

# THE SCENARIO OF WORKERS' SAFETY AND INDUSTRIAL DISASTER IN BANGLADESH: AN EMPIRICAL STUDY

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## ABSTRACT

The overall objective of the research is to know the safety issues and practice of safety culture; its scenario as well as an industrial disaster due to the negligence of workers' safety issues. Data have been collected from primary and secondary sources by questionnaire and interview method. Most of the manufacturers and workers are not concerned about the causes of accident and safety issues. Both are not aware of safety and health hazards in the workplace. The safety regulation is prevented and inspected on the basis of owner's whims and desires. The inspection authority audits and investigates the workplace after a long period (such as decade) of time. A system should be developed for the workers to know about risk and hazards in the workplace. The inspection authorities should review the safety situation at all workplaces by an independent inspector as well as by the use of personal protective equipments such as safety glasses, apron, mask, gloves and hair-nets. Manufacturer's awareness about industrial safety-related rules and regulations as well as inspection, reporting, and compliance with existing national and international laws ensure a safe workplace.

**Key Words:** Worker, safety, industry, disaster, manufacturer, labor.

## INTRODUCTION

Bangladesh is the emerging country of South Asia. The country is fighting for development by challenging to the world. The nation is contributing to the development at their best level. Workers are playing a vital role in the development of this country. But they are disappointed because they are deprived (A JhonGambates, 2003). The workers are not given proper financial facilities on the basis of their performance. The employers are reluctant to bonus, incentive, increment, job stability and democratic management in time. In most cases, they have to work in unsecured places works on in text citations (Aliyu AA, Shehu AU., 2006). In 2013, fire in Tazreen Fashion and the collapse of Rana Plaza depict the overall picture of workplace insecurity in Bangladesh. So, at present, workers' safety in Bangladesh has become the most talked issue all over the world. The fire incidents and building collapse make the issue live to us. About 1200 workers have lost their lives for these incidents and building collapse. The concern of different human rights organizations and international bodies has raised the demand for ensuring workers' safety in Bangladesh. Although Bangladesh amply benefits from the cheaper labor cost all

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over the world, the government hardly thinks of ensuring safety for the workers (BGMEA, 2015).

The industrial performance of any country can increase the familiarity of that country. But the development of an industry is dependent on its workers' performance. The business world is competitive and if the manufacturers want to compete in the world market, they must practice safety management. Temporary accidents may bring permanent disaster in the industry lead (Dagdeviren M, Yuksel I.). Safe environment leads to better performance and better performance leads development. So, the workers should adapt to the safety management and culture. If the managers can predict about accidents, they can prevent it (Bertha GS, Patnaik B, Mahapatra SS, Padhee S. 2012). It is the responsibility of every employer to make his employees concern about safety so that they can be safe while working and their belief should be safe is to be valued in the organization lead (Griffin MA, Neal A. 2000).

The top management of an organization will take necessary steps of safety management and expand safety system as well as practice safety-oriented culture in the organization (Koster RBM, Stam D, Balk BM. 2011). Safety Management is the policy in which the senior manager can create mission and vision in such a way so that he can set a standard of behavior for employees as well as make responsible the employees to practice safety culture. Safety concern means to the way in which a senior manager can give priority on the importance of safety equipment and emphasize on the interest of worker's attention to practice safety policy and it is also meant safety improvement as well as coordinate with other departments to solve safety issues (Lu CS, Yang CS. 2010).

Safety leadership means the process through which the manager and followers will interact in such a way that they will learn about safety management and attain the organizational safety goals under the circumstances of organizational and individual factors (Wu TC, Chen CH, Li CC. 2007).

The top management wants safety leadership because safety leadership reduces or prevents risks as well as endorses safety among the managers and employees. Leadership will be concerned for safety; the managers and supervisors can learn a good lesson from transformational and transactional leadership (Barling J, Loughlin C, Kelloway EK., 2002). Every worker's intention is to increase his productivity by efficiency. So the manufacturers should ensure safety management and safety culture practice in an organization which encourages the workers to work spontaneously. Safety leadership increases effectiveness and efficiency. Safety leadership encourages the worker to work hard as well as they will be responsible

for safety performance (O'Dea A, Flin R. 2001).

A safe and secure environment is the precondition of massive production. So the government and the manufacturers should be concerned at the secured and safe environment for magnificent output. Bangladeshi manufacturers are famous for cheap and quality products. But it is questionable to violate human rights due to not following safety management culture and for that, they face difficulty like an industrial disaster. The researchers intentions are to present the meaning of safety, nature of safety management practice, safety and health hazards in the workplace, safety issues and scenario of safety in different industries, reasons behind poor safety, safety movement and industrial disaster in Bangladesh.

## **WORKERS' SAFETY**

Workers' safety is about preventing unexpected injury, death, and illness to the employees in the workplaces. It does not merely indicate physical safety, it also includes psychological refreshment. (Akhmad Suraji, A. Rony Duff, Stephen J. Parkit, 2001) However, workers' safety includes the following hazards:

- Social harassment
- Financial issues
- Chemical (toxic, flammable, corrosive, explosive)
- Electrical shock or short circuit and fire.
- Collapse (Excavation)
- Fall (condition results I slip or trip from heights / on working surfaces)
- Fire or heat (burn skin or another organ)
- Noise (hearing damage, inability to communicate, stress)
- Radiation (X-ray, microwave towers for radio or television station/ wireless technology)
- Being struck by falling objects and projectiles and body injuries.
- Extreme temperature ( heat stress, exhaustion, hypothermia) (Lopez Arquillos A, Rubio Romero JC, Gibb A. 2012)

## **ADDRESSING SAFETY AND HEALTH HAZARDS IN THE WORKPLACE**

To make the workplace safer, the organization has to acknowledge which potential health and safety hazards are present or determine where, what, and how a worker is likely to become injured or ill (Eugenio Pellicer, Keith R. Molenaar, (2009). The employers should be responsible for safe and healthy workplace so that they will identify hazard. They should take necessary defense against hazards and risks caused by flammable or explosive hazards, electrical equipment, noise, dust and radiation. The employers will provide safe ventilation, temperature, lighting

facilities, toilet, washing and rest facilities. (Dembe AE, Erickson JB, Delobs RG, Banks SM., 2005).

## **OBJECTIVES OF THE STUDY**

- To examine the safety issues in different industries of Bangladesh.
- To know about the interest of safety management practice in industry level.
- To determine the nature of safety management practice in Bangladesh.
- To analyze the disaster in the industry for not practicing safety management properly.

## **THE RATIONALE OF THE STUDY**

The researcher tries to present the safety environment, safety culture, the practice of safety management, the interest of workers and manufacturers to a safe workplace as well as the industrial disaster due to not follow safe code in industry. That means the researcher addresses the scenario of worker's safety and industrial disaster in Bangladesh. The study on such field emphasizing on assessment of occupational safety and health programs in SME, safety management practice and worker engagement for reduction and prevention accident, workers represent health and safety at SME in Europe, safety management practices in SME in India. But this study represents the scenario of workers' safety as well as an industrial disaster which is different from others. So, this study is authentic.

## **LITERATURE REVIEW**

The manufacturers should practice safety management systems in industry and the workers will engage with the system. Because safety management can predict the accident rate. Safety management system can predict the worker engagement levels and the worker engagement levels act as a mediator between safety management system and safety performance outcomes (Jan K. Wachter and Patrick L Yorio, 2013). The employers seek for any systematic approach to reduce occupational illness. They choose occupational safety health as a scientific approach that practice the workers in the organization and ensure safety. That is why, the occupational safety health becomes emerging rapidly internationally (Frick and Wren, 2000). In the industries, the industrialists can use human performance tools that will reduce the chance of human error. These tools can be used as vehicles that will provide social and mental skills that implement a worker's skills to promote safe and efficient task performance and they can think about the critical steps of the work (Muschara, 2012). The researcher introduces safety, safety practice in Bangladesh, health hazards in the workplace, safety issues and scenario of safety in differ

ent industries, reasons behind poor safety, safety movement and industrial disaster.

## **DATA COLLECTION PROCESS**

Face to face conversation with manufacturers, workers, foreign and local buyers, labor leaders, and staff.

### **Sources of data**

1. Primary source
  - Interview with manufacturers, workers, foreign and local buyers, labor leaders, staff, and university teachers.
2. Secondary source:
  - Different books and articles.
  - Evidence from the newspaper.

### **Data collection instrument**

#### **A. Questionnaire**

Data had been collected by questioning manufacturers, workers, foreign and local buyers, labor leaders, staff, and university teachers.

#### **B. Checklist**

The checklist was used at the time of preparing a dissertation.

### **Variables covered**

- i. Lack of awareness about safety in workplaces.
- ii. Establishing safety system but not practicing properly.

### **Analytical tools used**

- a. Statistical method: Mode.
- b. Diagram: Pie chart.
- c. Public opinions are expressed in terms of percentage of the total number of respondents.

## **SAMPLE SIZE AND STRUCTURE**

The survey is conducted on thirty factories for short time. These factories were chosen for the intention of collecting data to analyze the real scenario of workers' safety and industrial disaster in Bangladesh. Two respondents were interviewed from each factory and the respondents were workers, and staff, top and mid-level managers and thirty industrialists were chosen as respondent. Since

workers are the major portion of a total number of people engaged in the factory, the researchers have chosen workers as a major portion of respondents.

1. Total 100 samples.
2. 3 samples (including industrialist) from each factory. That means total 90 respondents (2 workers from each industry and 30 industrialists) were chosen from the factory and remain 10 were chosen from university teachers, labor leaders and foreign and local buyers.

## **LIMITATIONS OF THE STUDY**

- i. Time constraint.
- ii. Huge procedure to enter the factory.
- iii. The workers are reluctant to talk.
- iv. The manufacturers are reluctant to disclose internal information.
- v. The workers are not aware of safety rules.

## **SAFETY ISSUES IN BANGLADESH**

Safety is very important and mandatory production function. Safety lapses are serious matters and the authorities concerned are harshly punished by the safety regulatory authorities for any act of omission and commission (A Jhon Gambates, 2003). Unfortunately in Bangladesh, state safety regulation and intervention are extremely poor. Like everything else, it is also regulated more to a routine than any prevention or inspection function –based only on the whims and desires of the factory owners. Over decades no worthwhile safety audit has been seen, not even any kind of investigation or positive measures from the factories owners or inspection authorities who are primarily responsible for safety in the workplace. Though the Bangladeshi government has three ministries and laws to safeguard the rights of the workers (The Independent, 2006), unfortunately, none of the ministries carries out their duties toward the workers and takes steps to prevent the recurrence of such tragic incidents. In last ten years, there were more than hundreds of fires in factories in Bangladesh (The Independent 2006). The office of the chief inspector of factories under the ministry of the industry is the main organization responsible for visiting industries and to ensure health and safety compliance of the industries. However, this office is not equipped with adequate staff and logistics.

## **WORKERS' SAFETY IN RMG INDUSTRY**

In recent years, Bangladesh has witnessed many industrial disasters including factory fires. The recent collapse of Rana Plaza on 24 April 2013 has shaken the world. Within two weeks of Rana Plaza disaster, another factory was ablaze at

Mirpur, Dhaka. Fires have been a persistent problem for the RMG industry in Bangladesh. The fire at Tazreen Fashion and the collapse of Rana Plaza have challenged the workers' safety. According to the Bangladesh Institute of Labor Studies, 431 workers died in 14 major fire incidents between 1990 and 2012. Again, according to Bangladesh Fire Department, 414 garment workers were killed in 213 factories between 2006 and 2009 (BGMEA, 2015).

## **WORKER SAFETY IN SHIPBREAKING INDUSTRY**

The work in the ship breaking yards is mostly labor intensive and contract based. No formal worker-management relationship and no job security and social safety-net schemes are available for them (Tahir Nawaz, Azam Ishaq, Amjad Ali Ikram, 2013). The workers are illiterate, have no former training and are unorganized. Occupational accidents, injury, and deaths are very frequent and normal there. The workers are injured in the yard daily. It seems like nobody really cares. Workers are easily replaceable to the yard owners; if one is lost they know another ten are waiting to replace him (Isah EC, Asuzu MC, Okojie OH. 1997). The government collects the taxes and turns a blind eye- the owners say it. Explosions of leftover gas and fumes in the tanks are the prime cause of accidents in the yards (Vayrynen S, Hakkinen K, Niskanen T. 2015).

## **WORKERS' SAFETY IN THE TANNERY**

The leather used in luxury goods throughout the world is produced in tanneries in Bangladesh where workers include children as young as 11 years and pollutants of tannery flood into surrounding communities a new report claims. Research by Human Rights Watch says that children work 12 or 14 hours a day at the tanneries in Hazaribagh neighborhood of Dhaka. This considerably more than the five-hour limit for adolescents in factory work establish by Bangladeshi law. Harmful tannery chemicals also flood the environment it says leading both local residents and workers to fall sick from their exposures. Up to 15000 people are employed in over 150 tanneries, all of which lack pollution controls and effluent treatment plants and leave workers exposed to hazardous chemical and dangerous machinery without basic protective safety equipment or training. The report "Toxic Tanneries: The Health Repercussions of Bangladesh's Hazaribagh Leather," documents an occupational health and safety crisis among tannery workers, both men, and women, including skin diseases and respiratory illness caused by exposure to tanning chemicals and limb amputations caused by accidents in dangerous tannery machinery. According to Human Rights Watch, the government has consistently failed to enforce labor and environmental laws in the area and has ignored High Court orders to clean up the tanneries (De Dobbeleer N, Beland F. 2015).

## **WORKERS' SAFETY IN CONSTRUCTION**

The current population in Bangladesh is now about 157.9 million. Job opportunities are very limited compared to the huge population. Literally, there is no opportunity for the illiterate people in the crowd of educated unemployed (Aliyu AA, Shehu AU. 2006). People are desperately looking for jobs, no matter big or small. Besides, many people are losing their belongings due to flood or water every year, forcing a large number of them to migrate to cities and towns (Sengupta I, Reno V, Burton JF. Workers, 2010). Most of them are day laborers and they have to do odd jobs. Bangladesh is an emerging country and infrastructure development works are going on across the country with more and buildings being constructed by individuals and land developers (Raymond E Levitt, Nancy M Samelton, 1993). The number of developers now ranges from 350 to 400. Their projects are scattered all over the capital and they really abide by the building construction law. Buildings are constructed quite fast. So, construction worker remains at risk, resulting in many deaths every year (Cox S, Cox T., 1991). In 2013, 43 construction workers died across the country in accidents at the sites they were working while 96 were critically injured, but their families were not provided with compensation. The deaths were caused by a landslide, fall from roofs, wall collapse and electrocution. There were three female construction workers among the deceased (BILS in 2013). The actual figure of casualties is believed to be much higher because news of all accidents is not published in newspapers. It is essential to ensure the safety of the construction workers who undertake the risky job to feed themselves and their families (Fernandez -Muniz B, Montes-Peon JM, 2009).

## **REASONS BEHIND THE POOR SAFETY**

There are many reasons behind poor safety in the industrial sectors.

- Lack of safety measurement (Vincent CA, Burnett S, Carthey C., 2013)
- Violation of building codes (Vincent CA, Burnett S, Carthey C., 2013)
- Electric short circuit (Berwick DM. 2013)
- Additional illegal floors in the buildings (Vincent CA, Burnett S, Carthey C., 2013)
- Inflammable materials (Vincent CA, Burnett S, Carthey C., 2013)
- Lack of training programs (Berwick DM. 2013)
- Negligence of the management (Panagiotis Mitropoulos, Tariq S Abdelhamid, Gregory A Howell, 2005)

## **SAFETY MOVEMENT AND INDUSTRIAL DISASTER**

Safety should be the prime concern in the industrial sectors. But in Bangla



desh, most of the factory owners do not think about the workers' safety. They only think about profit. So, they do not hesitate to put the lives of thousands of innocent workers in danger. The collapse of Rana Plaza and fire at Tazreen Fashion has put the question into the spotlight that the workers work in a very dangerous condition and there is no value in life. But the accidents have drawn global attention to safety standard issues in Bangladesh; Western and American retailers are concerned about the worker's safety in Bangladesh. They are thinking of withdrawing their orders to buy a garment from Bangladesh. The suspension of GSP by the USA is an example of this. Bangladesh has witnessed that the RMG workers are showing their anger through different types of protests for ensuring their workplace safety. The causes of their anger are

- Low minimal wages against increasing cost of living
- The absence of job security
- Lack of workplace security
- Long working hours (12 hours a day)
- Lack of holidays, including weekly ones
- Verbal and physical abuse, including sexual harassment
- Killing by negligence or by torture

After a series of protest in 2010, the national minimum wages in Bangladesh was increased from 1662 taka to 3000 taka up by 80%. Despite this increase, the minimum monthly wages of a garment worker is lower than the minimum monthly cost of living in Bangladesh, calculated by the National Garments Workers Federation, which is almost 5000 taka. These wages are much lower than those in China, India, Cambodia, Thailand, and Pakistan.

The recent events in Bangladesh have been distressing for several international brands whose clothes were found at the disaster sites. These global companies often commit to a tightly scrutinized system and assure buyers that the clothes sold are produced safe conditions. However, in spite of ground-level checks, these companies often have very little control over how the subcontractors run the factories. After the accident in Tazreen Fashions and Rana Plaza boxes of sweatshirts with Disney characters bound for Wal-Mart stores were found in the rubble. It, however, came to light that the work was subcontracted to Tazreen Fashions without authorization from Wal-Mart or Disney.

Lack of workers' safety some companies deciding to move on from Bangladesh or reduce the number of factories they subcontract to in the country. Walt Disney Corporation, the largest licensor withdrew from Bangladesh in March 2013 as a part of larger movement out of countries with higher worker safety risk such as Pakistan and Venezuela. Along with Walton Disney Corporation, Wal-Mart and

Levi Strauss & Co. have backed away from factory buildings housing multiple tenants. Traget Corporation and Nile Inc. are also reducing the number of factories they use in Bangladesh. The ongoing civil and political unrest in Bangladesh has caused losses of up to \$ 25.7 million daily and a 40% drop in foreign orders for the garments industry. With global firms exiting the market, Bangladesh faces a larger threat which could affect the economy and the livelihood of the millions who make a living out working in these factories. According to BGMEA, in last one year or a little more, almost 1346 garment industries are shut down or lay off for want of order demand or contact, among 1345 some will be restarted or some 1000 shall permanently become full time unemployed ((BGMEA, 2015)

DATA ANALYSIS AND FINDINGS

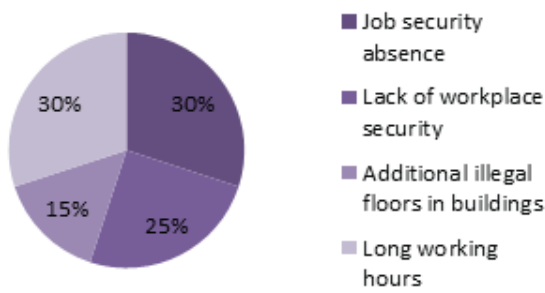


Figure: Safety regulation and intervention are poor

The above diagram shows that 30% of the respondents agree the safety regulation and intervention are not satisfactory. Though the industrialists know about the safety regulation, they don’t follow it out and out.

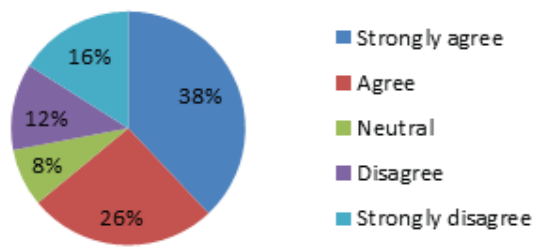


Figure: Conscious of worker’s injury and safety

38% of the respondents agree the manufacturers are conscious about work-er’s safety but they do not apply the safety management properly.

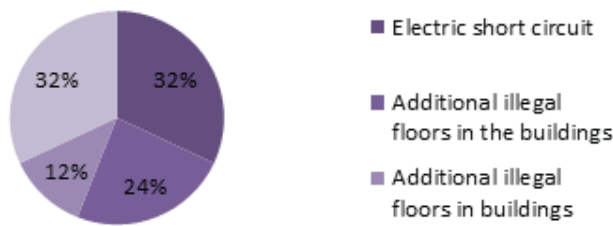


Figure: Violation of building codes

The government is rigid to the rules of building codes but the government officers are indifferent to the rules and the manufacturers get the chance to violate the rules and that is why there is a risk of an accident.

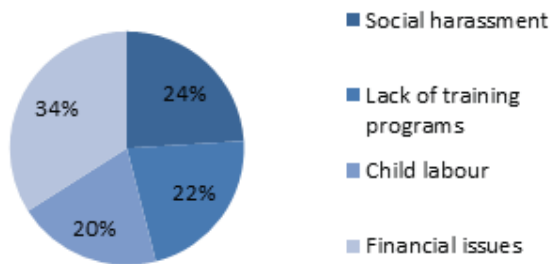


Figure: Lack of safety measurement

The safety measurement is not practiced. The above diagram shows 34% of the respondents agree with the statement. The manufacturers do not meet financial need, child labor law is not practiced and efficient training program is not continued.

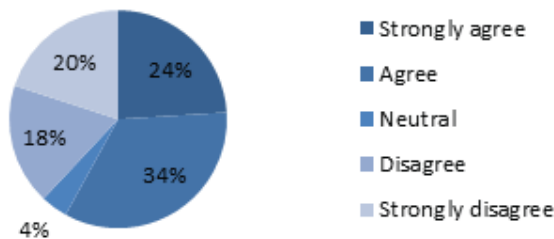


Figure: Negligence of the management

The workers work in a very dangerous condition and there is no value in life. Sometimes the manufacturers do not practice the safety management. The above diagram represents 34% of the respondents agree that the manufacturers know the safety management but neglect it.

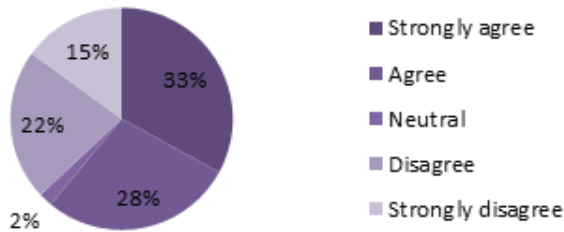


Figure: Verbal and physical abuse, including sexual harassment

The workers are not given their real rights. That is why, now and then, they protest against the manufacturers and then the manufacturers assault them. The female workers are not safe. They are sexually harassed.

## RECOMMENDATIONS FOR DEVELOPING WORKPLACE SAFETY

- Safety regulation and intervention should be reasonable.
- Building codes should not be violated.
- Safety measurement must be practiced at every level of the industry.
- Child labour should be strictly prohibited.
- The management should be concern about workers' safety and industrial disaster as well as management should take steps to make conscious about safety.
- Managers, supervisors, and workers should be properly trained in fire and safety procedures and take responsibility for ensuring the safe exit of the building during or following an incident.
- Review the safety situation at all workplaces by an independent inspector.
- Personal protective equipment minimizes potential hazards. Use personal protective equipment such as safety glasses, apron, mask, gloves, hair net, etc.
- Ensure a fire drill at least once a year in each factory where than fifty workers are employed.
- Workers must have rights to know about hazards communications in the workplace.
- Ensure strict punishment for those culprits whose negligence is the main reasons behind severe industrial disasters.

- The employers should maintain the code of conduct of behavior in such a way that the employees will not be verbal and physically abused.
- Every worker (both male and female) should have the rights to protest against unconsciousness of safety management.

## CONCLUSION

A safe and secure working environment is the fundamental rights of the workers. From the international human rights instruments to the domestic laws worker's rights are protected but in the country, due to lack of the enforcement mechanisms and the unwillingness of employers and employees, these problems remain unresolved. The industrialists are continuing to build industries without proper infrastructure and facilities. Since industries are the biggest sectors in Bangladesh and more people can be employed in these sectors, so deterrent punishment for those who are not conscious and responsible for worker safety. Otherwise, in the near future, Bangladesh will be questioned for these types of gross human rights violations and may lose the foreign buyers. At the same time, proper implementation of general and international standards should be made mandatory. Otherwise, the death traps for workers will continue to be built. The government and owners should be more concerned about industrial safety-related rules and regulations which will minimize their expenses as well as the severe losses due to accidents. Inspection, reporting, and compliance with existing national and international laws and standards must be enforced properly to minimize further incidents due to lack of occupational safety provisions.

## REFERENCES

- A Jhon Gambates, (2003); Safety emphasis in university engineering and construction programs. In JC Journal, Mei.
- Aliyu AA, Shehu AU. (2006); Occupational hazard and safety measures among stone quarry workers in Northern Nigeria. Nigerian Med Pract; 50: 42-7.
- Bertha GS, Patnaik B, Mahapatra SS, Padhee S. (2012); Assessment of safety performance in Indian industries using fuzzy approach. Expert Syst Appl, 39:331-23.
- Baram M, Schoebel M. (2007); safety culture and behavioral change at the workplace. Safety Sci; 45: 631-6.
- Barling J, Loughlin C, Kelloway EK., (2002); Development and test of a model linking safety-specific transformational leadership and occupational safety. J Appl psycho, 87:488-96.
- Berwick DM. A promise to learn—a commitment to act. Improving the safety of patients in England. London: Department of Health, 2013.

- Cox S, Cox T., (1991); the structure of employee attitudes to safety: a European example. *Work Stress*, 5:93-106.
- De Dobbeleer N, Beland F. (1991); A safety climate measure for construction sites. *J safety Res*, 22:97-103.
- Dagdeviren M, Yuksel i. (2008); Developing a fuzzy analytic hierarchy process (AHP) model for behavior-based safety management. *Inform Sci* ,178:1717-33.
- Dembe AE, Erickson JB, Delobs RG, Banks SM., (2005), The impact of overtime and long work hours on occupational injuries and illness: new evidence from the United States. *Occup Environ Med*; 62:588-97.
- Eugenio Pellicer, Keith R. Molenaar, (2009) Discussion of "developing a model of construction safety culture" In *Journal of Management in Engineering*.
- Fernandez -Muniz B, Montes-Peon JM, (2009), Vazquez-Ordas CJ. The relationship between occupational safety management and firm performance. *Saf Sci*; 47:980-91.
- Griffin MA, Neal A. (2000); Perceptions of empty at work: a framework for linking safety climate to safety performance, knowledge, and motivation. *J Occup Health Psychol*, 5:347-58.
- Hasle P, Zwetsloot G. Editorial, (2011) occupational health and safety management systems: issues and challenges. *Saf Sci*; 49:961-3.
- Isah EC, Asuzu MC, Okojie OH. (1997); Occupational health hazards I manufacturing industries in Nigeria. *J Community Med Primary Health Care*; 9:26-34.
- Koster RBM, Stam D, Balk BM. (2011), Accidents happen the influence of safety-specific transformational leadership, safety consciousness, and hazard reducing systems on warehouse accidents. *J Oper Manag*, 29:753-65.
- Lu CS, Yang CS. (2010); Safety leadership and safety behavior in container terminal operations. *Safety Sci*; 48: 123-34.
- Lopez Arquillos A, Rubio Romero Jc, Gibb A. (2012); Analysis of construction accidents in Spain, 2003- 2008. *J Saf Res* 43:381-8.
- O'Dea A, Flin R. (2001); Site managers and safety leadership in the offshore oil and gas industry. *Safety Sci*, 37:39-57.
- Panagiotis Mitropoulos, Tariq S Abdelhamid, Gregory A Howell, (2005), System Model of construction Accident causation, in *Journal of Construction Engineering and management*.
- Raymond E Levitt, Nancy M Samelton, (1993); *Construction safety management*, John Wiley& Sons, Inc. New.
- Sengupta I, Reno V, Burton JF. *Workers*, (2010); compensation: benefits, coverage, and costs 2008. Washington D.C.: National Academy of Social insurance.
- Tahir Nawaz, Azam Ishaq, Amjad Ali Ikram, (2013); trends of Safety Performance in construction and Civil Engineering projects in Pakistan. In *Civil and Environmental Research*. IISTE Vol. 3No. 5,
- Vayrynen S, Hakkinen K, Niskanen T. (2015), *Integrated occupational Safety and*

- Health management Solutions and Industrial cases. Switzerland: Springer; p. 7-15.
- Vincent CA, Burnett S, Carthey C. The measurement and monitoring of safety in healthcare. London: Health Foundation, 2013.
- Wu TC, Chen CH, Li CC. (2007); Correlation among safety leadership, safety climate, and safety performance. J Loss Prev Process Ind, 21: 307-18.
- Bangladesh Garment Manufacturer and Exporters Association (BGMEA), (2015); (<http://www.bgmea.com.bd/home/pages/tradeinformation#.VfjdwC6370s>).