CONSTRUCTION HEALTH AND SAFETY CONDITIONS AND CLIMATE IN PAKISTAN

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Abstract

Developed economies have realized construction health and safety issue and have improved the working site condition by continuously emphasizing on the issue. Sadly, the case is different in developing countries particularly in the Indian subcontinent where the injury and death rate is high due to poor health and safety conditions. The paper examines the current health and safety practices, legislations and the management of Health and safety of Pakistan, a country in the Indian subcontinent. The data reviewed is organized around developing countries and the culture affecting health and safety in these countries is discussed. Moreover, the secondary data focuses on health and safety management system, behavioral aspects of the stakeholders, general health conditions of workers associated to the construction industry and the construction industry of Pakistan is also discussed. For the achievement of objectives, both, qualitative and quantitative methodologies are adopted (i.e questionnaire survey and interviews). The questionnaire and the interviews mainly focus on the contractors, workers, designers and the clients. The findings from these methods indicates that majority of the respondents have a poor degree of health and safety awareness. It also reveals that there are general health problems faced by the workers, people are hesitant to record and report the accident at site and showed the key behavioral aspects affecting the health and safety.

Keywords: OSHA, CDM, HSE, MSD, SME, PPE.

I. Introduction

Pakistan has experienced a rapid growth in the past decade, mainly attributable to the democratic setup and consistent government policies. The government is carrying these policies and bringing new business setups, consistently encouraged by the World Bank and International Monitory Fund (IMF). The country has achieved success with the introduction of macroeconomic policies bringing economic stability. A financial year report of state bank (2016) indicates that the GDP of the country has grown...
unexpectedly, with the on-going peace crisis in the country. Construction industry is also considered as the contributor to a country’s economy. Construction industry of Pakistan contributed 10.6 % to the GDP of the country, employing 6% of the total work force (FY year report 2016). It is worth noting that the sector is a significant source of formal employment.

The growth of construction has open doors to new innovations; however, it has resulted in the increased number of fatalities and injuries. [IV] Observed that accident reporting rate in the developed countries is higher as compared to the developed countries. [II] Supports this statement and adds that in Pakistan between 2003-2009 only 2836 accidents were reported across all the industries, which included 176 accidents related to construction. In developing countries every year, many people fall victim to injury, harm and even death through accidents on construction sites and reporting rate of these incidents is very low [VII]. In perspective of Pakistan the fatality rate per 100 people is estimated as 2.7 in Pakistan [I]. Just like the other developing countries, the construction industry of Pakistan has adopted responsive strategy rather than pre-emptive strategy [III]. [V] Observed that weak legislation and lack of commitment from the government, in the developing countries is also one of the factors of worse situation of health and safety. [V] And [VI] observed that the construction industry in developing countries like Pakistan is more labour intensive than the developed countries. This results in many health problems among the workers. [V] Believe that the client and the designers have a role to play in construction health and safety especially in developing countries where these stakeholders are unaware of that.

In the light of the above factors the research question states that why, the conditions of Health and safety are poor in developing countries like Pakistan and what are the key factors affecting OHS management and its practices, within the construction industry of Pakistan. To guide the research question following objectives were derived:

- To identify the authorities and the legislations involved in Health and safety.
- To investigate and evaluate the causes of occupational health and safety accidents at construction sites.
- To find out and quantify the general health problems associated to construction workers.
- To understand the role of client and designer regarding construction health and safety in Pakistan.
- To find out the suggestions for improvements and the barriers towards those improvements.

II. Literature Review

According to [VII], the construction industry plays, an important role in the development of a country. It contributes to both social and financial aspects of a country.
Developing countries attract more foreign investments in the sector of construction creating employment for locals. [V] and [VIII] says that a construction site is always exposed to different sort of threats and these threats are concerned with loading unloading, lifting, exposure to various substances at a site, etc.

Management has influence on construction health and safety [IX] discovered that health and safety are more correlated with the attitude of the management. If the management has an active relationship with its workers, then the workers will be less prone to the accidents at construction sites. [X] Observed that the OHS management system also plays a significant role in the modern construction.

[XI] have related the accidents with the industrial growth and urbanization. [XII] says that developing countries have poor health and safety performance because of mass movement of people from rural areas to cities. Due to skill shortage, these people go to construction sites for work.

The designers have a critical role to play in construction health and safety. The European communities claimed that almost 60 percent of all fatal construction accidents are related to the pre-construction activities i.e. the design stage activities’ is essential for a designer to know how their designs are built, used, maintained and demolished without endangering the health and safety of those involved in the process [XII].

Most of time, health and safety are considered as the responsibility of the contractor. The contractor’s duty is to communicate with a client and manage other stakeholders on a worksite. But OSHA act says that the Employers are required to provide a safe workplace free from hazards and they are responsible for every accident at site [XIV]. It supports the statement of that the employer and the employees don’t share the same responsibility. However, according to [XV], the employees are responsible for their own and the safety of their co-workers in the surrounding environment. But still the clients and other stakeholders are supporting the statement of Peyton and Rubio and because of the trend i.e. transferring the risk to the contractors, they are held responsible most of the time. The contractor in turn transfers the risk to the subcontractors. Most of the subcontracting companies are not aware of the safety systems, and their employees are mostly unaware of safe practices at workplace. Hence accidents at construction site occurs [XVI].

[XVII] Believe that if the gap between the contractor and the designer is reduced then health and safety situation can be improved. They added that the distance between designer and the contractor limits the identification of the solutions to OHS problems at the design stage. [XVII] Investigated a study to know the behavioural aspects of workers. One of their main finding was the trend of risk taking among the construction workers was very high which results in the accidents.

[XIX] says that the competitive bidding is also affecting health and safety as the contractors get works lower than the desired price. As a result, the contractor cut corners one way or the other. Hence it is very important to include estimators from the client’s side, who briefs the contractors about the minimum cost. [XX] found that health and
safety is related to the company’s size. In the UK, 95% of the construction companies are SMEs which employ not more than 20 personals, and only 5% of businesses hire more than 20 personnel in their organization. [XII] found that large construction organizations implement OHS programs more efficiently than smaller companies. In the construction industry, [XI] related the business size inversely with accidents. As the company grows; it brings something different with higher standards and greater awareness. [XV] found that most of the small firms in Hong Kong had limited knowledge of the H&S legislation of the country and were reluctant to take a free advice on OHS. Furthermore, the fatal and non-fatal injury rates are higher in small construction firms as compared to the large companies.

[XVI] revealed that construction industry directly impacts the economic growth of a country. The construction industry faces different Problems of different magnitude in various countries. According to [XVII], the developing parts of the world meet these challenges differently than the developed parts because they are facing problems with their economies and socio-economic growth problems. These countries face these problems due to lack of research and development, lack of safety awareness and cost issues. [VIII] Found that, in many developing countries like India, the training programs for staff and employees, the orientation for new employees or workers when inducted; identification of hazards and safety meetings regarding the site are not considered. In perspective of health and safety, there are two main differences between the developed and developing countries. The existence of legislation and the presence of government bodies showing commitment towards its practical implementation.

In construction, culture is an influential player. [XXI] Indicated the importance of cultural aspects. They found that organizational culture, industry culture, stakeholder’s responsibility for occupational health and safety influences on proactive health and safety management in the construction sector. Schein, Deal and Kennedy provided the impacts of culture on organizations while Hofstede focused on the influence of national culture on an organization as they believed as national culture is a key factor for organizations [XIX]. [XXII] in his study linked religion and health and safety. He says that religion emphasizes conservation of life and the environment. [VII] work reflected cultural influences in health and safety management system. [VI] supports the above statement by saying that behaviours and attitudes of employees are linked to each other as their beliefs command both.

Construction workers are deprived of good health, especially in developing countries. They work in such an environment where there is the risk of catching chronic diseases [IX]. Most of the sensitive physical health complaints like musculoskeletal disorder and a higher number of chronic lung diseases are recorded among construction workers [XII]. [III] established a link between a physical and mental performance by saying that a worker having poor mental condition will have an unhealthy behaviour. The disability rate in the construction industry is more than any other industry (Arndt et al. 2005). It is most common in the construction industry that employees stop working before their
retirement due to physical issues [XIV]. I found that among the older workers, the psychological problems were more evident as they were mentally weak to perceive the risks and were not mentally strong enough to accept the workload. Contradict this statement by saying that age is critical to workers health, but it is not the most influential factor. They found that risk of disability increases with age but, health hazards are always there even if younger people are employed.

Revealed in their findings that firms in construction Industry, when plans their working schedules appropriately, results in better health conditions of the workers. Construction workers due to poor balance in their lives do not take care of their diet and hence consume such food in bulk which later cause’s problems [XVII]

It is essential to determine the mental workload of the workers doing complicated tasks, as it is one of the best indicators of risk perception ability indicated by Chen et al. (2016). Peters et al. (2004) indicated that emotions are related to the brain activity and when the brain gets tired then reflexes gets slow. Hence the risk perception, which related to reflexes, gets weak (Chen et al. 2016). Mitropoulos et al. (2005), fond that fast track projects have adverse effect on the health of workers.

Pakistan is currently enjoying a growth in infrastructure. Large scale projects are underway and these development project, have potential to lead the industry to international standards. However, the country, has not responded to the technological advancements yet. Still, there is an unsafe working environment in the country. Health and safety conditions in the construction industry of Pakistan are deplorable, and it needs attention [XIX].

[XX] identify the following factors for unsafe practices: a) The slow growth of the industry’s) Least interest to adopt managerial practices which have resulted in cost overruns, poor quality of works and poor workmanship c) Non-seriousness by the higher authorities, which has led to the poor health and safety situation. d) Lack of government interest. e) Law and order situation, which has diverted the attention from health and safety.

III. Methodology and Adopted Methods

A strategy was developed for acquiring the information required to achieve the objective. Health and safety management approaches of the companies, how the general health of workers is affected and find out the suggestion for future improvements required a quantitative methodology. Whereas, to know the remaining objective, required a qualitative approach.

Therefore, epistemologically, a multi methodological approach was adopted, which opened doors to get richer knowledge regarding the subject. [XII], [VI], [XIV] and [XX] gave advantages of multi methodological approach. They argued that this approach gives complementary strengths to the study and most of the data collected is believed to be relevant. Quantitatively, survey questionnaires were forwarded to contractors, workers
and engineering students in the city of Peshawar and Islamabad. The results were then analyzed on SPSS and the results were in percentages. Whereas, qualitatively interviews on Skype were conducted from two designers and two client’s representatives based in different organizations and different cities.

IV. Results

The questionnaire was distributed among approximately 200 individuals. 67 of them were received with correct response, depicting that the response rate was 33%.

When asked about their opinion about health and safety, 76% of the participants reply was unsatisfactory as they did not respond correctly. Remaining 24 %, who answered correctly were educated and had less experience about construction.

When asked about the submission of health and safety policy during tendering is to fulfil the criteria 73% of the respondents replied with yes whereas 27% answered with no.

When asked that safety policy submitted by contractors can improve can improve the situation, majority of the respondents agreed to the statement.

When asked about the factors stopping the contractors to submit the policy, 27% of the participants held competitive bidding is the main factor. Expensive safety equipment and low profit margins were highest rated by 25 and 24% respondents as they believed that health and safety is associated with cost and savings. 15% of the participants rated corruption as they must fill the pockets of officials, whereas unawareness was highest rated 9 % of the respondents as they believed that this issue only due to unawareness of people.

When asked about the compensation culture in case of accidents, 62% of the participants responded that they would give compensation and first aid to worker in case of an accident. 13% participants said that they would give first aid but would not want to give compensation as it was workers fault. 4% said that they really don’t care if accident takes place as they are not liable.

When asked about recording the accidents and reporting it, 57% of the respondent said that keeping the records of accidents is not necessary as it has no role to play in the improvement of health and safety situation where as 43 % believed that keeping the accident record can improve the health and safety situation because the causes of accidents and the factors that caused the accidents will be known and accidents can be avoided in the future.

When asked about the common accident at construction site. Majority of respondents (61%) felt that fall from height is the most common injury having high probability to occur in the industry because of poor work man ship.
When asked factors causing these accidents. Many participants highly rated the occupational health issues followed by substance abuse which is rated as 21%.

When asked about the provision of PPE and behavioural aspects related to it, 56% of the respondents highly disagreed to the statement as they believed that workers are not provided with the PPE so how can they wear it. 32% of the respondents were of the view that PPE is loved by the workers so why to provide it. 9% responded that they provide PPE but the workers don’t wear it whereas 3% responded that they are providing PPE and forcing the workers to wear.

When asked about the common disease among the workers, Muscoskeletal disorder was found the common disease among the construction workforce.

When asked about the effects of fast track projects, large number of respondents was of the view that fast track projects have adverse effects on the health of construction workers.

When asked about the substance abuse at construction site, 68% of the respondents had a view that more than 50% of the workforce does drug abuse.

When asked the construction workers being exposed to more threats than any other industry, 91% of the participants responded with a yes answer. They believed that construction workers are retiring early because the industry is exposed to more hazards than any other industry in Pakistan. 9% believed that construction industry is not that much hazardous than other industries and the workers do not early compare to other industries.

When asked about the barriers towards improvements, majority of the participants responded with the opinion that the corruption is the main barrier towards the improvement of health and safety situation. Less than a quarter said that government seriousness towards this issue is unsatisfactory. Old legislation and compensation culture was rated 14 and 17% of the respondents respectively. Lack of education and lack of funds was rated 9 and 7% by the respondents.

When asked about the improvement of situation, 51% of the participants said that new sets of legislation and strong enforcing authorities as the step towards improvement while 17% rated provision of health and safety training as the first step towards the improvement. 17% said that safety awareness schemes should be introduced for the improvement of the situation while 11% said that incentive programs should be introduced. 3% said that collaboration between the stake holders is necessary for the improvement of the situation.

V. Findings from the Survey and Interviews

Safety Awareness, Climate, and Culture

It is evident from the survey and the literature review that the stakeholders in Pakistan do not have enough knowledge of health safety. Few individuals knew about the
health and safety and corresponded with right answers. Most of the small sized companies did not know about the health and safety. The large size companies knew and some of them were implementing the health and safety regulations. Thus, findings supported the statements of [XX] that small size companies in the developing countries do not care that much as compared to large companies and [XIII] statement that there is insufficient knowledge of H&S among the stakeholders of construction industry of Pakistan. The contractors who provide the health and safety policy considered it as a formality which is indicated by [XIX] and [XXIV]. [XXIII] Stated that if the contractors in developing countries just act upon their health and safety policy will make the situation better, the statement was supported by most of the stakeholders in the construction industry of Pakistan. The elements that are stopping the implementation of their health and safety policy which was indicated in the literature review namely unawareness, corruption, safety equipment small profit margins and competitive bidding. The interviews showed that there are some issues faced by the contractors and the clients as they are not able to direct the workers towards the safety. It was found from the client that workers of some part of the country are arrogant and they do not wear safety equipment because of their over confidence and as a result there are more injuries and fatalities among them.

- **DEALING ACCIDENTS**

[XVII] and [XXII] indicated that compensation culture within the developing is one of the hurdles towards improvement as it stops the workers to know their rights. It was revealed from the questionnaire as most of the respondents had views to give compensation. Majority of the respondents told that they would give workers first aid and give him some cash if he is injured. Moreover, the health and safety executive says that all the accidents at the sites must be reported to the responsible authorities and the record of every accident should be kept in the site register as it will be helpful for future. It was found from the questionnaire that reporting of accidents is not done by the contractors and keeping the record is not considered as a priority for most of the accidents.

- **COMMON TYPES OF ACCIDENTS AND ITS CAUSES**

[XXI] indicated that fall from height and electrocutions are most of the common accident at a construction site. The results of the questionnaire also revealed that fall from heights and electrocutions are common accidents at a site. To find out the causes of the accidents again as a question was asked. The respondents revealed that common causes of the accidents were drug abuse and workers responsibility shown at a workplace. It clearly indicated that substance addicted workers are more prone towards accidents than the ordinary workers. Moreover, substance abuse is often found commonly at construction sites in Pakistan.
• **BEHAVIORAL ASPECTS**

The safety tools are not provided to the workers if provided are either malfunctioned or are in bad condition of use in the developing countries [XXII]. A question was asked in a twisted way so to know that do contractors provide PPE and the workers wear it or not. The response supported the statement of [XXIII] as most of the respondents said that the workers are not provided with the PPE.

Moreover, the question was pointing towards the behavioral aspect of employees and the will of the contractor i.e. he can make sure that the workers are wearing the PPE or they are not. It was evident from the question the workers have problems when they wear PPE as they believe it is slowing their progress because they are not used to it.

• **GENERAL HEALTH**

[XXIV] said that construction workers are experiencing more musculoskeletal disorders as compared to workers in other industries. [XVI] Found that psychological disorders are rising among the workers of construction industries.

From the question, it was found that both musculoskeletal disorder and mental diseases were high among the construction workers because of being dangerous and risk of hazard taking anyplace at any time. Other general issues like lung illness and cancer are due to the employee's exposure to dust and asbestos. The literature review indicates that there is high demand for works in the least period is causing health problems among the construction workers. The respondents also agreed and said that in Pakistan there is a trend to complete projects within a short time which is leading to accidents and mental health issues among construction workers.

It was found that the general health matters in the construction workers are affecting the performance of the building industry. Also, the questionnaire revealed that more than half of the labour employed does drug abuse lead to inattention disorders. Substance abuse is common as it is the cheaply available [XIX].

• **WEAK HEALTH AND SAFETY REGULATIONS**

Interviews with the stakeholders revealed that Pakistan has a fragile set of legislation of health and safety. They also showed that PDA and CDA were the authorities who were responsible for the health and safety in their respective cities. These interviewees argued that these bodies are weak because the legislation ruling them is limited. This is leading to accidents and fatalities. Furthermore, the government commitment towards this issue seems very disappointing as they haven't done anything appreciable to improve the situation of health. They believed that even if the government impose the regulations on the stakeholders will improve the situation up to some extent.
• ROLES OF DESIGNER AND CLIENT

The literature review indicates that the designers must make sure the site is safe and the work conducted is safe. But in Pakistan, when asked from the designers, they answered that it was not their duty. They replied that the designers have only to ensure the safe design after the construction of any building.

The designers were also of the view that if something goes wrong at a construction site, they should not be held responsible. Their job is only to ensure a safe design. They also believed that they are responsible for the durability of building only. Their job is not to act a bridge between stakeholder between the client and the contractor. These designers also contradicted the statement of Lingard and Turner who said that inclusion on contractors in the design stage improves the safety and health conditions of workers. As they considered that the inclusion of contractors in the design stage in Pakistan is not possible because most of the contracts are procured through traditional way. Moreover, they added that most of the contractors are illiterate or their education level is not enough for them to sit with the designers. This indicated that there is a gap between the contractors and the designers. Furthermore, from the interview, it seems that the relation between the client and the contractor is hostile and the designers do not look forward to collaborating with the contractors for the improvement of the situation, indicated such in the literature review. These designers stuck to the point that they only are responsible for the design nothing else.

The client's representatives who were engineers knew adequately about construction health and safety, but they also believed that health and safety are not their responsibility. They encouraged the view that the departments conducting works should be responsible for health and safety but these representatives argued that it is going to be costly for a country like Pakistan. They mentioned that there are departments like PDA and CDA who are responsible for health and safety. The client’s representative also blamed the competitive bidding as they thought that this is one of the factors responsible for the worst health and safety situation in the country. Secondly, they said that the culture of doing things quickly without proper planning is also another factor. They highlighted that getting results in less time is the common culture in Pakistan. This puts immense pressure on the contractors and the workers; this is also indicated in the literature review. The client's representatives also mentioned that its competitive bidding leads to corruption as the contractors cut corners from ends just to make his profit.

The discussion in the interview indicates that the client and the designer in Pakistan apparently do not know their roles regarding health and safety as compared to international standards. Both the stakeholders were transferring the risk to the contractor. They concluded that they are never held liable for the accidents at sites in Pakistan.
INDENTIFICATION OF AUTHORITIES

It was also found from the interviews that construction health and safety is looked after by the local development authorities e.g. CDA in Islamabad is responsible for looking after the health and safety issues at construction sites in Islamabad.

VI. Conclusion and Recommendations

To conclude, the study investigated the construction industry of Pakistan by taking different factors into account. It was discovered that the construction industry of Pakistan had poor health and safety causing human and financial losses affecting the country’s economy. The primary purpose of the study was to know the legislation ruling construction health and safety in Pakistan, to know the general health issues faced by the workers of the construction industry, to find out the role of the client and the designer and to know the occupational health and safety accidents and factors causing these accidents. After conducting interviews and deriving results from the questionnaire, significant things were derived which affected the health and safety process in the country one way or the other.

Following recommendations are forwarded for the improvement of the situation.

- The stakeholders should ensure that training is provided to each worker before the commencement of construction activity
- Pakistan engineering council should take the initiative by arranging workshops and training programs for contractors regarding health and safety. These training should be made compulsory and a theory test should be conducted from the contractors when they renew their registration yearly
- The PPE should be provided to the workers along with proper training of use. This can be achieved by practical demonstration at worksite by giving examples of accidents with and without use of PPE
- The government should revise the legislation and form new set of rules depicting the liabilities for all the stakeholders involved in the construction process
- Labour department should be made active to watch the work limit and work load of workers
- It should be made compulsory on contractors to submit a health and safety policy during tendering. Works should be given to contractors who submit a good policy rather to least bidders.
- For short term, the government should make responsible its departments (e.g. PWD) conducting construction works. As these departments have massive budgets and they will automatically transfer the risk to contractors making them cautious.
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