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Health and safety issues among construction workers in Bangladesh

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ABSTRACT:

Background: Bangladesh is a rapidly developing country. Lots of infrastructures are set up every year. A large number of people are working in the construction industry. Work related injuries and deaths of construction workers are common. The aim of this study was to find the health and safety awareness of informal construction workers.

Methodology: This study was a cross sectional study by using a preset questionnaire among the construction workers in Bangladesh.

Results: Participants of this study had lower income and education. About 87% of participants did not receive any health and safety training and did not wear safety equipment when they were working. About 57% of the participants had a history of injury. This study also found that the main reasons for the non-use of safety equipment were lack of safety equipment, motivation and training.

Conclusion: construction workers are not adequately aware about health and safety issues that relate to them.

Key words: Bangladesh, construction workers, health and safety, Injury.

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Introduction

The construction industry has a significant role in the economical growth and development of Bangladesh.[1] In last few years, the construction sector in Bangladesh has soared, particularly in the private sector.[2] Around 3.5 million people work in this industry.[3] Up to now, the industry is more labor intensive and less mechanized, and is considered to be one of the riskiest fields of work, with a high chance of injury.[4] Globally, the construction industry is one of the major area of health related injury, death and disability.[5] In Bangladesh, despite employing only about 4.4 percent of the population, the construction industry is responsible for around 16% of all deaths by occupation.[6]

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A study found that a total of 1,509 people died in the construction injury between 2008 and 2017. The rate of death is increasing steadily. For example, there were 179 deaths 2017compared to 147 in 2016.The main causes of death of construction workers were falling from a height and electrocution.[7]

Most construction workers in Bangladesh are employed as casual day-labour. Consequently, they work without any contract with employers and are mostly paid on a daily basis. Most of them are employed through middle man or contractors. Day-labour construction workers do not get any letters of employment. Death or injury is hardly ever recorded.[4]

At present, in Bangladesh two important rules are applicable to maintain the safety of construction workers. The Bangladesh Labor Act (BLA) 2006 and the Bangladesh National Building Code (BNBC)

2006.[8-9] Both laws provided guidance for a safe work environment, worker compensation for death or injury, and minimum standards of construction work and design.[8-9] Despite having these laws injury or death in construction sites are common. Lack of monitoring and law enforcements are big challenges. Health and safety during construction work is not a priority. Awareness among the stakeholders about this issue is not adequate.

As workers are not often aware their health and safety it is still difficult to improve the situation. We have found a lack of studies relating to increasing the awareness of constructions workers regarding health and safety issues. The objectives of this study were to:

1. To find the sociodemographic information of informal construction workers
2. To identify their experience of injury and use of personal protective equipments (PPE).
3. To identify the association of various selective socio-demographic factors and injury experience and using personal equipments

Methodology

A cross sectional study was conducted among construction workers at Savar, a large town close to near Dhaka, the capital city of Bangladesh. The study was conducted between March 2018 and August 2018. We considered only those workers who did not have a formal employer and who had worked in the construction industry for at least a year. In addition, we considered only male workers since majority of construction workers are male in Bangladesh.[10] We recruited them conveniently by visiting different construction sites. A questionnaire was developed and a pilot study was conducted to produce this questionnaire. Data were collected by face to face interview with this preset structured questionnaire at construction site.

Data analysis: We used both descriptive and inferential statistics to present data.

A multivariate logistic regression was done to find the association between various socio- demographic factors and health and safety awareness. Data analysis was performed using the Statistical Package for the Social Sciences (SPSS) software program, version 19. Armonk, NY: IBM Corp. A total of 200 participants were recruited for this study. However the calculated sample size was 377 based on online sample size calculation.

Ethical clearance and consent

Ethical permission from the Institutional Review Board (IRB) at Bangladesh Health Professions Institution (BHPI) was taken prior to conduct this study. Verbal and written informed consent was also taken from each participant who wanted to take part in this study voluntarily.

Results

A total of 200 male construction workers, who voluntarily participated were interviewed during our study period. However, the calculated sample size was 377 based on sample size calculation. The average age of all participants was 31 years and highest numbers of participants were in 21 and 40 years age group. Most of them (76.5%) were married. Please see the table 1 for detail socio demographic information.

Based on this study, about 94% of the participants were smokers. About 94% of participants worked at least eight hours per day. About 46% of the participants work six days per week and about 41.5% of the participants worked seven days per week (see Table 2 for details).

Only 25% participants received any form of health and safety training. Overall, 57% of the participants experienced injury during working and main causes of injury was picking up heavy objects (see Table 3 for details).

Only 33% of the participants used personal protective equipments when working (See Table 4).

Injuries were more frequent among younger construction workers (below 30 years of age), those who were illiterate, and those with less work experience. On the other hand, using PPE was associated with older age, education, more work experience and health and safety training.

Table 1: Socio-demographic information of participants

Variables	Categories	Frequency (N=200)	Percentage (%)
Age (years)	15-20	9	4.5
	21-25	38	19.0
	26-30	74	37.0
	31-35	41	20.5
	36-40	16	8.0
	>40	22	11.0
Marital status	Married	153	76.5
	Single	47	23.5
Education	No formal education	37	18.5
	Primary	142	71.0
	Secondary	16	8.0
	Higher secondary	5	2.5
Family member	2-5	122	57
	6-10	88	43
Earning member	Participant only	112	56.0
	Additional earning member/s in the family	88	44
Yearly income of participant (US Dollar)	600-1000	75	42.5
	1100-1500	99	49.5
	1600-2000	16	8
Smoking	Yes	188	94
	No	12	6

Table 2: Work history of the participants

Variables	Categories	Frequency (N=200)	Percentage (%)
Working experience (years)	1-5	127	63.5
	6-10	43	21.5
	>10	30	15
Working hours per day	7	8	4.0
	8	99	49.5
	9	89	44.5
	10	4	2.0
Working day per week	5	25	12.5
	6	92	46.0
	7	83	41.5

Table 3: Injury experience

Variables	Categories	Frequency (N=200)	Percentage (%)
Experience of injury at work	Yes	114	57
	No	86	43
*Causes of injury	Picking up heavy object	67	33.5
	Fall on heavy object	34	17.0
	Fall from height	24	12
	Others	12	6.0

Table 3 cont ...

*Types of injury	Soft tissue injury	74	37
	Back pain	67	33.5
	Cut	59	29.5
	Neck pain	42	21
	Wrist and hand pain	29	14.5
	Shoulder pain	23	11.5
	Fracture	19	9.5
Injury compensation	Yes	10	5
	No	190	95

• Some participants received their injuries as a result of multiple causes.

Table 4: Health and Safety issues

Variables	Categories	Frequency (N=200)	Percentage (%)
Health and safety training	Yes	25	12.5
	No	175	87.5
Wearing PPE	Yes	38	19
	No	162	81
Primary cause not to wear PPE	Safety equipments not available	117	58.5
	Lack of motivation	34	17

Table 5: Regression analysis of injury experience and wearing PPE with selected socio-demographic factors

Variables	Injury experience, (95% Confidence Interval)	Wearing Personal protective equipments (PPE) AOR, (95% CI)
Age (years)		
Below 30	1.78(1.00-3.17)	.361(.154-.846)
Above 30	1	1
Education		
No formal education	1.227(.577- 2.857)	.845 (.329-2.173)
Formal education	1	1
Work experience		
Below 5 years	1.804 (.495-2.50)	1.031 (.110-3.649)
Above 5 years	1	1
Working hour		
Above 8 hours	1.541(.878-2.70)	.744(.405-1.367)
Below 8 hours	1	1
Health and safety training		
No	2.250 (.945-5.360)	1.609 (.310-2.197)
Yes	1	1

Discussion

Most of the participants were very young in this study and age was below 40 years. As it requires strong physical strength working in the construction industry, this is a common phenomenon around the globe. A study in Malaysia had found similar results.[11] In the Malaysian study, most of the participants were below 40 years old and only 1% were over 48. A study in Nepal also found similar characteristics.[12] It can be inferred that most of those who work in the construction industry are young and it can be assumed that construction workers face difficulties finding work when they are older.

This study found that most of the workers had not advanced further than a basic secondary education. Participants in this study had received less formal education compare to other studies in different countries. For example, a study in Uganda found that all participants had received formal education and majority (74.5%) completed secondary level of education.[13] This study suggests that people with

secondary or higher level of education usually do not work as a construction workers in Bangladesh.

More than half of the participants were the only earning member of their family. Their average annual income was only about US $ 1300 and this is below the average personal income (US $1,751) of Bangladeshi people.[14] Workers in the construction industry struggle financially and their jobs are not well paid. Construction workers usually work for long hours. In this study, the average working hour of construction workers was nine hours per day and 41% worked seven days in a week. Probably to increase their income they did not take any day off. This might create more health and family problems. Most of the construction workers worked for long hour which exceed 48 hours per week. Long working hours increases the risk of injuries.[15]

High prevalence of smoking among the construction workers is common but in present study found nearly all of construction workers did smoke that exceeded the national level. About 36.3% people do smoke in Bangladesh.[16] A study done on construction workers in USA found 34.3% of their participants were smoker and that percentage was double compare to national level.[17] In India rate of smoking among construction workers was 60.2%. High percentage smoking was observed among the construction workers in developing countries. In comparisons to other countries smoking rate was higher in Bangladeshi construction workers.

Globally Injuries are big public health problem and these are the fifth leading cause of death worldwide among working population age 15-59 [18] Injuries are the major causes of disabilities and injury is 17% caused of all disabilities.[18] Occupational injuries are quite common. In present study more than half (57%) of participants had history of some kind of injury. Most of them had soft tissue injury, back pain, neck pain, cut and fracture. A study in Ethiopia found that 41% of building workers had injury in the last one year. The more common problems were lower back pain, falling injury, skin disorder, eye problem. The main causes of injury was sharp injury, strike by mobile objects, falling from height.[19]

When they were unable to work due to injury only 5% of participants received any form of compensation or financial help. This suggests that informal employers usually do not provide compensation to their workers. When they injured during work they need to bear all expenses for treatment. That creates a huge financial burden to the construction workers. In many countries compensation after injury or death is strongly applicable like United Kingdom.[20] However in Bangladesh injury compensation is only applicable to formal workers. If someone death occurs his or her family can receive only 10,000 Bangladeshi Taka equivalents to 1200 US Dollar.[7]

In terms of health and safety training, only 12.5 % of participants mentioned that they received any form of training on health and safety. Health and safety training of workers is vital to prevent injury and ensure safety at work. Despite the large number of participants injured on-site, they were not adequately aware of the use of safety equipment. Most of them (81%) did not use safety equipment during their work where necessary. The situation is similar in many other developing countries. A study in Uganda found that only 15.6% of constructions workers were aware of personal protective equipment.[13] Informal workers were less likely to use PPE compared to formally employed workers. A study in Ethiopia found that more than 71% of construction workers did not use PPE during their work. In Ethiopia a study found that 81.1% of workers had never had any workplace safety training.[19]

When they were asked why they did not use safety equipment, the majority of participants in this study said that they were not provided with any safety equipment. They were not motivated and they did not receive any training. A previous study in Bangladesh found that about 65% of construction sites lack basic safety equipment.[5]

The Bangladesh Occupational Safety, Health and Environment Foundation (OSHE), which works for the health and safety for workers, has recommended improvements in several fields including the mandatory use of personal protective equipments by all construction working whilst working.[21]It is a big concern for the construction industry that workers are not using health and safety equipments. Thus ensuring health and safety training for day-labor construction workers is badly needed, in addition to the supply of suitable protective equipment.

Limitation and recommendation:

This study has several limitations. We had small number of participants from a certain area. We also excluded female workers. A comprehensive study with more participants is required to understand the problem.

Conclusion

As the country is developing, the prevention of unnecessary death, disability and injury for construction workers is a societal responsibility. Adequate measures in health and safety need to be implemented in both the formal and the casual day-labour sectors.

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