.

Occupational injuries and illnesses have their impact not only on safety and health, but also the high economics impact. It was observed that construction safety has gained attention because of the increasing workers' compensation for the marked increase in work injuries beside the medical and convalescent care costs ***(Pinto et al., 2011)***.

Project risk is defined as an uncertain event that, if it occurs, has a negative effect on project objectives, such as time, cost or quality. Risks are threats to project achievement. Failure to deal with risks efficiently has been shown to cause cost and

time overruns in construction projects. Risk is a calculation of the probability of the hazard to occur, and the severity of its consequences. Being able to accurately assess the risk in a situation is, at a personal level, dependent on an individual's risk perception and risk tolerance ***(El-Sayegh, 2008; National Safety Council, 2017).***

Risk perception is the ability of an individual to determine a certain amount of risk, and risk tolerance refers to a person's ability to accept a certain amount of risk. These two concepts are very much related to each other. Most of the literature review suggested that inability to accurately perceive risk may lead to higher risk tolerance, which can promote high-risky behavior ***(National Safety Council, 2017).***

Risk perception depends on objective factors like work experience, and subjective factors like risk acceptability. Therefore, the study of workers' risk perception is important, as individuals are responsible for the risks perceived in their work environment ***(Carriço et al., 2015).***

Also, there is a simple difference between hazard awareness and risk perception: hazard awareness involves having knowledge or understanding of hazards, while risk perception implies further calculation of the likelihood and severity of consequences of that hazard ***(Dongping et al., 2006).***

As the main goal of safety and health programs is to prevent workplace injuries and improve safety compliance ***(OSHA, 2016)*****,** the concept of safety climate has gained much attention in several sectors. Safety climate refers to workers' perceptions regarding managements' attitudes towards occupational safety and health. It is suggested that more favorable safety climate perceptions are related to safer behavior and accordingly less occupational accidents happen ***(El-Sayegh, 2008)*****.**

Trying to eliminate all risks in construction projects is unfeasible. Thus, there is a need for a proper risk management process to manage all types of risks. Risk management is a systematic process of identifying, analyzing and managing risks throughout a project to obtain the optimum degree of risk elimination, mitigation and control. To be successful, the organization should be committed to risk management proactively and throughout the project ***(El-Sayegh, 2008)*****.**

Safety and health programs promote a proactive approach which means "finding and fixing" workplace hazards before they can cause injury or illness. Rather than reacting to an incident, management and workers work together to identify and solve issues before they occur. This cooperation builds trust, promotes communication, and often leads to other business improvements ***(OSHA, 2016)*****.**

When workers are aware of the health and safety risks in their workplace, they can follow safe work practices. Information about workers' current and changing awareness about health and safety hazards, risk perception and safe work practices can help to understand where to apply prevention strategies ***(National Safety Council, 2017).***

Unfortunately, construction sites are workplaces with limited access for research, studies at work level represent 2.28% of all available research that makes it necessary to pay more attention to safe construction environment ***(Forteza et al., 2016).***

AIM OF THE WORK

Research questions:

- What are the occupational hazards in the construction industry in Egypt?
- What is the perception level of the Egyptian construction workers toward different occupational hazards?
- What are the factors affecting the perception of the Egyptian construction workers toward the hazards?

Research hypotheses:

- The Egyptian construction workers may perceive different occupational hazards as no or low risk hazards.
- Workers personal characteristics may affect their risk perception
- Work related environment may affect the workers risk perception.

Goal:

- To increase the level of the Egyptian construction workers perception toward their occupational hazards aiming to decrease the incidence of occupational accidents and injuries.

Objectives:

This study was designed to:

1- Estimate the perception of construction workers to the hazards in their work environment.

2- Identify types of common occupational accidents involving construction workers in an Egyptian company.

3- Identify the role of workers' personal and work related characteristics on their risk perception.