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Occupational Health Problems in Construction Industry: A Case Study

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Abstract: Construction workers are those, who perceive more clearly the lack of job safety. It has been evidenced by a number of studies that construction industry is one of the most hazardous work place industry with high rates of fatalities, injuries and health problems. It has been observed that more deaths are caused via ill health of the worker rather than any safety breach. Health problems can cause many problems for a project in terms of time overrun, cost overrun, less quality and loss of production. Hence, this paper presents various health problems in construction industry with in depth investigation of the causes leading to such health problems. Qualitative analysis has been conducted to identify the most common types of health problems recorded in this industry. Later on, their significant direct and indirect causes were identified. The findings of the research show that "heat stroke, eye strain, lungs irritation and skin disease" are found to be the major type of health problems in the construction industry of Pakistan. "Poor management, human element and poor site conditions" are found to be the main direct causes of health problems in this industry. It is further observed that "shortage in the supply of the proper equipment, lack of responsibilities, negligence of the safety precautions, and workers resistance to safety practices" are the indirect causes for the health problems. The study provides the basic information regarding this important issue to the decision makers as remedial measures can be made to reduce health problems in this industry and avoid negative impacts on the project.

Keywords: Occupational Health, Relative Importance Weight, Causes of Health Problems, Construction Industry.

1. INTRODUCTION

Construction industry is one of the leading industry in development of economy, infrastructure and provides quality of life to the people. It also contributes at a large extent in the employment rate of any country. On the contrary, higher rate of work related accidents resulting in fatalities and injuries have made this industry as one of the hazardious work related industry in the world (Camino *et al.,* 2008; Cheng, *et al.*,2010). Apart from occupational accidents, there is great concern for loss of work hours and compensation cost of the workers due to health problems in this industry (Schwatka *et al.,* 2012). The workers of this industry preceive less job security specially working in the field (Sparks, *et al.*,, 2001).

There are various types of accidents and health problems, which normally occur in construction industry but this paper focuses on work related health problems. Occupational Health and Safety (OHS) shows their serious concern on this issue around the world (Sum, 2014). This industry is plagued by occupational risky situations and poor working conditions. Workers of this industry are exposed to hazards. These hazards are difficult to quantify and these are closely associated with the nature of the job because workers of this industry work at different job sites, where they face different procedures and different site conditions (Burkhart *et al.,* 1993). Significant reduction has been observed in the numbers of occupational incidents over the last 20 years. Nevertheless, construction remains a high risk industry. Safety risks in construction have been recognized for some time. Health risks have received less attention even though absence due to work-related ill-health is far greater than absence due to injuries at work (Monnery, 1998). The ill-health effects from construction activities are not always immediately obvious and can take a long time, even years, to develop. Recent report of Health and Safety Executive, UK shows that there were 76000 work related health problems identified on sites, where 31000 were the new cases reported in year 2013-14. It also highlighted the loss of working hours of the workers from site. A total estimated loss of working hours was 2.3 million in the industry due to health problems and injuries where 1.7 million loss of working hours was specifically from health problems and which consumes about 1.1 billion dollars per year for such losses (Ellis, 2014).

It has been reported that since 2001/02, cases of health problems were fallen down and reaching up to the low level of 452000 in 2011/2012 but this number increased to a level of 535000 in 2013/2014. This is the similar level of health problems cases recorded in USA in 2009/10. It has been recorded that around 13000 deaths cases occur each year due to various health problems including occupational lungs disease and cancer. The common health problems which has been observed are; back ach problems, musculoskeletal disorders, hearing loss, skin problems, breathing problems and eye strain (Reed, 2012). A recent research

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study carried out in 2014, to analyze the health problems in the construction industry in Thailand. The result shows that about 2000 to 2700 workers are affected by various health problems on sites. The research also shows its concern that this number is significantly increasing over the period (Charusabha, et al.,2014). Smaller firms are in majority in all industries and they endure greater burden of occupational injuries, illnesses, and fatalities as compared to larger firms because smaller firms often lack the necessary resources for effective occupational safety and health activities and they require assistance for safety & health programs and trainings (Cunningham and Sinclair, 2015). Occupational health is always overlooked. Safety is imperative, but only 1% of work-related deaths occur as a result of safety breaches. The rest are from occupational health problems. Safety is frequently prioritized in organizations, but occupational illnesses are a growing concern for employers (Cheng and Wu, 2013).

It is responsibility of every one on site to care for others safety, inspite of that the authorized safety persons are around because its every body's business. A Safety Management System (SMS) should be well designed, which should address all safety issues including health problems in this industry. There are numerious studies related to occupational health and safety and most of them focuses on occupational accidents and injuries. Hence, it is important to investigate the level of occurance and the level of severity of occupational health problems in construction industry. So, this paper address this gap in the exisiting liturature specifically for construction industry of Pakistan. The results of this study will help the safety managers to review there SMS and policies specially for construction industry in general and specifically for Pakistan.

2. PROBLEM STATEMENT

It has been observed that better the safety at work, there will be more likely that the job to be completed on time and within estimated budget because any safety breach can cause accident, which may lead to fatalities and injuries. Whereas, in case of health problem, it may lead to various temporary and permanent health issues like hearing disorder, lungs irritation, nose irritations and muscular pains etc. Apart from physical damages, these incidents may also affect the project in various aspects, which can be time overrun, cost overrun, low quality, loss of working hours of workers and compensations paid to the workers after such incidents. These incidents also significantly affect the production rate of the workers. Thus, it is important to identify different types of health problems so as to prevent the occurrence of such health problems. Prevention of the work place health problem is only possible, when the health problems are predictable. It is also essential to identify that "why" any health problem occurs at the first place, in order to make corrective actions, which should be adequate enough to prevent the recurrence of health problems.

3. RESEARCH METHODOLOGY

In order to identify the different types of work place health problems normally occur in construction sites, a detailed literature review has been carried out from various journal, conference papers and reports. Later on, these health problems were validated by interviewing the professionals working in industry at different projects. Finally, a questionnaire was designed to get the response of the experts working in the industry. The respondents were requested to rank frequency of occurrence and impact level of these health problems on a scale ranging from 1-4 [(1) very low; (2) low; (3) high; and (4) very high]. In the later stage, the respondents were asked to give their opinion in percentage for the five direct causes leading to health problems. At the end, the respondents were requested to rank the important indirect causes of health problems on another scale ranging from 1-4 [(1) not significant; (2) slightly significant; (3) significant; and (4) very significant]. The data has been collected from current ongoing public and private projects in Pakistan. Relative Importance Weight (RIW) technique has been used to analyze the data as this approach have better results, less laborious and successfully used to analyze such data samples (Ali and Khahro, 2014). The health problem having higher frequency of occurrence and impact has been ranked at priority. Whereas, health problem having low frequency of occurrence and impact has been ranked at lower rank.

3.1 Respondents Experience

The questionnaires were sent to various public sector department and private sector companies. A total number of 200 questionnaires were sent via emails and post. A total number of 160 questionnaires were received successfully. To get such important opinion, respondent experience level working in the field was of great concern. **(Fig. 1)** shows the experience level of the respondents.

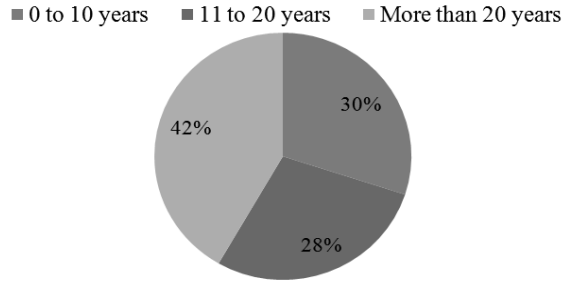

Fig. 1. Respondent's experience

4. RESULTS AND DISCUSSION

The respondents response for occurrence of different health problems and their impact level has been analyzed in such a way that a health problem heaving higher frequency of occurrence and higher impact is ranked as the most important type of health problem followed by a health problem with low frequency of occurrence and higher impact as second, a health problem with higher frequency of occurrence and low impact as third and a health problem with low frequency of occurrence and low impact as fourth category. **(Table 1)** indicates the final ranking of the health problems investigated in the construction industry of Pakistan.

Table 1. Work Related Health Problems

S.No	Type of Health Problem	Impact	Frequency	Ranking
1	Heat Stroke	2.73	2.60	1
2	Eye Strain	2.60	2.26	2
3	Lungs Irritation	2.60	2.20	3
4	Skin Disease	2.50	2.20	4
5	Nose Irritation	2.56	1.90	5
6	Blood Poisoning	2.56	1.80	6
7	Throat Irritation	2.40	2.00	7
8	Hearing Disorder	2.36	1.93	8

Heat stroke has been identified as the most important health problem in construction industry of Pakistan as workers work for the day long having only prayer break whereas in a significant noon break is normally been given in other countries with same climate. Eye strain has been observed at second vulnerable health problem, which is because proper PPE is not provided to the workers and provision of insufficient light, when working at night to complete the tasks assigned. Lungs irritation has been observed as third significant health problem followed by others as shown in above table.

4.1 Causes of Work Related Health Problems

The causes were classified in to two categories, direct and indirect cause for the health problem. **(Fig. 2)** highlights the histogram of the ranking of direct causes leading to occupational health problems in construction industry of Pakistan.

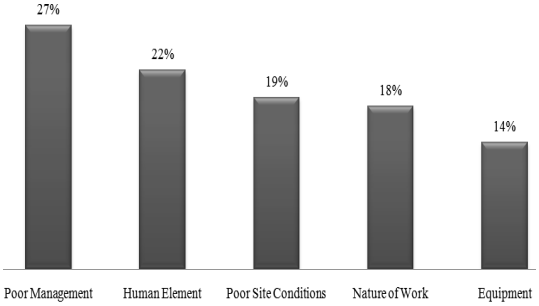

Fig. 2. Direct causes of occupational health problems

Each direct (root) cause contains several contributing factors (indirect cause) which may result in any health problem in construction industry. The ranking of the major indirect causes due to poor management are shortage in supply of safety equipment, irresponsible behavior of the management towards occupational health problems, work stress due to early production, lack of safety meetings, unsafe housekeeping, lack of supervision, bonus for early production, lack of orientation training, unsafe methods and task during work, lack of coordination, poor design and lack of periodical trainings. Whereas, negligence in safety precautions, workers resistance to safety practices, irresponsible behavior of worker towards his health, use of illicit substances, caviler attitude, continuation of work even in illness, ignorance in reporting unsafe conditions, typical nature of the workers, improper awareness of machinery and personal factors are the major indirect causes due to human element.

The ranking of the major indirect causes due to poor site condition are hazardous working environment, inadequate provision for lights at night shifts, limited/confined working area and rough weather. Whereas, exhausting physical task and unfamiliar nature of work are the major indirect causes due to nature of work. The ranking of the major indirect causes due to equipment are lack of safety equipment, lack of safety instructions, poor quality of equipment's, equipment without safety devices and improper use of equipment's.

5. CONCLUSION

Managing occupational health should focus on providing health checks before someone starts work, first aid, welfare, general information about health and safety, well-being and fitness to work, or managing sickness absence and return to work. Managing occupational health should also focus on things one can do to reduce risks for workers health. The proper remedial measures should be carried out to reduce identified health problems on site such as heat stroke, eye irritation, lungs irritation, skin disease, nose irritation, blood poisoning, throat irritation and hearing disorder. Project management should consider this problem on priority and make safety plans to manage such issues throughout the life cycle of the project. Sufficient and proper safety equipment should be provided to the workers and periodical training programs should be arranged to motivate the workers to use these safety equipment as they would not feel these PPE's as an extra feature with them. The workers should be trained to develop a safety culture as they should not neglect the usage of PPE's. The project manager should assign a balanced possible task to the workers otherwise extra fatigue to complete the task

may lead health problems. Safety is everybody's business. Creating a safe working environment is not only the task of a few designated people within the company. The mission of contributing to the introduction and maintenance of safe working conditions, while participating in the detection of risk and danger, is a matter for all. So, it is for all employees to communicate any hazardous situation, they observed. This paper can help the stakeholders to make and update the health and safety plans accordingly. It is always good to be proactive rather than reactive in cases of health problems.

6. SUGGESTIONS

Construction firms should implement Safety Management System (SMS) to improve the health and safety issues on construction sites. Specifically for health problems, companies should arrange an annual health assessment program, and the reported cases should be addressed properly. The cases should be recorded, assessed and monitored properly. Control measures should be instituted to protect workers from occupation related exposures. Occupational Risk Assessment (ORA) should be implemented at workplaces, which is the key element to achieve adequate safety levels, particularly to support decision-making in safety programs.

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