

Abstract

Introduction

Construction industry is considered as a hazardous industry and its employees are incurring work related fatal and non-fatal injuries globally, even in developed countries. This study was carried with the aim of describing Safety Performance of male Construction Trades Workers including attitudes and perceptions towards safety, behaviours of workers when faced with high risk situations; injuries, costs and correlates of injuries. The study was conducted in Colombo Municipal Council Area.

Methods

The study had three (3) components

Component I

Development and validation of tools to assess attitudes, perceptions and behaviours of construction workers related to safety.

First component of the study comprised of two (2) parts

Subcomponent I- Development of a tool to asses Worker's Attitudes & perceptions towards safety (WAS)

Thirty two (32) items were used in the questionnaire used in the validation study and the responses were rated on a scale ranging from zero to five. Four hundred and forty one (441) construction workers were enrolled in the validation study and factors were extracted using Principal Axis Factoring (Principal Factoring). Direct Oblimin Rotation was used to rotate factors. Data was analyzed using SPSS (version 20).

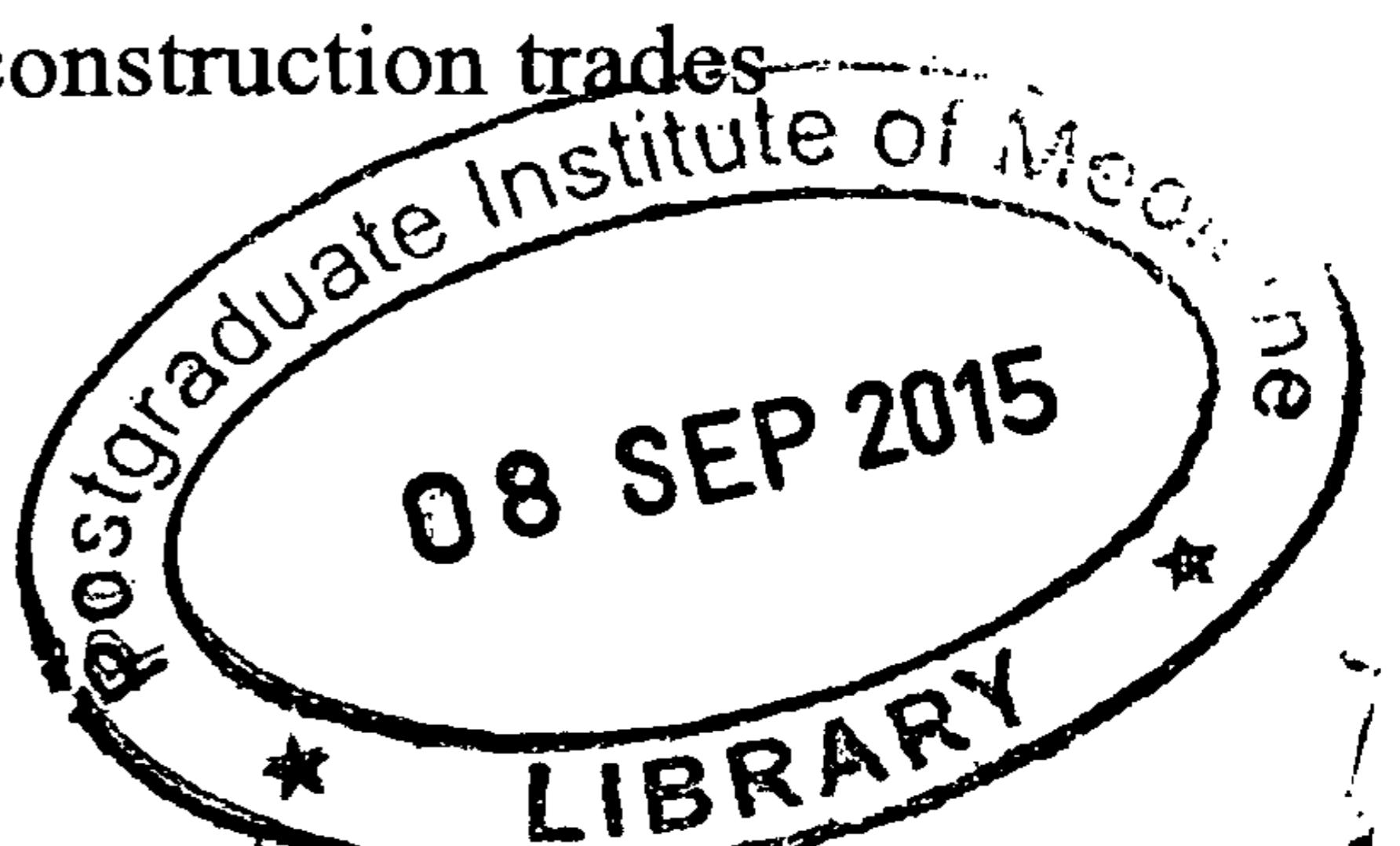
Eighteen items (18) were retained in the final tool and five underlying factors were identified taking both Keiser criterion and scree plot into account. The tool explained 64.5% of the variance and both Kaiser-Meyer-Olkin test and Bartlett's Test of Sphericity were satisfactory.

Subcomponent II-Development of a tool to asses Workers' Behaviours when faced with high risk situations.

Twelve (12) items were used in this component of the study and only face, content and consensual validity were assessed subjecting it to the several expert panels and modified Delphi technique was used to arrive at a consensus.

Component II

A Cross sectional study to assess attitudes, perceptions, behaviours of construction trades



workers related to occupational safety, injury frequencies and correlates of construction injuries was conducted.

A total of 2380 construction workers working in 161 construction sites were enrolled in the study (minimum number of workers needed was 2361). Tools developed and validated in the Component I were used in this study.

Information on injuries was collected using a questionnaire and details of minor acute injuries (cuts, bruises etc.) that required treatment other than self medication was given a recall period of two (2) weeks (even if they did not cause any work loss), but major acute injuries(fractures, amputations etc) that required hospitalisation or long term treatment were given a recall period of one (1) year. Any acute injury that lost work time was given a recall period of three (3) months. Injuries were categorised according to the type of injury and cause of injury. Musculoskeletal disorders such as repetitive stress injury were considered only if it required treatment from a doctor/medical practitioner and was given a recall period of six (6) months.

Component III

Costing study-This component of the study was conducted prospectively for six (6) months. Human Capital method was used to calculate the cost of construction injuries and only direct medical costs (both hospital and out of pocket expenditure) of injuries and indirect cost due to loss of earnings in the subject and care-givers were assessed.

Scenario Building approach was used to calculate direct hospital medical costs and prevalence type of costing was done.

Results

Majority (64%) of workers were helpers (36%), Masons (20%) and Carpenters (8%).

Only a slight majority of workers agreed that “there are efforts to improve safety” and that “safety inspections are carried out on regular basis” (52% and 54% respectively). Only 31% agreed to the statement that “working safely is the top priority for site managers, foremen and supervisors” and only 38% agreed to the statement that “management provides safety training”. An overwhelming majority of workers agreed to “Safety rules and procedures are required” and “Safety rules and procedures are easy to implement” (92% and 90% respectively).

Working on scaffolds which is not totally boarded, working on scaffolds with missing guard-rails and climbing up or down a scaffold without a ladder were not considered as risky by 3%, 4% and 26% of workers respectively.

Using a ladder which is not tied or secured, using a ladder which is broken or somehow defective and using a ladder which extends less than 1 meter above the landing place were not considered as risky by 7%, 0.4% and 34% respectively.

Working on fragile roofs without support, working on roofs without edge protection without a harness and working on roofs in bad weather were not considered as risky by 10%, 2% and 1% respectively.

There were 974 injuries (both minor and major injuries collectively) in this study for a period of one year; 232 (24% of injuries) were hospital injuries while 742 (76%) were minor injuries and the overall injury prevalence was 41%.

There were 364 (37%) superficial wounds and 88 (9%) sprains in this study. There were 201(21%)open wounds, 55(6%) fractures and 55 (6%) contusions. Majority (62%) of the injuries which resulted in hospitalization were due to trips and falls (elevated) (36%)and tools and material (26%).

Indirect cost of acute injuries is quite high and mainly it is due to the unregulated sector

Conclusions

Acute injury rates are quite high among construction workers in this study compared to injury rates in other countries and prevalence of all types of injuries was relatively high in this study. Most of the minor injuries which can be prevented by appropriate protective methods and vocational training were high in this study. Both major and minor injury rates were higher in the large category.

More attention should be to improve safety performance and safety inspection should be carried out regularly in all categories of the industry. Provision of safety training to workers and improved attention to safety by the management will reduce the acute injuries among construction workers.

Key words

Construction Worker, safety performance, acute injuries, chronic injuries, cost of construction injuries.