

HEALTH AND SAFETY AWARENESS AMONG THE CONSTRUCTION WORKERS

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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for the acceptance of this dissertation entitled

**HEALTH AND SAFETY AWARENESS AMONG THE
CONSTRUCTION WORKERS**

Submitted by **Ganesh Dey** for partial fulfillment of the requirements for the degree of Bachelor of Science in Physiotherapy (B.Sc. in PT)



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DECLARATION

I declare that the work presented here is my own. All sources used have been cited appropriately. Any mistakes or inaccuracies are my own. I also decline that for any publication, presentation or dissemination of information of the study. I would bound to take written consent from the department of Bangladesh Health Professions Institute (BHPI).

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Acronyms

BHPI	:	Bangladesh Health Professions Institute.
BMRC	:	Bangladesh Medical Research Council.
BILS	:	Bangladesh Institute of Labor Studies.
CRP	:	Center for the Rehabilitation of the Paralysed.
DGHS	:	Directorate General of Health Services.
IRB	:	Institutional Review Board.
ILO	:	International Labor Organization.
OHS	:	Occupational Health & Safety.
SPSS	:	Statistical Package for the Social Science.
WHO	:	World Health Organization.
WHS	:	Workplace Health Safety.

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Abstract

Purpose: The purpose of the study was to identify the health and safety awareness among the construction workers. *Objectives:* Quantify the injury rates among construction workers, investigate the injuries by trade, event, type, bodily location and use of safety equipment's. *Methodology:* 200 workers are randomly selected from the different construction area at Savar, Dhaka, Bangladesh. A face to face interview was taken to conduct a cross sectional study. *Result:* A total of 200 participant was attended this study. The majority of the 37% participant was belonged to the age group 26-30 years. Among 200 participants 71 persons was worker such as helper of construction workers. 87 persons was construction workers and 43 persons was painter. Most of the participants 71 % (n=142) receive only primary education. 87.5% was smoker. 64% have experience about use of construction equipment. 47.5% people apply health & safety at construction site. The majority 75% do not have any training about health and safety. About 47% have experience of injury at construction site. Most of the injury occur due to fall from height 18 % (n=36). Although they have an experience of injury but majority 52.5% people do not practice any health and safety. Only 5% injured people were pain when they did not go to work due to injury. 23.5% people was death at the construction site known by the participants. Only 26.5 % (n=53) take preventive measure to prevent this death. 67% participants use safety harnesses to prevent fall from height. 56% people think that they are secured with this safety harnesses. *Conclusion:* Although the rate of construction site injury is high but the participants are not aware about this injury. Most of them do not use any safety measure to prevent this accident.

Keywords: Health, Safety, Injury.

1.1 Background

The construction industry stands out from other employments as having one of the highest worker injury and fatality rates. Construction comprises a very small percentage of the overall workforce (Cruz & Huerta-mercado, 2015). Yet, the incidence rate for both fatal and non-fatal accidents causing death, injuries and illnesses exceeds that of many other industries (Hossain et al., 2017). The construction industry has the most fatalities of any other industry sector for many countries of the world and currently for Bangladesh its fatality rate is the second largest only falling behind the garments sector (Hossain et al., 2017). Many studies have shown that a fairly large percentage of construction accidents could have been eliminated, reduced, or avoided if simple safety techniques were applied at the sites and the workers were trained and made aware of the safety hazards present in the sites (Iii et al., 2015).

Construction safety (the intermediate phase between a finished design and a completed building) is largely the responsibility of the owner/developer/contractors and other site professionals (ILO, 2015). The success of a project depends on the intricate planning and decisions regarding safety measures that are made on site. Most construction accidents result from basic root causes such as lack of proper training, deficient enforcement of safety, unsafe equipment, unsafe methods or sequencing, unsafe site conditions, not using the safety equipment's that were provided, and a poor attitude towards safety (Eppenberger,2009). Often times these safety measures are grossly neglected and safety laws are violated in the sites causing undue fatalities (Adane et al., 2013).

Construction is one of the world's biggest and fastest growing industrial sectors. It is however, one of the most dangerous industries. At least 108 thousand workers are killed on site every year, which represents about 30% of all occupational deaths (ILO, 2015). The risks are 3 to 6 times more likely than any other occupation (ILO, 2015).

“Safety and health at work is not only a sound economic policy - it is a basic human right” (Kanchana et al., 2015).

The right to life is the most fundamental right. Yet every year 2.2 million 2005 men and women are deprived of that right by occupational accidents and work related diseases (ILO, 2015).The word injure may be in physical or emotional in sense (Iii et al.,2015).

In Bangladesh also this industry is growing very fast. It represents 9 percent of Bangladesh’s gross domestic product (GDP) and employs more than 2.6 million people (Hossain et al., 2017). This industry in Bangladesh is worth 900 billion Taka or US \$12 billion (Hossain et al., 2017). There are more than a thousand companies in Bangladesh who are involved in the construction business (Biswas et al., 2017).

According to Cambridge dictionary physical harm or damage to someone's body caused by an accident or an attack. Similar to many low- and middle-income countries Bangladesh is passing through an epidemiological transition where there are changes in the causation of diseases and deaths (Hossain et al., 2017). As a result, injury has appeared as one of the major causes of death, morbidity and disability in Bangladesh (Hossain et al., 2017).

Occupational health and safety is a broad concept which include physical, mental and psychosocial well-being of the worker in relation to the work and the working environment aimed at providing a safer working environment which leads to an improvement of productivity as well as that of the worker’s morale and quality of life (Drysdale,2017). However, data on the magnitude and risk factors of injury especially in low resource setting are scarce (Zahoor et al., 2017).

Nationally representative Bangladesh Health and Injury Survey (BHIS) was conducted by the Institute of Child and Mother Health (ICMH) with the support from Directorate General of Health Services (DGHS), UNICEF-Bangladesh and The Alliance for Safe Children (TASC) to measure the magnitude of the injuries (Biswas et al., 2017).

BHIS 2003 was the largest injury survey ever conducted at the community level in a developing country with a sample size of 171,366 households and a total surveyed population of 819,429. It looked at all causes of death (communicable, noncommunicable

and injury) and showed the burden of injury in proportion to communicable and noncommunicable causes (Hossain et al., 2017). It characterized injuries in all age groups and looked at moderate, major, serious, severe, and fatal injuries in detail (Kemei & Nyerere, 2016).

It examined behavioral and economic aspects as well as the epidemiology. The majority of construction workers have a low safety awareness among the world (Zainon et al., 2017). Kikwasi and Smallwood (2016) told that health and safety awareness that create a negative impact on the workers and the community.

Poor awareness of occupational health and safety can hamper the organizational safety awareness (Zainon et al., 2017). By conservative estimates workers suffer 270 million occupational accidents and 160 million occupational diseases each year (ILO, 2015).

According to the World Health Organization (WHO), a substantial part of the general morbidity of the population is related to work (ILO, 2015). According to the WHO Health for All principles and ILO Conventions on Occupational Safety and Health and on occupational health services every worker has the right of access to occupational health and safety services, irrespective of the sector of the economy, size of the company, or type of assignment and occupation (ILO, 2015).

The accident and injury rates in construction are higher than in most other industries (Antuchevi et al., 2016). Recent study told that serious occupational injuries involving death or disability increase with age while less serious injuries decrease (Khanom, 2014).

The safety management issue in this sector is very poor in Bangladesh characterized by high fatality rates. Though there is extensive research in this sector around the world, but in Bangladesh, studies are limited and research cannot go far due to lack of data and lack of knowledge about safety (Maxwell et al., 2015). Therefore, this subject demands further study and research, as its importance is being realized at national level to keep on track with the international standard (Nghitanwa et al., 2017).

1.2 Rationale

Currently Bangladesh is passing through an epidemiological transition, where communicable diseases have already markedly declined due to various successful communicable disease control programs. On the contrary, non-communicable ailments and health-related events, including injuries, are gradually on the rise. The country, thus, bears a double burden of diseases and health events. On the process of urbanization construction work increasing day by day. People are interested to work in this area. But it is a matter of great regret that most of them do not have any clear idea about safety measure in construction area. They used to work without use any safety equipment. We also see that children also involve in construction works and injured. It was estimated that annually over 30,000 children die due to injury in Bangladesh .Moreover traumatic spinal cord injury is also a leading cause of construction injury. The findings drew a lot of attention of the policy planners and health professionals as a result of which injury prevention became a priority health agenda in Bangladesh. During the last decade, a Considerable number of injury prevention research activities were conducted in the country. In the coming years, Directorate General of Health Services (DGHS), Ministry of Health and Family Welfare, Government of the People's Republic of Bangladesh, by engaging various stakeholders will initiate countrywide injury prevention activities to reduce avoidable mortalities, morbidities and disabilities due to injury. This study will helpful for full fill the aims of government. Prior to implement such large-scale countrywide intervention programs, it is imperative to assess the present scenario of injury among the construction works of the country. We hope this research will be a valuable resource for developing injury prevention strategies and also designing and implementing various national injury prevention programs. On the other hand this study will be helpful for professions and professionals of physiotherapy & with this connection to other professionals will have a chance to gather their knowledge from this study.

1.3 Research question

What is the health and safety awareness among the construction workers?

1.4 Operational Definition

Health:

The health is not just the absence of disease but as a state of complete physical, mental and social wellbeing.

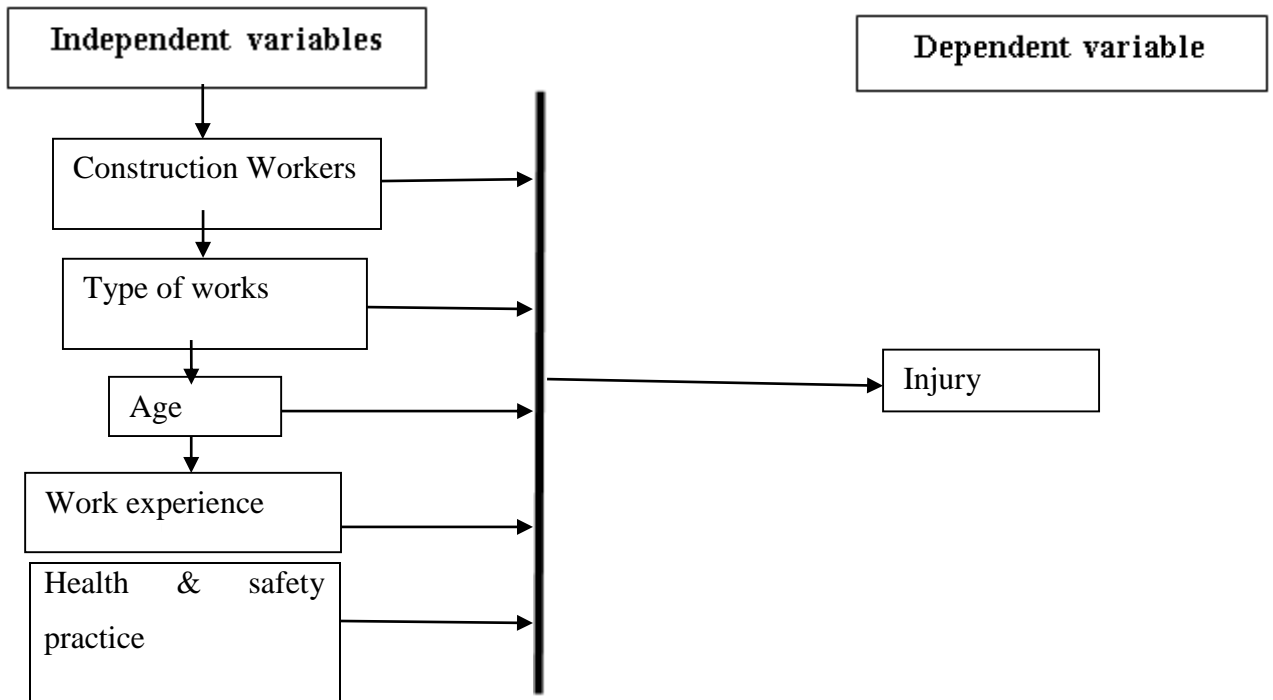
Occupational health:

“Occupational health is the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations”.

Occupational injury:

Any physical injury resulting from an accident in the course of construction work.

1.4: List of variables



1.5 Aim

To identify health and safety awareness among the construction workers and types of injury occurs among the construction workers.

1.6 Objectives

General Objective

Quantify the injury rates among construction workers, investigate the injuries by trade, event, type, bodily location and use of safety equipment's.

Specific Objectives

To find out the sociodemographic status of the participants.

To find out the common types of construction work.

To find out the causes of death and preventive measure to prevent this accidents.

To find out the safety awareness use.

To find out the concerned about life at risky situation.

To find out the safety harness used by the participants and how effective it is.

Globalization has a good impact on changing the world. Like others country in the world Bangladesh also except this changes (Maano & I, 2017). Now a day's construction works seen everywhere. So injury prevention among the construction workers has become a major issue (Maano & I, 2017).

The most common causes of construction site accidents are inappropriately organized or undertaken dangerous works, absence of collective protection devices, work performed by a worker who is not properly trained and/or certified and instructed on issues of occupational health and safety, and insufficient internal control of occupational health and safety(Lakusic et al.,2016).

If we want such accidents can be avoided by appropriately planning works in advance, by assessment of the potential risk of falling or injury, and by the use of personal and collective protection devices (Tadesse & Israel, 2016).

Tawiah & Dartey (2011) explained that the costs of unsafe, stressful and unhealthy workplaces are horrific in personal, economic, and social terms and therefore require immediate attention. If we develop a good occupational and health safety practices it is not only provide a safer working environment but also improve worker morale and productivity (Adane et al., 2013).

In the previous study researcher suggests that serious occupational injuries involving death or disability increase with age while less serious injuries decrease (Length, 2017). Occupational safety can only be ensured if appropriate measures are taken during the entire life-cycle of the project (Nghitanwa & Lindiwe, 2017).

Planning of occupational safety starts with the identification of hazardous factors and selection of appropriate protection measures (Mikkelsen, 2010).Safety and health at work is not only a sound economic policy - it is a basic human right (Kanchana et al., 2015).

The right to life is the most fundamental right. Yet every year 2.2 million men and women are deprived of that right by occupational accidents and work related diseases (ILO, 2015).

By conservative estimates workers suffer 270 million occupational accidents and 160 million occupational diseases each year (Schwatka & Rosecrance,2016). This is perhaps just the tip of the iceberg, as data for estimating nonfatal illness and injury are not available in most developing countries (Schwatka & Rosecrance, 2016).

Occupational injuries alone account for more than 10 million Disability-Adjusted Life Years (DALYs) lost, or healthy years of life lost whether to disability or premature death, and 8% of unintentional injuries worldwide (Strickland et al.,2017). Poor occupational health and reduced working capacity of workers may cause economic loss up to 10-20% of the Gross National Product of a country (Amiri et al., 2016). Globally occupational deaths, diseases, and illnesses account for an estimated loss of 4% of the Gross Domestic Product (Gonzalez et al., 2015).

Occupational safety and health (OSH), also commonly referred to as occupational health and safety (OHS), occupational health, or workplace health and safety (WHS), is a multidisciplinary field concerned with the safety, health, and welfare of people at work (Occupational safety and health) (Kemei & Nyerere,2016). It is very important to keep oneself in a safety position regarding their health concern (Okoye, 2017). In Turkey, construction is an industry in which occupational incidents are frequent. Accidents are the most serious type of these incidents at construction sites. Their annual statistics compiled from two different sources (Social Security Institution of Turkey (SGK) and Turkish Statistical Institute (TUIK) can be accepted as a numerical indicator of safety performance of the industry (Adane et al., 2013).

For occupational safety enforcement of law is mandatory in every sector. In Peru regulations have been implemented to protect the safety and health of workers (Cruz & Huerta-Mercado, 2015).

One of the most important regulations is the Law on Safety and Health at Work, which has been recently promulgated (Cruz & Huerta-Mercado, 2015). Regulations are complemented by training and education in occupational safety and health (Cruz & Huerta-Mercado, 2015).

The measures are yet to be fully implemented thus a positive effect in reducing accidents and occupational diseases at work has not yet been seen (Cruz & Huerta-Mercado, 2015).

The implication of law is a vital thing especially in construction industry. Because the risk of injury is more and severe in this sector. The performance of the industry in occupational health and safety is very poor (Kanchana et al., 2015). The standard of occupational health and safety is even worse in developing countries (Kanchana et al., 2015).

In India, construction industry is the second largest employer when compared to agriculture (Maxwell et al., 2015). Throughout the world, the construction area of civil engineering is one of the most hazardous industries (Mikkelsen, 2010). The number of fatal accidents taking place at the construction sites is quite alarming and the major cause was found to be fall of persons from height and through openings (Lakusic et al., 2016).

In the present scenario, the Indian construction industry is quite large and complex involving latest technology as well as man power (Kanchana et al., 2015). On a par with the development of construction industry, drawbacks in terms of safety and health aspects are also witnessed (Kanchana et al., 2015).

Accident caused due to fall of workers at construction sites and the result showed that most fall accidents took place at elevations of less than 9.15m, occurring primarily on new construction projects of commercial buildings and residential projects of relatively low construction cost (Zerguine et al., 2017).

In construction industry, there is another health risk is noticed among the workers that is general health risk usually causes for smoking. Construction workers were more likely to smoke, to drink alcohol more frequently and heavily, and to report less seatbelt use when compared with the general population (Kanchana et al., 2015).

Construction workers' concerns about specific health conditions were often incongruent with health and injury risks posed by their behaviors (Biswas et al., 2017). We also observed a sharp contrast between current smokers and non-smokers with regard to perceptions of the effects of smoking on safety and productivity, and on whether smoking should be allowed on worksites (Lakusic et al., 2016).

Another health concern among the workers is the environmental risks such as dirty workplace; heavy noise etc (Amiri et al., 2016). Industrial safety awareness is not seen usually almost all over the world. Industrial safety and health problems are becoming major challenges in Ethiopia because of low occupational hazards awareness, lack of workplace safety and health policy, and inefficient safety management systems (Strickland et al., 2017).

Tadesse & Israel (2016) explained that the construction sector employs about 7 % of the total global working population, it is responsible for approx. 30-40 % of all accidents. Kikwasi & Smallwood (2016) found in their study over the last two decades, the US construction sector claimed more than 26 000 lives, or five workers per day. 40 % of all deaths were due to falls from an elevation, with one-third of workers falling off a roof. 30% of workers that fell from a height either did not use any personal protection devices, or used inappropriate devices.

Lithuanian construction companies accounted for 73 serious injuries and fatal accidents. This number makes up 28 % of the accidents registered in all sectors of national economy. 86 % of occupational accidents occurred due to a fall from a height (Drysdale, 2017). Among key causes of accidents are the perception of health and safety instructions as a formality, inappropriate set-up of workplaces, and failure to use personal and collective protection devices (Adane et al., 2013).

However, continuous prevention campaigns cut down the number of falls from an elevation, and so the total number of accidents was reduced (Lakusic et al., 2016).

A total of 3201 deaths were identified in the preceding two years of the survey of which 392 deaths were due to injury. Injury accounted for 12.2% of all deaths among all age groups. Injury caused 3.2% of infant deaths, then rose to be the leading cause through the rest of childhood (52.6% 1-4; 42.1% 5-9; 56.9% 10-14 and 60.7% 15-17) and remained the leading cause at 47.4% in young adults before dropping to 27.7% in adults and 10.9% in middle age and 3.6% in old age (Hossain et al.,2017).

They also found that Over 108,000 people of all ages die due to injury each year, 297 persons each day. Suicide, road traffic injury and drowning are the top three causes of

injury mortality in all ages. These account about two-thirds of the injury mortalities (Hossain et al., 2017).

The majority about 92.0% of all injuries in all ages were moderate in severity i.e. the injured persons either sought medical care but not admitted to hospital or had a one-day work loss or absence from school (Eppenberger, 2009). Over 5.0% suffered from major injury severity which means the injury resulted in less than 10 days hospitalisation with no permanent disability and did not require major surgery. A small proportion (1.4%) had serious injury which caused hospitalisation for 10 days or more and required major surgery but no permanent disability (Eppenberger, 2009). Only 1.3% had severe injury that resulted in permanent disability (Iii et al., 2015).

Occupational accidents are a particularly acute issue. Human errors are among the key causes of accidents as usually workers lack knowledge regarding occupational safety and are incapable of correctly identifying hazardous factors (Lakusic et al., 2016).

Therefore, more attention should be paid to the briefing and training of workers with the help of a virtual construction site. Construction managers should continuously cooperate with workers on safety issues and prevent dangerous situations (Lakusic et al., 2016).

Due to these factors employers, workers and the government are incurring measurable and immeasurable costs (Length, 2017). The World Health Organization defines occupational injury as an epidemic problem in the field of public health in developing countries (Eppenberger, 2009). The human suffering caused by the injuries is hurtful to the employee, the employer and society (Khanom, 2014).

This problem is mainly noticed in construction, manufacturing, mining, and road infrastructure workings (Maxwell et al., 2015). This kind of risk occurs different injury to the workers. An estimated work force of about two million is currently engaged in the public and private sectors (Maxwell et al., 2015).

In Bangladesh, there were around 190 fatalities recorded in the preliminary data for 2013, which was the second highest number of fatalities of all industries (Hossain et al., 2017). This corresponds to a fatality rate of 7.35 fatalities per 1, 00,000 workers, which accounts

for 16% of fatalities for all industries. In addition, for the last six years, the construction industry accounted for about 135 deaths per year on an average in the country. This figure is one of the highest compared to other countries (Hossain et al, 2017).

Safety culture is a concept that is gaining traction within this sector as a useful concept to further reduce fatalities, injuries and incidents. It has been used by organizations seeking to improve construction site safety (Cruz & Huerta-mercado, 2015).

Males constitute the majority of this workforce (Antuchevi et al., 2016) .Most of the workforce has basic primary education. Commonly observed hazards in the workplace include occupational noise and dust of various types in manufacturing sectors and chemical exposures in the flower industry (Antuchevi et al., 2016).

Safety climate reflects the true perceived priority of safety in an organization. Some researchers define safety climate as a current-state reflection of the underlying safety culture (ILO, 2015).

Each project affects the safety and health of the workers during construction. Various activities having impact on health, safety and environment need to be identified with their likely effect and proposed preventive corrective actions, which shall address and cover safety issues including use of personnel protective equipment's by all concerned (Biswas et al.,2017).Drysedale (2017) has provided a useful guide to identifying safety critical positions within the construction industry.

With more than 160 million people, Bangladesh is the world's eighth most populous country. And the capital Dhaka, with a population of over 16 million, is the 8th largest city in the world and also 37th among the most densely populated cities in the world (Hossain et al., 2017).

Statistics show that Bangladesh will need to construct approximately 4 million new houses annually to meet the future demand of housing in the next twenty years. In Bangladesh, 25% of the population now lives in urban areas; this proportion will be 34% by the year 2015. Apartment construction projects, took off in the Dhaka city in the late 1970s. From

the early 1980s the business started to flourish and at present, more than 1000 companies are active in construction business in the country (Hossain et al., 2017).

Kikwasi & Smallwood (2016) reveals that construction sector in the country currently employs around 2.6 million people which accounts about 4.4% of the total workforce in Bangladesh. Also this sector contributes to about 9% of the total economy of Bangladesh. The monetary figure of this contribution stands about 900 billion Bangladesh taka which is equivalent to about 12 billion US dollar (Hossain et al., 2017). This implies a consistent growth in the labor force in the construction sector which makes this sector critical from the perspective of employment generation in Bangladesh (Hossain et al., 2017).

The country is presently seeing a rapid expansion in the construction industry. This fact is evident from the statistics provided in a newspaper article that states that RAJUK gave approval for construction of almost 12000 buildings during the period 2009 - 2012 (Hossain et al., 2017).

RAJUK report 2013 shows that an average of about 3000 buildings were given approval for construction per year. It is to be noted here that the following estimate is only for Dhaka city which is the jurisdiction area for RAJUK (Hossain et al., 2017).

Lack of proper implementation of safety measures has resulted in poor safety situations in the construction sites. The data analysis in this study has revealed that more than 800 deaths occurred in the country during the period 2008 – 2013 (Gonzalez et al., 2015). This means that on an average, 135 people are dying in this country (Hossain et al.,2017).Previous study shows that the fatality figures in the construction sector is the second highest for all the workplace accidents occurring in Bangladesh (Hossain et al.,2017).

In Bangladesh, the construction process is still traditional i.e. it is labour intensive, but mechanization has just started, for instance, ready mixed concrete are prepared in the cement plant and transported by truck directly to the site for casting (Biswas et al., 2017). Production of brick aggregates are no longer labour oriented, now machines are used to crush bricks. But safety measures are still neglected as in almost every case the owners, contractors and workers are reluctant to ensure safety measures due to negligence and lack of knowledge, experience and awareness (Biswas et al., 2017). While carrying out survey

at various construction sites in Dhaka city many malpractices have been found, especially regarding the safety issues (Hossain et al., 2017). On the other hand some sites did have some form of safety measures implemented. Common practices observed in various construction sites with emphasis on safety are discussed below (Hossain et al., 2017).

In most of the cases, contractors use thin bamboo poles for scaffolds without considering its load holding capacity (Length, 2017). In most cases, scaffolds have no guard rails. Contractors usually use poor quality old planks for the platforms of scaffolds and repeatedly use these poles and platforms without changing (Kikwasi & Smallwood, 2016).

In the construction sites, most often contractors do not provide any safety gloves, shoes or helmets to the workers (Maxwell et al., 2015). On the other hand the labours are unaware about safety, they do not demand for it. Even when available, the workers are not interested to wear personal safety devices due to lack of knowledge (Khanom, 2014). As a result injuries to fingers, palms, hands, feet, legs, eyes etc. is very common in the sites. Only in few places workers are seen wearing boots but otherwise they use ordinary sandals or slippers. Workers using hand gloves are hardly found. Because of not using the boots and hand gloves the workers often suffer from skin diseases and in the long run they gradually become sick and work life is reduced (Adane et al., 2013).

Safety belts are used to provide safety to those workers who work at high elevation to prevent from falling. But during the survey maximum workers were found without any safety belt, unknowingly endangering their lives only because of lack of awareness. Either, these belts are not provided or the workers do not make it a habit of using them. Standard safety belts conforming to BDS 1359 shall be used (Iii et al., 2015).

Injury in both the agriculture and the manufacturing sectors is another workplace hazard commonly observed in the country (Kanchana et al., 2015). A lack of information made assessing workplace exposures in detail difficult (Kanchana et al., 2015).

The prevalence of noise exposure was found to be high with the potential to seriously impact hearing capacity (Iii et al., 2015). Exposure to dust in textile and cement factories greatly exceeded international permissible limits (Iii et al., 2015). There is a high level of

workplace injuries that often leads to an extended loss of productive working days (Kanchana et al., 2015).

The construction site needs to be fenced for safety. The fence requires to be extended along the street line for the entire length of the building or site and each end shall be turned and extended to the building line. But in our context, generally this site-fencing is made very casually or there are no site-fencing at all while the construction work is going on at full swing. Protective railing or fence shall also be placed adjacent to excavations. All construction work within 1.5 m from the road shall be enclosed with a fence not less than 2.4 m high from the grade (Hossain et al., 2017).

From the study, it can be seen that safety is not adequately considered in the construction industry as proved by the statistics. Therefore, proper safety management in construction is of utmost importance (Khanom, 2014). The issue of safety of workers and public during building construction is a great concern to all as it affects the human life both economically and socially (Antuchevi et al., 2016). In Bangladesh, there is the code of BNBC to follow but its effectiveness in the field is lagging behind due to absence of a Code enforcing agency. Therefore the building construction industry is growing without any proper guideline (Hossain et al., 2017). The inspected companies do not follow the rules regarding the safety of workers, public property and others, which are summarized in BNBC 2006 (Hossain et al., 2017).

Another factor is that the percentage of injury among the workers in their work place during working. 84.7% of construction site workers experienced occupational injuries at least once in a year time (Antuchevi et al., 2016). According to previous study, the assessment of severity of occupational injury revealed that 74 (10.8%) were hospitalized, from which 31 (41.9%) were hospitalized for more than 24 h. Most 592 (86.7%) were absent from work for seven days or less (Iii et al., 2015).

Safety in workplace is less developed in underdeveloped and developing countries compared to developed countries (ILO, 2015). But the number of workers is more in underdeveloped and developing countries. It is argued that poor countries and companies cannot afford safety and health measures (Kanchana et al., 2015). However, there is no

evidence that any country or company in the long run would have benefited from poor safety and health (Kanchana et al., 2015).

Occupational health and safety (OHS) issues in Ghana reveals the lack of a comprehensive OHS policy, poor infrastructure and funding, insufficient number of qualified occupational health and safety practitioners, and the general lack of adequate information as among the main drawbacks to the provision of occupational health and safety services (Hossain et al.,2017).

This research was a cross sectional study design to identify the safety measure used by the construction workers. The aims of the study was make a sense about the use of safety equipment among the construction workers. Questionnaire will be used as measurement tools for measuring the health and safety issue among construction workers

3.1 Study Design

A cross sectional study design was used. A cross sectional study was chosen as appropriate to achieve the aims. A cross-sectional study is a descriptive study in which disease and exposure status is measured simultaneously in a given population. Cross-sectional studies can be thought of as providing a "snapshot" of the frequency and characteristics of a disease in a population at a particular point in time. All the measurements on each person are made at one point in time. The most important advantage of cross sectional studies is that in general they are quick and cheap. As there is no follow up, less resource are required to run the study. The quantitative methods are appropriate if the issue is known about relatively simple and unambiguous.

3.2 Study Site

The study was conduct non organizational construction site in the Savar, Dhaka, Bangladesh area. Savar is an upzilla under Dhaka district. Construction works develop day by day in this area. Huge number of construction workers lives in this area.

3.3 Study Area

Savar, Dhaka, Bangladesh area was selected for conduct this research. First I was find out the non-government organization for conduct this research. The construction include building construction workers, Color construction workers.

3.4 Study Population

I was selected the construction workers who do not have any involvement with organization. The construction workers including building construction workers and painters.

3.5 Sample Size

The equation of sample size calculation are given below-

$$n = \frac{Z^2 pq}{d^2}$$

Here,

$$z = 1.96$$

$$p = 0.75 \text{ (Here, } p = \text{Prevalence} = 0.75) \text{ (According to BILS, 2016)}$$

$$q = 1 - 0.75$$

$$= 1 - 0.75$$

$$= 0.25$$

$$d = 0.05$$

The actual sample size for this study is calculated as 288, but as the study is a part of academic research project and there were time limitation. So, 200 construction workers were considered as the sample of this study considering the inclusion and exclusion criteria.

3.6 Sample Technique

Purposive sampling technique was used for sample selection. Purposive sampling starts with a purpose in mind and the sample is thus selected to include people of interest and exclude those who do not suit the purpose. Usually, the population is too large for the researcher to attempt to survey all of its members. A small, but carefully chosen sample can be used to represent the population. The sample reflects the characteristics of the population from which it is drawn. Researcher selected building construction workers and color workers according to their nature of work.

A purposive sample is one which is selected by the researcher subjectively. The researcher attempts to obtain sample that appears to him/her to be representative of the population and will usually try to ensure that a range from one extreme to the other is included. Purposive sampling is different from convenience sampling is that the researchers does not simply study whoever is available, but uses their judgment to select that they believe, based on prior information, will provide the data they need. A large sample is more likely to be representative of the population than a smaller one and secondly small sample size would be corrected by an increase in the stringency with which the analysis will conduct.

3.7 Inclusion criteria

Construction workers who are not controlled by any organization
Construction workers including building construction workers and painters.
Construction both male, female and children.

3.8 Exclusion Criteria

Construction workers who are controlled by any organization.
Construction workers who are unwilling to participate in this research.
Construction workers less than experience of 2 years.
Construction workers with psychological disturbances.
Construction workers who work less than four hours per day.

3.9 Data Processing

3.9.1 Data Collection Tools

Data was collected using structural questioner, Papers, Pen, Pencil, Diary, Computer and pen drive.

3.9.2 Data analysis

The data was collected using structural questioner. And for the analysis of data descriptive statistics was used. To calculated percentages, and presented this using bar, column, table and pie charts by SPSS software version 20.0. SPSS is a comprehensive and flexible statistical analysis and data management solution. SPSS can take data from almost any type of file and use them to generate tabulated reports, charts, and plots of distributions and trends, descriptive statistics, and conduct complex statistical analyses.

3.10 Ethical consideration

The research proposal was submitted to the Intuitional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI) and approval was taken from the board. The Bangladesh Medical Research Council (BMRC) and World Health Organization (WHO) research guide line also flowed to conduct this study. Beginning the data collection, permission was obtained from the concerned authorities ensuring the safety of the

participants. Data collection was started and completed within the allocated time frame. All information was kept in secure.

3.11 Informed Consent

A written consent was given to all participants. Consent form was explained to the participants verbally. The researcher explained to the participants about his or her role in this study. The researcher received a written consent from every participants including signature. So the participant assured that they could understand about the consent form and their participation was on voluntary basis. The participants were informed clearly that their information would be kept confidential. The researcher assured the participants the study would not be harmful for them. It was explained that there might not a direct benefit from the study for the participants but in the future cases like them might got benefit from it. The participants have the right to withdraw consent at any time. Information from this study was anonymously coded to ensure confidentiality. They would not be embarrassed by the study.

4.1 Socio-demographic status

4.1.1 Age

The total number of participant was 200. Among them the majority of the people was belong the age 28 years (13%) (n=26). Mean age was 31 years and minimum and maximum age was 15 years and 52 years. Most of the participants was belong the age group 26-30 (37%) years.

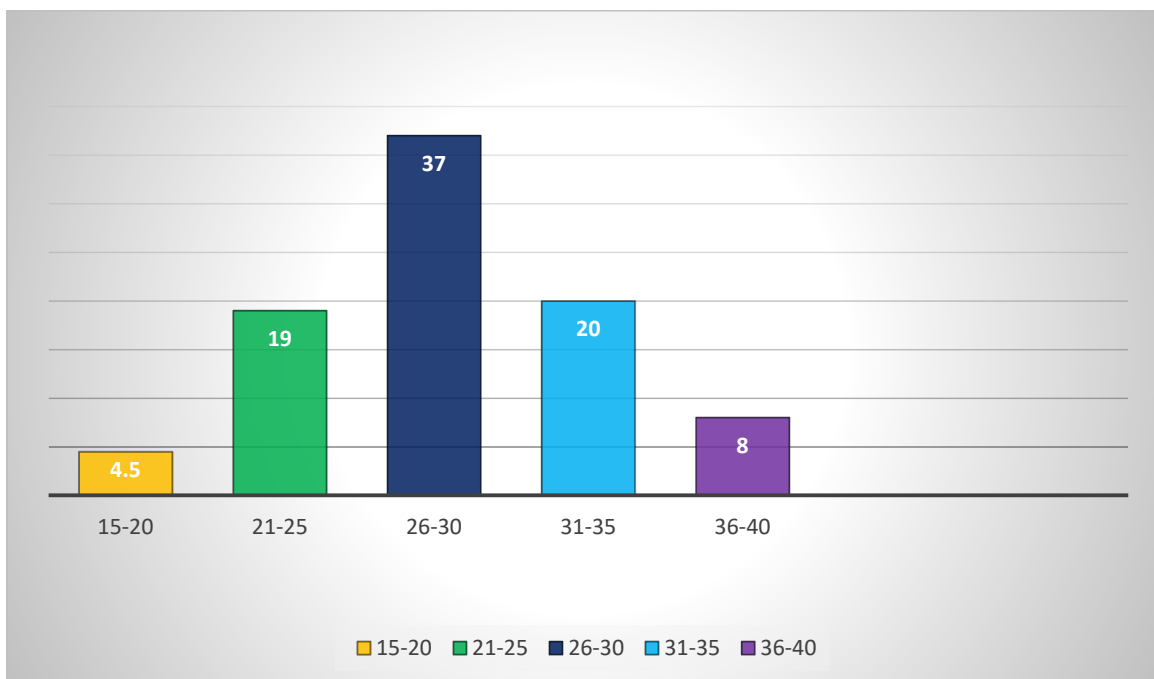


Figure 1: Age of the participants.

4.1.2 Marital status of the participants

Among the total participants 76.5% (n=153) was married and 23.5% (n=47) was unmarried.

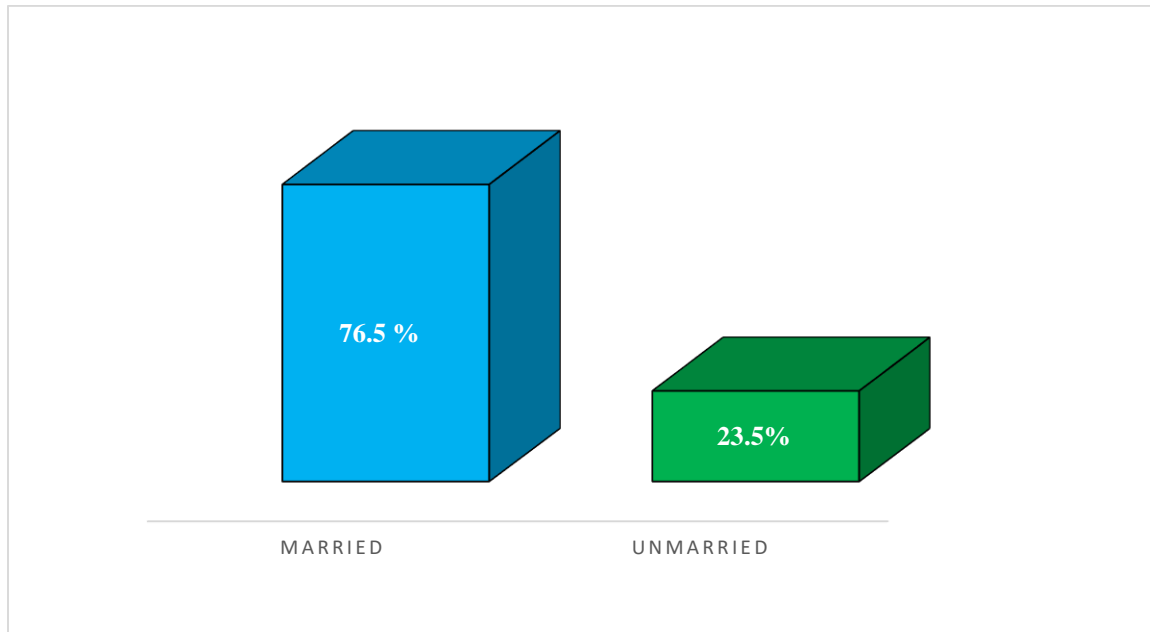


Figure 2: Marital status of the participants

4.1.3 Educational status

71.0% (n=142) receive primary education, 18.5% (n=37) receive informal education, 8% (n=16) receive secondary education, 2.5% (n=5) receive higher secondary education.

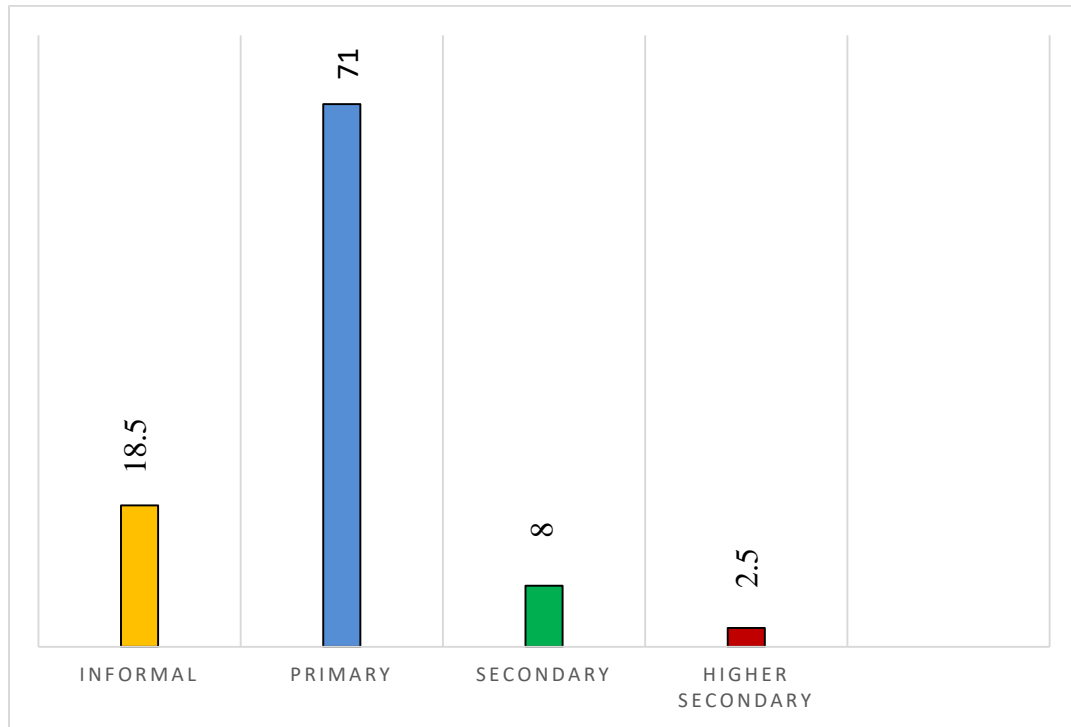


Figure 3: Educational status

4.1.4 Family member, earning member and smoking history.

Most of the participant's family member was 4-5 (21%). 56% (n=112) participants family earning member was 1. 36.5% (n=73) has earning member 2 persons. Among the 200 participants 87.5% (n=175) had smoking habit.

Table No 1: Family member, earning member and smoking history.

Values	Frequency (n)	Percent (%)
Family member of the participant		
2	10	5.0
3	21	10.5

4	42	21.0
5	42	21.0
6	27	13.5
7	21	10.5
8	23	11.5
9	8	4.0
10	6	3.0
Earning member in the family of the participant		
1	112	56.0
2	73	36.5
3	12	6.0
4	3	1.5
Smoking history		
Habited	175	87.5
Not habited	25	12.5
Total	200	100

4.1.5 Yearly average income of the participants

In this study we can see that most of the participant 17% (n=34) earn Tk 1, 00,000 per yearly. Their monthly average income was about Tk 8500. Minimum income was Tk 45000 yearly. Maximum income was Tk 1, 80,000 per year. Mean income was about Tk 1, 11,000.

4.2 Type of work of the participants.

In this study total participants was 200. Among them 35.5 % (n=71) was worker who help in construction work. 43 % (n=86) was construction worker, 21.5% (n=43) was painter.

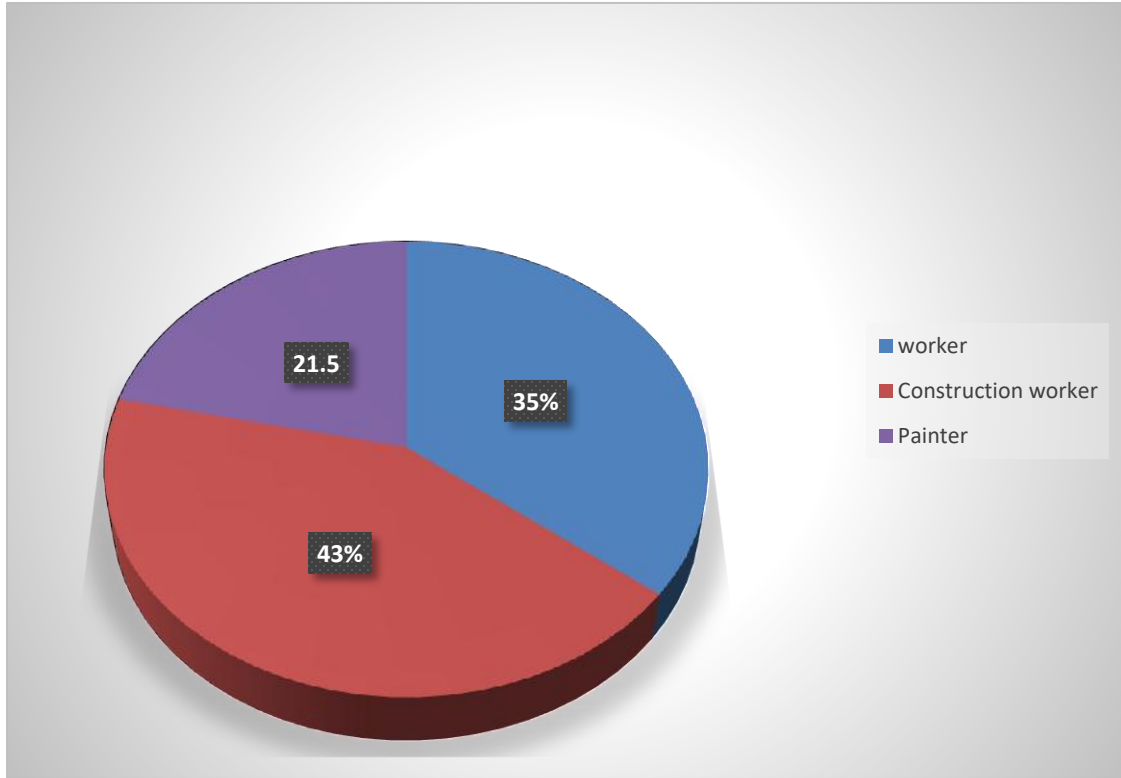


Figure 4: Type of work.

4.3 Working behavior

Most of the people was working experience between 6-8 years 35.5 % (n=67). Most of the are works 6 days per week 46 % (n=92). In this study we can see that most of the people 28.5 % (n=57) works 10 hours per day.

Table No 2: Working behavior

Values	Frequency(n)	Percent (%)
Working experience (Year)		
2-5	60	30.0
6-8	67	33.5
9-12	44	22.0
13-16	18	9.0
17-22	6	3.0
More than 22	5	2.5
Weekly working day		
5	25	12.5
6	92	46.0
7	83	41.5
Average working hour in per day		
5	4	2.0
6	18	9.0
7	28	14.0
8	43	21.5
9	49	24.5
10	57	28.5
12	1	.5
Total	200	100

4.4 Work experience, health and safety training

In this study we have seen that about 56.5 % (n=113) construction works experience. But the majority 56.5 % (n= 113) do not have any knowledge about health and safety. Majority 75% (n= 150) do not have any training about health and safety. Few of them 47.5% (n=

95) are apply health and safety at work place. But there is a hope that majority 64% (n= 128) of them have experience about use of equipment.

Table No 3: Work experience, health and safety training

Values	Frequency(n)	Percent (%)
Construction work experience		
Yes	113	56.5
No	87	43.5
Experience about use of equipment		
Yes	128	64.0
No	72	36.0
Understand about health and safety		
Yes	87	43.5
NO	113	56.5
Traing include health and safety		
Yes	50	25.0
No	150	75.0
Apply health and safety in practice at work		
Yes	95	47.5
No	105	52.5
Total	200	100

4.5 Experience of injury at construction work.

Among the 200 participants 47.0% (n=94) had experience of minor or major injury at construction work.53% (n=106) did not injured at construction work.

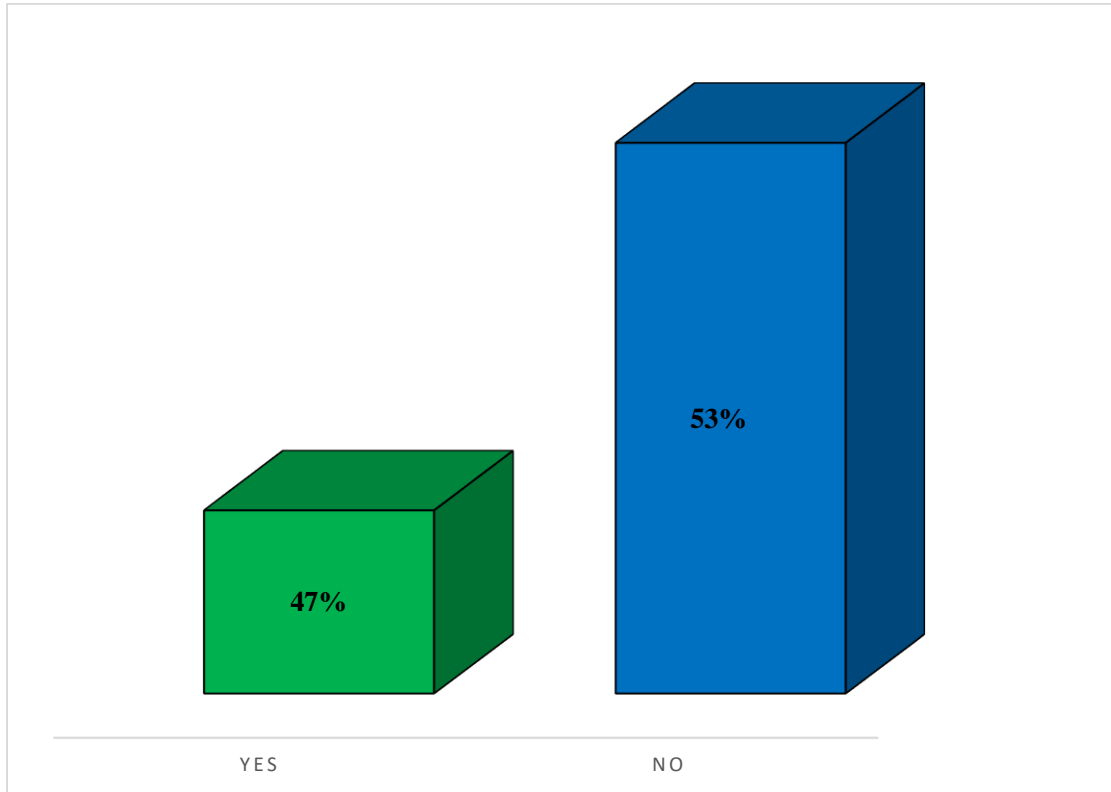


Figure 5: Experience of injury at construction work

4.6 Causes of injury at construction work

Among the total participants 93 participants injured at construction site. Most common cause of injury was fall from height 18% (n=36).Second most common injury was fall heavy object on body 17 % (n=34).5.5% (n=11) injured while pick up heavy object from the ground.17% (n=34) had other injury such as fracture, cut injury etc.

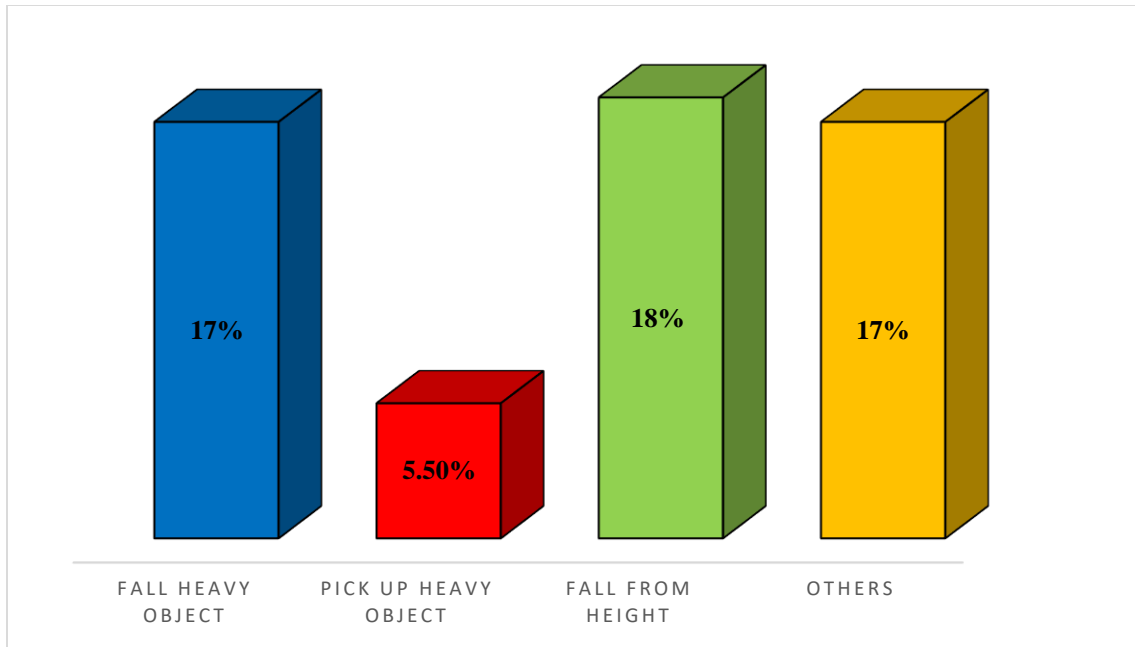


Figure 6: Causes of injury at construction work

4.7 Return work after injury & paid while off work

Among 93 injured persons 92 were return to their work after injury. Most of them 16% (n=32) return 6-15 days after injury.10.5% (n=21) return 21-35 days after injury. Among the 93 injured people 10 (5%) people are paid while they did not go to work.24.5% (n=49) was get compensated while their work was off.

Table No 4: Return work after injury & paid while off work

Values	Frequency(n)	Percent (%)
Return to the work after injury(Day)		
3-5 days	9	4.5
6-15 days	32	16.0
16-20 days	12	6.0
21-35 days	21	10.5
36-50 days	12	6.0
51-70 days	2	1.0

More than 70 days	4	2.0
Total	92	46
Paid while off work		
Yes	10	5.0
No	83	41.5
Total	93	46.5
Compensated by employer		
Yes	49	24.5
No	44	22.0
Total	93	46.5

4.8 Attempt taken to prevent construction site accident.

43% (n=86) had taken preventive measures to prevent construction site accident.57% (n=114) did not take any preventive measures to prevent construction site accident.

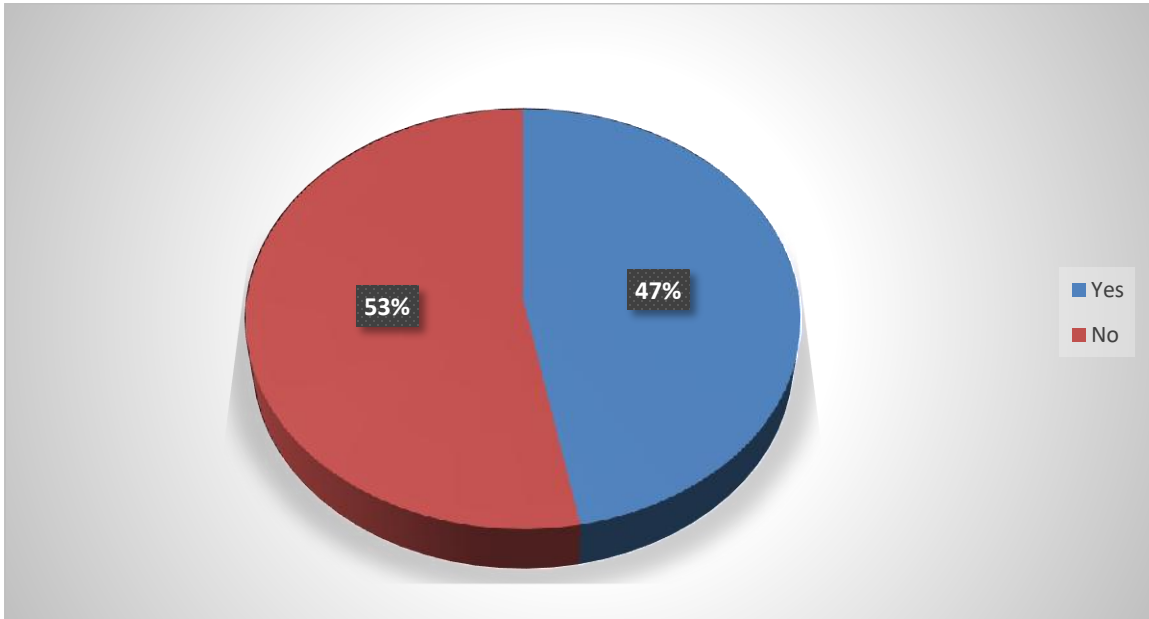


Figure 7: Attempt taken to prevent construction site accident.

4.9 Others who have history of injury at work place and thinking of participants about prevent this injury

About 36 % (n=72) people have experience of injury at work place known by the participants. Among them 29 % (n=67) never return to their work. 67.5 % (n=135) have think that this injury can be prevented but many of them did not take any preventive measures for prevent this injury.

Table No 5: Others who have history of injury at work place and thinking of participants about prevent this injury

Values	Frequency (n)	Percent (%)
Others who have ever experience any injury at work known by the participant		
Yes	72	36.0
No	128	64.0
Number of injured people never returned to work		
1-3	46	23.0
4-6	11	5.5
more than 6	1	.5
Total	67	29
Thinking of participant about the prevention of this type of accident		
Yes	135	67.5
No	65	32.5
Total	200	100

4.10 Death of construction site, cause and perception of participants to prevent this death

In this study we see that about 23.5 % (n=47) people was death in construction site. The causes of the death was heart attack .5%(n=1),fall from height 15%(n=30),head injury 1%(n=2) and fall heavy object such as road, cement etc. 4.5%(n=9). Most of them think 67.5 % (n=135) that this can be prevented but the authority do not take any preventive measures.

Table No 6: Death of construction site, cause and perception of participants to prevent this death

Values	Frequency (n)	Percent (%)
Participant known any death at construction site		
Yes	47	23.5
No	153	76.5
Cause of death		
Heart attack	1	.5
Fall from height	30	15.0
Head injury	2	1.0
Fall heavy object	9	4.5
Total	42	21%
Thinking of participant about the prevention of this type of accident		
Yes	135	67.5
No	65	32.5
Total	200	100

4.11 Safety measure to prevent death and record of death

Among the 200 participants only 26.5 % (n=53) take preventive measures to prevent this death. It is a matter of regarded that only 14 % (n=28) of death history was reported.

Table No 7: Safety measure to prevent death and record of death

Values	Frequency (n)	Percent (%)
Safety measures put in place following this accident known by the participant		
Yes	53	26.5
No	147	73.5
Total	200	100
Any of these accidents reported known by the participant		
Yes	28	14.0
No	49	24.5
Total	67	38.5

4.12 Member of labor union and reinforced for safety working environment

Among the 200 participants 57.5 % (n=115) was the member of labor union and 43% (n=86) was reinforced for safety working environment but they do not get safety working environment.

Table No 8: Member of labor union and reinforced for safety working environment

Values	Frequency (n)	Percent (%)
Member of labor union		
Yes	115	57.5
No	85	42.5
Reinforced the participant right of safety working		

environment by the labor union		
Yes	86	43.0
No	114	57.0
Total	200	100

4.13 Maintain Health and Safety at construction site

Among the 200 participants only 45 % (n=90) maintain health and safety at work. Although most of them 53.5% (n=107) are comply health and safety. Only 38.5% people told that their office aware of the risk of daily work.

Table No 9: Maintain Health and Safety at construction site

Values	Frequency (n)	Percent (%)
Maintain health and safety at the construction site		
Yes	90	45.0
No	110	55.0
Comply health and safety regulation		
Yes	107	53.5
No	93	46.5
Participant think safety officials are aware of the risk of daily work		
Yes	77	38.5
No	123	61.5
Total	200	100

4.14 Being hurt at work

About 33 % (n=66) are more hurt at their work. Among them 20 % (n=40) are hurt about injury, 38 % (n=76) about disability, 17.5 % (n=35) about their family and rest of them are think about reduce their income.

Table No 10: Being hurt at work

Values	Frequency (n)	Percent (%)
Concerned about being hurt at work		
Few tension	52	26.0
More tension	66	33.0
Total	118	59.0
Think that participant concerned more		
About injury	40	20.0
About disability	76	38.0
About family	35	17.5
About reduce income	31	15.5
Others	8	4.0
Total	190	95.0

4.15 Hurt at risk situation and think impair health long run.

Among the 200 participants most of them 44.5(n=89) does not hurt at risk situation. Most of the participants 51 % (n=102) take preventive measure at risk situation. Few of the participants 40 % (n=80) thinks that their work impair their health long run.

Table No 11: Hurt at risk situation and think impair health long run.

Values	Frequency (n)	Percent (%)
Hurt at risk situation		
Does not hurt	89	44.5
Few tension	46	23.0

More tension	65	32.5
Take preventive measure at a risk situation		
Yes	102	51.0
No	98	49.0
Thinking of participants that work can impair his health long run		
Yes	80	40.0
No	120	60.0
Total	200	100

4.16 Height and fall prevention

In this study we can see that 67% (n=134) use safety harness for fall prevention. But most of them 56 % (n=112) are not secured with this harness

Table No 12: Height and fall prevention

Values	Frequency (n)	Percent (%)
Participant wear safety harnesses for fall protection		
Yes	134	67.0
No	66	33.0
The scaffolding that participant use is stable and safely secured		
Yes	102	51.0
No	98	49.0
Participant use rope scaffolding which is suspended from the roof		
Yes	119	59.5
No	81	40.5

Participant secured with safety harness		
Yes	112	56.0
No	88	44.0
Total	200	100.0

4.17 Personal protective equipment

Among the 200 57.5 % (n=115) wear safety glass for eye protection.58 % (n=116) never use safety helmets.

Table No 13: Personal protective equipment

Values	Frequency (n)	Percent (%)
Wear safety glass		
yes	115	57.5
No	85	42.5
Wear hand gloves		
Yes	102	51.0
No	98	49.0
Wear safety boots		
Yes	66	33.0
No	134	67.0
Wear safety helmets		
Yes	84	42.0
No	116	58.0
Total	200	100.0

4.18 Chi- square

In chi-square test we see the correlation. If the p value is < 0.05 result in significance. We can see that lack of working experience causes injury (Chi=52.35, p=0.03).Participants

who did not apply health and safety are vulnerable for injury (Chi =7.459, p=0.006).Participants who use safety harness for fall protection had lack of chance of injury (Chi=50.65, p= 0.03).

Table No 14: Chi-square

Association between contents	Chi-square	P value	Significance
Education level and experience of injury	.953	0.813	Not significance
Working experience and experience of injury	52.352	0.03	Significance
Apply health and safety in practice at work of the participant and Experience any injury at work of the participant	7.459	0.006	Significance
Participant wear safety harnesses for fall protection and Scaffolding that participant use is stable and safely secured	50.658	0.03	Significance

This population based cross sectional survey revealed the scenario of injury in construction site in urban areas of Bangladesh. The purpose of the study to evaluate the health and safety measures used by the construction workers. The study also evaluate the incidence of injury and causes of death in the construction sites. Annually about 25,000 people suffered from moderate to severe injury in construction site and 512 ended with fatality (Adane et al.,2013).In this study the minimum age was 15 years which is not allotted age work.This is not only common in this study another study in Ethiopia shows same result(Schwatka & Rosecrance,2016) .The majority of the participants belong the age 28 years (13%).In few study we also see that most of the people 15%(n=140) belong the age group 25-30 years of age (Amiri et al.,2016).71%(n=142) participants only receive primary education. This is not only scenario in Bangladesh but also in one study in USA shows that 50.4 %(n= 165) only receive primary education (Kemei & Nyerere,2016).Although most of the participants works 10 hours/day 28.5%(n=57) but they did not get enough salary. The average income of construction worker TK 8500/Month. Gonzalez et al. (2016) conduct a study in Maxico they also find the similarity about income. About 33.3% employs have working experience 6 to 8 years and injury related to working experience is (CI 52.35%, P=0.032). Schwatka and Rosecrance (2016) conduct study in Turkey and correlated between working experience (CI 68.52%, P= 0.038).We can see that lack of working experience causes increase chance of injury.

BHIS study report 2016 shows that 30 %(n=90) have traing about health and safety. This is the one of the most important cause of injury in construction site. In this study I am also find that only 25 %(n=50) have traing about health and safety and correlation between traing and experience of injury at construction site is significance (CI 7.459%, P= 0.006). Males are at greater risk than female in construction site injuries in Bangladesh largely because men make up the majority of the workforce in construction sites while women are found to be involved in minor activities(Hossain et al., 2017).The experience of injury was 47%(n=94) among the total participants. The rate is high in our country.Hassan et al. (2017) conduct a study in Bangladesh and found that about 69 %(n=138) have experience injury

at construction site. Hassan et al.(2017) found that the causes of injury was fall object 22.3%,fall from height 11.7%.In this study 47%(n=94) have experience of injury at construction site. The mechanism of injury was fall heavy object 17 %(n=34), fall from height 18 %(n=34) among the 94 injured people. Others injury was cut injury, fracture etc. which was found by Kanchana et al. (2015) in their study at Japan.

The rate of injury is higher in Bangladesh but it is a matter of regarded that most of the workers 55 %(n=110) do not apply safety measure. It is not only seen in Bangladesh Adane et al. (2013) also seen the similarity 69 %(n=185) of this rate at his study in Ethiopia. This may be due to lack of education or lack of awareness about the use of safety measures.

Bangladesh, being a lower middle income country, focusses on infrastructure development rapidly nowadays. However, taking proper precaution in building these projects is crucial to ensure safety of workers as well as the public during construction.

Limitation of this study:

Regarding this study as below there were some situational limitation or barriers to

Consider the result of the study:

The limitation of this study was small sample size. It was taken only 200 samples and could not able to collect samples by random selection because, there were not adequate subjects and study period was short.

The one of major limitation was time. To conduct the research project on this topic, time period was very limited. As the study period was short so the adequate number of sample could not arrange for the study.

In this study, socio demographic profile of the construction workers could not focus properly. So, the result cannot generalize the outcome of the whole population.

The study only focus the health and safety measures among the construction workers but the role of government could not be define properly that is a biggest limitation of this study.

Time and resources were limited which have a great deal of impact on the study.

As the study was conducted at Savar area which may not represent the whole country.

In this study we see that rate of construction site related injury is high among the population of Bangladesh. Construction site related injury is a significant cause for mortality, morbidity and disability. It is also a cause for hospitalization, workday loss and prolonged hospital stay. To prevent this public health burden formulation of a national strategy and its appropriate implementation is required. The situation demands that the state, as well as other stakeholders, must address the rights of workers with seriousness, failing which they should all be held accountable for involuntary manslaughter, which is a direct consequence of gross negligence and breaches of workplace safety laws. Accordingly, civil as well as criminal liabilities should be imposed upon those responsible for not exercising due diligence in ensuring workplace safety. Workers are an integral part of industry and national development. Hence, an employment injury insurance (EII) policy must be adopted by the government to provide an immediate response in terms of compensating those directly affected by workplace accidents. Without ensuring safety in the workplace, no development would be sustainable. If urgent interventions are not in place, the absence from work, loss of productivity and work-related illnesses, disabilities and fatalities will continue to be a major challenge of the construction industry in the future. There is growing empirical evidence that as safety climate improves injuries and fatalities are reduced. The survey results exposed some important findings that should be considered carefully. The importance to a harness, goggles, helmet, or ear plugs. Consequently, in a working environment with insufficiencies in the quantity and quality of external control mechanisms, such as unions and government inspectors, it is evident that contractors will tend to neglect their legal responsibilities of paying workers' insurance premiums. Increasing the number of government inspectors may be a short-term urgent solution to this problem. Contractors have some duties. They should implement internal self-control mechanisms in the form of site inspectors and managers. In this context, they should execute their projects in a way that complies with HS regulations. Some of them are cost-free activities such as providing safety training and allowing some breaks at work. Similar to prior research, we hypothesized that construction worker's safety climate perceptions of top management and supervisor commitment to safety would affect their personal safety

behaviors. However, it was hypothesized that worker's perceptions of their co-workers commitment to safety would play an important intervening role in the relationship between the management focused safety climate factors and safety behaviors. Our results indicate that top management, supervisor, and co-workers commitment to safety positively impact safety behaviors on the job. More specifically, workers must perceive that their co-workers are committed to safety in order for top management and supervisors to influence safety behaviors on the job. Our results support workplace health and safety interventions targeted towards not only leadership, but also work teams.

Recommendations:

Initiate campaign towards enforce workplace accident reporting obligation.

Raising awareness among workers, trade unions and employers on this matter.

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APPENDIX

1. IRB permission letter.
2. Informed Consent (Bangla)
3. Informed Consent (English)
4. Questionnaire (Bangla)
5. Questionnaire (English)



বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
Bangladesh Health Professions Institute (BHPI)

(The Academic Institute of CRP)

Ref: CRP-BHPI/IRB/11/18/1270

Date: 13/11/2018

To
Ganesh Dey
B.Sc. in Physiotherapy
Session: 2013-2014 Student ID:112130218
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of the thesis proposal "Health and safety awareness among the construction workers" by ethics committee.

Dear Ganesh Dey,
Congratulations,

The Institutional Review Board (IRB) of BHPI has reviewed the above mentioned dissertation, with yourself, as the Principal investigator. The Following documents have been reviewed and approved:

Sr. No.	Name of the Documents
1	Dissertation Proposal
2	Questionnaire (Bengali & English version)
3	Information sheet & consent form.

The purpose of the study is to determine the awareness about health and safety of the construction workers. The study involves use of a self - administered questionnaire find out the result that may take 20 to 30 minutes to answer the questionnaire and there is no likelihood of any harm to the participants in the study. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 11 AM on 5th February 2018 at BHPI.

The institutional Ethics committee expects to be informed about the progress of the study, any changes occurring in the course of the study, any revision in the protocol and patient information or informed consent and ask to be provided a copy of the final report. This Ethics committee is working accordance to Nuremberg Code 1947, World Medical Association Declaration of Helsinki, 1964 - 2013 and other applicable regulation.

Best regards,

Muhammad Millat Hossain
Assistant Professor, Dept. of Rehabilitation Science
Member Secretary, Institutional Review Board (IRB)
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, বাংলাদেশ, ফোন : ৭৭৪৫৪৬৪-৫, ৭৭৪১৪০৪ ফ্যাক্স : ৭৭৪৫০৬৯

CRP-Chapain, Savar, Dhaka-1343, Tel: 7745464-5, 7741404, Fax: 7745069, E-mail: contact@crp-bangladesh.org, www.crp-bangladesh.org

সম্মতি পত্র

আসসালামু আলাইকুম,

আমি গণেশ দে বাংলাদেশ হেলথ প্রফেশন্স ইন্সটিটিউট(বিএইচপিআই), ঢাকা বিশ্ববিদ্যালয় এর স্নাতক ফিজিওথেরাপি বিভাগের একজন ছাত্র। স্নাতক ডিগ্রী প্রাপ্তির জন্য আমার একটি গবেষণামূলক প্রকল্প পরিচালনা করা প্রয়োজন এবং আমার প্রকল্পটি হচ্ছে “নির্মান শ্রমিকদের মধ্যে স্বাস্থ্য এবং নিরাপত্তা জনিত সচেতনতা (Health and safety awareness among the construction workers)”. এর জন্য আমি একটি জরিপ পরিচালনা করবো। এই গবেষণায় অংশগ্রহণের জন্য আপনাকে কিছু প্রশ্ন করা হবে এবং আপনাকে এই প্রশ্নগুলোর উত্তর দিতে হবে। এই গবেষণার ফলাফলে অন্য অনেকে উপকৃত হবে এবং পরবর্তীতে এই ধরনের দুর্ঘটনা প্রতিরোধ করতে সাহায্য করবে। আপনার দেয়া যাবতীয় তথ্য গোপন রাখা হবে। আপনার সাহায্য যথায়ত ভাবে আশা করছি; আমি আপনাকে সত্য তথ্য দিতে অনুরোধ করব। এই গবেষণায় আপনার অংশগ্রহণ স্বেচ্ছাকৃত এবং যেকোন সময়ে আপনি এই গবেষণা থেকে নিজেকে প্রত্যাহার করে নিতে পারবেন। আপনার যদি কিছু জিজ্ঞাসা থাকে তাহলে কোন সংকোচ ছাড়াই জিজ্ঞাসা করতে পারেন।

পরবর্তীতে আরও তথ্যের প্রয়োজনে নিম্নোক্ত ব্যক্তির সাথে যোগাযোগ করতে পারেন

ফিরোজ আহমেদ মমিন

সহযোগী অধ্যাপক

ডিপার্টমেন্ট অফ রিহেব সায়েন্স

বিএইচপিআই, সিরপি, সাভার, ঢাকা।

গণেশ দে

বি এস সি ইন ফিজিওথেরাপি

বাংলাদেশ হেলথ প্রফেশন্স ইন্সটিটিউট (বিএইচপিআই)

Assalamualaikum ,

I am Ganesh Dey. I am a student of physiotherapy department of Bangladesh Health Professions Institute (BHPI) under University of Dhaka. For graduate degree acquisition I need a research hypothesis conduction. My hypothesis is “**Health and safety awareness among the construction workers**”. For this I will be direct a land survey. For participate in this research I will ask you some questions and you should answer this questions. It will take few minutes. The result of this research many people would helped and later in time it help to prevention of this accident. You’re given all information keep secret. I expect you’re abundant. I request you to give true information. I expect your free will participation in this research and any moment you revocation from this research. If you have any question you ask without any hesitation.

If you want to know more about this research you can contract with this person-

Firoz Ahmed Mamin

Associate professor

Department of Rehab Science.

BHPI,CRP,Savar,Dhaka

Ganesh Dey

B.Sc in Physiotherapy

Bangladesh Health Professions Institute (BHPI)

Signature of the participant:

Date:

Mobile number of the participant:

Signature of the Data collector:

Date:

নির্মান শ্রমিকদের মধ্যে স্বাস্থ্য এবং নিরাপত্তা জনিত সচেতনতা

১. নাম -

২. বয়স -

৩. বৈবাহিক অবস্থা

I. বিবাহিত II. অবিবাহিত

৪. শিক্ষাগত যোগ্যতা

I প্রাতিষ্ঠানিক II. প্রাথমিক III. মাধ্যমিক IV. উচ্চ মাধ্যমিক

৫. পরিবারে সদস্য সংখ্যা -

৬. পরিবারে উপার্জনকারীর সংখ্যা -

৭. কাজের ধরন

I. শ্রমিক II. রাজ মিস্ত্রি III. রং মিস্ত্রি

৮. আপনার বাৎসরিক গড় আয় কত?

৯. আপনি কত বছর যাবত নির্মান কাজ করেন?

১০. আপনি সপ্তাহে গড়ে কত দিন কাজ করেন?

১১. আপনি গড়ে কত ঘন্টা কাজ করেন?

১২. কি আপনাকে কোন প্রশিক্ষন গ্রহন করেছেন?

ক. নির্মান কাজের দক্ষতা সম্পর্কে

I. হ্যাঁ II. না

খ. নির্মান সামগ্রি এর ব্যবহার সম্পর্কে

I. হ্যাঁ II. না

১৩. আপনার কি স্বাস্থ্য এবং নিরাপত্তা সম্পর্কে কোন ধারণা আছে?

I.হ্যাঁ II. না

১৪. আপনার কি স্বাস্থ্য এবং নিরাপত্তা সম্পর্কে কোন প্রশিক্ষণ গ্রহণ করেছেন?

I.হ্যাঁ II. না

১৫. কর্মক্ষেত্রে আপনি কি স্বাস্থ্য এবং নিরাপত্তা বিধান মেনে চলেন?

I.হ্যাঁ II. না

১৬. নির্মাণ কাজ করতে যেয়ে আপনি কি কখনো কোন আঘাত পেয়েছেন?

I.হ্যাঁ II. না

আঘাত পেয়ে থাকলে কি ধরনের আঘাত পেয়েছেন?

উপরের প্রশ্ন উত্তর হ্যাঁ হলে ১৭ নং প্রশ্নের উত্তর দিন

১৭.

ক. আপনি কি ভাবে আঘাত পেয়েছেন?

খ. আপনি আঘাত এর কত দিন পর কাজে ফিরেছেন?

গ. আপনার কাজ বন্ধ থাকার সময় কি আপনাকে বেতন দেয়া হয়েছে?

I.হ্যাঁ II. না

ঘ. আপনি কি কোন ক্ষতি পূরন পেয়েছেন?

I.হ্যাঁ II. না

১৮. এই ধরনের দুর্ঘটনা প্রতিরোধে কি কোন ব্যবস্থা গ্রহণ করা হইয়েছে?

I.হ্যাঁ II. না

১৯. আপনার পরিচিত কি এমন কেউ আছে যিনি কাজের সময় আঘাত পেয়েছেন?

I.হ্যাঁ II. না

উপরের প্রশ্ন উত্তর হ্যাঁ হলে ২০ নং প্রশ্নের উত্তর দিন

২০. তাদের কত জন আর কাজে ফিরে নাই / কতজন আজীবন এর জন্য অক্ষম হয়েছে?

২১. আপনি কি মনে করেন এই ধরনের আঘাত প্রতিরোধ করা সম্ভব?

I. হ্যাঁ II. না

২২. আপনার পরিচিত কি এমন কেউ আছে যার এই ধরনের কাজের সময় মৃত্যু হয়েছে?

I. হ্যাঁ II. না

উপরের প্রশ্ন উত্তর হ্যাঁ হলে ২৩ নং প্রশ্নের উত্তর দিন

২৩. মৃত্যুর কারণ কি ছিল?

২৪. আপনি কি মনে করেন এই ধরনের মৃত্যু প্রতিরোধ করা সম্ভব?

I. হ্যাঁ II. না

২৫. এই ধরনের মৃত্যু প্রতিরোধ করার জন্য কি কোন প্রতিরোধ ব্যবস্থা গ্রহন করা হয়েছে?

I. হ্যাঁ II. না

২৬. এই ধরনের দুর্ঘটনা কি কোথায় রেকর্ড করা হয়েছিল?

I. হ্যাঁ II. না III. জানা নেই

২৭. আপনি কি কোন শ্রমিক ইউনিয়ন এর সদস্য?

I. হ্যাঁ II. না

২৮. আপনার ইউনিয়ন কি আপনার নিরাপদ কর্মক্ষেত্রের জন্য কোন ব্যবস্থা গ্রহন করেছে?

I. হ্যাঁ II. না

২৯. আপনি কি নির্মাণ এলাকার স্বাস্থ্য এবং নিরাপত্তা সম্পর্কে সচেতন আছেন?

I. হ্যাঁ II. না

৩০. আপনি কি স্বাস্থ্য এবং নিরাপত্তা বিধি মেনে চলেন?

I. হ্যাঁ II. না

৩১. আপনি কি মনে করেন আপনার অফিস কতৃপক্ষ আপনার প্রতিদিনের কাজের বুকির জন্য সতর্ক আছে?

I.হ্যাঁ II. না

৩২. কাজের সময় আঘাত পাওয়ার বিষয়ে আপনি কতটা চিন্তিত?

I.কোন চিন্তা নেই II.অল্প চিন্তিত III.অনেক চিন্তিত

৩৩. কোন বিষয়ে আপনি বেশি চিন্তিত?

৩৪.কাজের সময় বুকিপূর্ণ অবস্থায় আপনি কতটা চিন্তিত হন?

I.কোন চিন্তা নেই II.অল্প চিন্তিত III.অনেক চিন্তিত

৩৫. এই ধরনের বুকিপূর্ণ অবস্থা প্রতিরোধ করার জন্য আপনি কি ধরনের প্রতিরোধ মূলক ব্যবস্থা গ্রহন করেছেন?

৩৬. আপনি কি মনে করেন আপনার কাজ আপনার জীবনের জন্য ক্ষতিকর?

I.হ্যাঁ II. না

উচ্চতা এবং পরে যাওয়া প্রতিরোধ

১. পরে যাওয়া প্রতিরোধ করতে আপনি কি কোন সুরক্ষা ব্যবস্থা গ্রহন করেন?

I.হ্যাঁ II. না

২. আপনি যে সুরক্ষা ব্যবস্থা গ্রহন করেন তা কি নিরাপদ?

I.হ্যাঁ II. না

৩. আপনি কি ছাদ থেকে পরে যাওয়া প্রতিরোধ করতে কোন ধরনের সুরক্ষা ব্যবস্থা গ্রহন করেন?

৪. আপনি কি মনে করেন এই সুরক্ষা ব্যবস্থা নিরাপদ?

I.হ্যাঁ II. না

ব্যক্তিগত সুরক্ষা সরঞ্জাম

১. আপনি কি চোখের সুরক্ষার জন্য চশমা ব্যবহার করেন?

I.হ্যাঁ II. না

২. আপনি কি হাত গ্লবস ব্যবহার করেন?

I.হ্যাঁ II. না

৩. আপনি কি সুরক্ষা জুতা ব্যবহার করেন?

I.হ্যাঁ II. না

৪. আপনি কি সুরক্ষা হেলমেট ব্যবহার করেন?

I.হ্যাঁ II. না

“Health and safety awareness among the construction workers”

1. Name –
2. Age -
3. Marital status – I. Married II. Unmarried
4. Education level-
I. Informal II. Primary III. Secondary IV. Higher secondary
5. Number of family member –
6. How many dependents at home –
7. Type of work-
I. Labor II. Construction worker III. Painter.
8. Your average annual income
-
9. How many years have you been working in construction?
-
10. How many days per week do you work on average?
-
11. How many hours per day do you work on average?
-
12. Did you provide any training?
 - a. Training about construction skill
I. Yes II. No
 - b. Training about equipment
I. Yes II. No
13. Do you understand what health and safety is?
I. Yes II. No
14. Did you training any education on health and safety?
I. Yes II. No
15. Do you apply health and safety in practice at work?

I. Yes II. No

16. Have you experience any injury at work?

I. Yes II. No

If so, how did the injury occur?

-

If “yes” answer to the question no 17

17.

a. What was the injury?

-

b. How soon did you return to work ?

-

c. Were you paid while off work?

I. Yes II. No

d. Were you compensated by your employer?

I. Yes II. No

18. Was there any attempt made by the employed to prevent this happening again?

I. Yes II. No

19. Do you know somebody who has ever experience any injury at work?

I. Yes II. No

If yes answer to the question 20

20. How many never returned to work/ how many were left with permanent disability?

-

21. Do you think this accident could have been prevented?

I. Yes II. No

22. Have you know of any deaths at construction site?

I. Yes II. No

If yes answer to question no 23

23. What was the cause of death?

-

24. How do you think the deaths could have been prevented?

I. Yes II. No

25. Was there any attempt made by the employed to prevent this happening again?

I. Yes II. No

26. Were any of these accidents reported?

I. Yes II. No III. Do not know

27. Are you a member of a labour union?

I. Yes II. No

28. Have they reinforced your rights to a safe working environment?

I. Yes II. No

29. Are you aware of any health and safety regulations for construction sites?

I. Yes II. No

30. Do you comply with health and safety regulations?

I. Yes II. No

31. Do you think safety officials at your company are aware of the risk of your daily work?

I. Yes II. No

32. How concerned are you about being hurt at work?

I. No tension II. Few tension III. More tension.

33. What is the likelihood you might get hurt at work?

-

34. If a risk situation occurs, how could you be hurt?

I. No tension II. Few Tension III. More Tension.

35. What can you do to prevent a problem that could create a risk situation?

I. Yes II. No

36. Do you think your work can impair your health in the long run?

I. Yes II. No

Height and fall prevention

1. Do you wear protection against falling objects?

I. Yes II. No

2. The scaffolding you use, is it stable and safely secured?

I. Yes II. No

3. Do you use rope scaffolding which is suspended from the roof?

I. Yes II. No

4. Are you secured with a safety harness?

I. Yes II. No

Personal protective equipment

1. Do you wear safety glasses?

I. Yes II. No

2. Do you wear hand gloves?

I. Yes II. No

3. Do you wear safety boots?

I. Yes II. No

4. Do you wear safety helmets?

I. Yes II. No