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Original Research Article

An organization based cross-sectional study of occupational injuries among bridge construction workers in an urban area of Mumbai

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ABSTRACT

Background: Occupational injuries are matter of consideration and purport to be raising cost directly like in illnesses and accidents, loss of employment, disability and loss of productivity and subsequently to families and Society. However, there is paucity of studies to elucidate the state of affairs in most of the part of India. The Present study dictates the prevalence of injury and associated factors among Bridge Construction workers in urban area of Mumbai. Objectives are (1) to study prevalence of injury among bridge construction workers, (2) to identify the factors related to such occupational injuries.
Methods: A cross-sectional study was conducted among bridge construction workers in urban area of Mumbai from August 2017 to December 2017. Sample size was 150 by convenient method sampling which were selected randomly.
Results: The prevalence of injury among Bridge making was 25.7% in past 3 months. Factors like not using protective devices, smoking, tobacco chewing, lack of sleep, work experience were factors associated with suffering.
Conclusions: In the study dictating construction workers health and safety in an urban area of Mumbai, where higher prevalence of injury (25.7%) reported in bridge workers in an urban area of Mumbai. If intense mediation are not established then work absenteeism, drooping of work output, occupation related ailments, disabilities and casualties would remain in existence a major problem among construction workers .Therefore programmes to alleviation the load exhibited by construction related injuries should focus on work safety training, monitoring of health and substance abuse in work area.

Keywords: Occupational injury, Bridge construction worker, Health and safety

INTRODUCTION

An occupational injury is any personal injury, disease or death resulting from an occupational accident.[1] The World Health Organization defines occupational injury as an epidemic problem in the field of public health in developing countries, the injuries is hurtful to the employee, the employer and society.[2] Occupational safeness and health issues are becoming major threat in India because of less knowledge about work related hazards, lack of safety at workplace and health program, and disorganized safety systems. According to national sample survey organization 1999-2000, out of 36.9 crore workers 1.7 crore are in construction industry.[3] Occupational injuries are matter of consideration and raise cost directly like in illnesses and accidents, loss of employment, disability and loss of productivity and subsequently to families and society.[4] According to the International Labour Organization there are 270 million occupational accidents causing 2 million deaths annually.[5] Consequently, in developing nations the occupational health and safety hazards experienced by construction workers are significant than those in

industrialized nations. The effect is also 10 to 20 times higher in these nations, where the considerable collection of the world's human resources are situated.[6] Although, however work-related injuries present a major public health problem resulting in important social and economic sequel, it can be saved if well timed means are taken.[7] The approximated direct and indirect costs of fatal and nonfatal construction injuries totalled about $13 billion annually in this world. The medical expenses of nonfatal injuries alone cost more than $1.36 billion per year.[8] They often lack the basic knowledge of hazards and work for long hours in unsafe work conditions without personal protection at work and with little or no health care insurance.[9] However vocational training schools do exist in most countries, many workers and contractors see formal training as an unnecessary expense rather than an investment.[10] The construction regulation broadly requires that such protective clothing, equipment, or devices be worn "as are necessary to protect the worker against the hazards to which the worker may be exposed".[11] The present study dictates the prevalence of injury and factors among bridge construction workers in urban area of Mumbai.

Aim and objectives

- To study prevalence of injury among bridge construction workers.
- To identify the factors related to such occupational injuries.

METHODS

Study design and period: A cross-sectional study was conducted among bridge construction workers in an urban area of Mumbai from August 2017 to December 2017.

Sample size and sampling technique: The sample size was 150 as per convenient method sampling (as per study subjects availability). All employees who were directly involved in the process of construction for at least for 3 months or more were included in the study until the required sample size was obtained. Workers who were absent from work for any reason during the time of data collection were excluded from the study. Structured and pretested questionnaire was utilized to collect the data. The data were entered and analysed using SPSS software version 20.0. Ethical clearance was obtained from the Institutional Review Committee.

RESULTS

In the present study there were total of 150 selected 140 only participated, so response rate of participants was 93.33%.

In present study there were 64.29% males and 35.71% females. Majority of study subjects were in the age group of 18 to 29 years i.e. 49.29%. About 46.43% were single. In our study 45%, 37.86% and 17.14% were hindu, muslims and others respectively. Majority 41.43% of subjects were educated up to primary school and 22.14% were illiterate (Table 1).

Table 1: Distribution of study subjects according to socio demographic factors.

Distribution of study subjects according to gender (n=140)	
Male	64.29%
Female	35.71%
Distribution of study subjects according to age group in years	
18-29	49.29 %
30-44	32.86 %
above 45	17.86%
Distribution of study subjects according to marital status	
Single	46.43%
Married	32.14%
Widowed	12.14%
Divorced	9.29%
Distribution of study subjects according to religion	
Hindu	45 %
Muslims	37.86%
Others	17.14%
Distribution of study subjects according to education	
Illiterate	22.14%
Primary	41.43%
Secondary	26.43%
Higher secondary	7.14%
Post graduate	2.86%

Out of 140 respondents 61.43% were having inadequate sleep, 47.86%, 24.29% and 2.14% were addicted to smoking, alcohol and tobacco chewing. About 51.43 % workers used to work more than 8 hours and 69.29% got pre-employment work guidance. About 68.57% subjects were not using personal protective equipment (Table 2).

In our study only 67.14% were aware about occupational hazards (Figure 1).

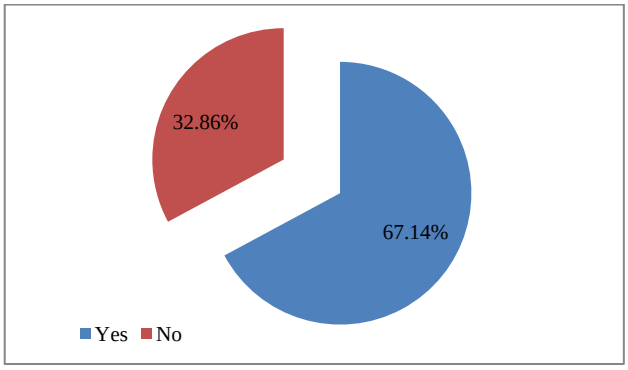

Figure 1: Awareness about hazards.

Majority of our subjects 44.44% got finger injury followed by 30.56 % and 13.89% leg injury and head injury respectively (Figure 2).

Table 2: Distribution of study subjects according to factors leading to occupational injury.

Distribution of study subjects according to sleep pattern	
Adequate	38.57%
Inadequate	61.43%
Distribution of study subjects according to type of addiction	
Smoking	47.86%
Alcohol	24.29 %
Tobacco chewing	2.14 %
Distribution of study subjects according to working hours	
< 8 hours	48.57%
>8 hours	51.43%
Distribution of study subjects according to work guidance	
Yes	69.29%
No	30.71%
Distribution of study subjects according to use of personal protective equipment	
Yes	31.43%
No	68.57%

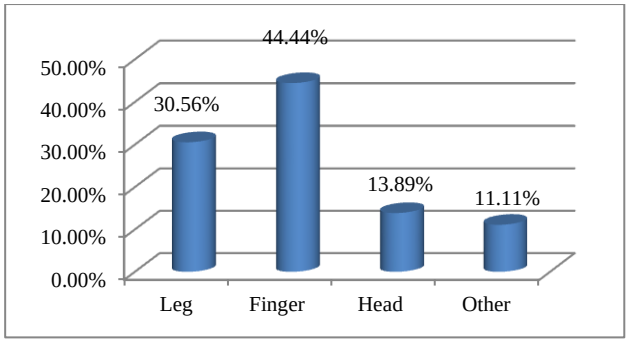

Figure 2: Common site of injuries.

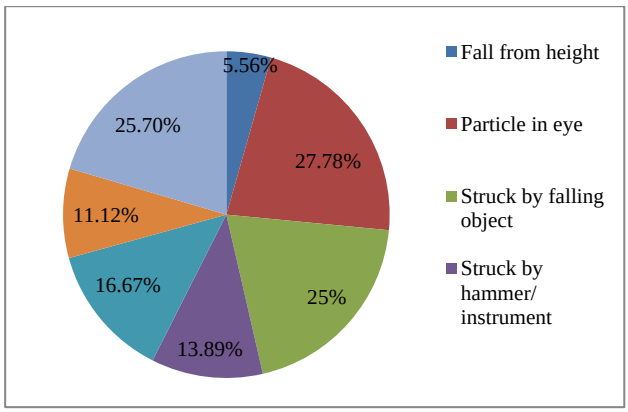

Figure 3: Injuries during occupation.

Out of 140 respondents, 25.71% got injuries during occupation, among them 27.78% had history of particle in eye followed by 25% got stuck by falling object, 16.67% struck by vehicle, 11.12% had electrical injury and 5.56% had fall from height (Figure 3).

DISCUSSION

In the present study 'a cross-sectional study of occupational injuries among bridge construction workers in an urban area of Mumbai' response rate of participants was 93.33%, so this looks like higher than previous similar studies, 92%.[11] This gives an idea might be attempt to decrease the non-response rate by redone visiting the workers.

In present study there were 64.29% males and 35.71% females, Majority of study subjects were in the age group of 18 to 29 years i.e. 49.29%. Majority of study subjects were in the age group of 18 to 29 years i.e. 49.29%, similar study done by Tiwary and Gangopadhyay et al in India in which average age was 32 years out of 150 study subjects.[12]

In our study majority 41.43% of subjects were educated up to primary school and 22.14% were illiterate, the study done by Tiwary et al literacy rate was 79% of the subjects and 10% of subjects have passed class X examination.[12] In a study by Shah and Mehta, 20% were illiterate and did primary education were 42.08%.[13]

In present study out of 140 respondents 47.86%, 24.29% and 2.14% were addicted to smoking, alcohol and tobacco chewing respectively. Similar study done by Balkrishna et al tobacco consumption was present in 50.48% of the workers and consumption of alcohol was about 14.65% of the workers.[14]

In present study about 51.43% workers used to work more than 8 hours, in similar study Tadesse S and Dagnachew Israel in Ethiopia regarding hours spent on work 91.9% of the employees had worked for ≤8 hours per day.[15]

In our study out of 140 respondents, 25.71% got injuries during occupation. The study done by Shah and Mehta in India, where the prevalence rate of injury was 22.92%. The study conducted in Ethiopia acknowledged that out of total participants 38.7% of the workers experienced occupational injuries at least once in the previous one year recall period.[16] This data was notably higher than that of done in India, this disparity in the prevalence of work-related injuries may be allied due to the asymmetry between the two countries in level of advancement, status of manpower, strengths of occupational health and safety services and heterogeneity and complexity of work tasks, and environments. The other reason might be related to the difference in the method of data collection.

The prevalence rate of injury among the workers was 25.7%. Arrangement of training to stimulate the workers to use the safety precautions and means would reduce their miseries profoundly.

In present study among respondents 27.78% had history of Particle in eye followed by 25% got stuck by falling object, 16.67% struck by vehicle, 11.12% had electrical injury and 5.56% had fall from height. Construction industry is known for high incidence of accidents. More than 90% of accidents are preventable.[17]

This study done by Ramsay reports 7.9% workers having some form of injury while working at the construction site. According to Ramsay the reason for the low prevalence in this study can be attributed to more of mechanized work and on-site periodic safety induction training given by the engineering company.[18] In other study done in Ethiopia the prevalence of injury among building construction employees was reported to be 38.3%.

The common types of injuries were 66.3% cutting and 28.5% falling. Nearly half, 46.6%, of the incidents were leg injuries followed by 43.5% finger/hand.

These subjects were usually victim of different types of injuries. It was seen that the injuries were due to (a) cut by sharp objects (46%), (b) fall from height (20%), (c) falling of objects from height (15%) etc.[6]

CONCLUSION

The study dictating construction workers health and safety in an urban area of Mumbai, where for bridge parts are being made by these workers since 2007. In this study higher prevalence of injury reported in bridge workers. If intense mediation are not established then work absenteeism, drooping of work output, occupation related ailments, disabilities and casualties would remain in existence a major problem among construction workers. Therefore programmes to decrease the load by construction related injuries should focus on work safety training, monitoring of health and substance abuse in work area.

Rarely attention has been given till now in India to the health of the construction workers. There is need to encircling this part of laborers to address the health problems.

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