

ORIGINAL ARTICLE

Occupational Injury Related Deaths among Construction Workers in Uttarakhand- A Retrospective, Descriptive Study

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Abstract :

Construction industry in India is vast and complex involving modern technology as well as the workforce. Annually construction industry alone contributes 24.2 % (on an average 38 people per day) fatalities out of estimated 48000 fatal occupational accidents occurred in India. As government megaprojects are in progress, an incidence of occupational injuries also rose among construction workers in Uttarakhand. This study aims to present a profile of victims of construction workers, the contributory factors and consequences of fatal accidents at construction sites.

Cases of construction accident victims' data between October 2018 to September 2020 brought for an autopsy were studied. All victims were male out of which 16 (88.8%) were in 21 to 40 years of age. Majority was migrant workers from other states. Among the total victims, 12 (66.6%) were engaged in highway construction work and 6 (33.4%) in building construction work. Landslide and fall from height were common causative factors of an accident. Most of the victims died due to multiple injuries sustained on the body.

Keywords : Construction worker; Occupational injury; Migrants workers; BOCW Act.

Introduction :

The construction sector is one of the most dangerous industries due to its exceptional nature. The construction projects are having many difficulties due to complexities and risk of accidents.¹ At present, the construction industry in India is very big and complex including modern innovations as well as the workforce. In the construction work, chance of a casualty is five times more than the production industry, whereas 2.5 times higher risk of a major injury.² Annually construction industry alone contributes 24.2 percent (an average 38 people per day) fatalities out of estimated 48000 per year fatal occupational accidents occurred in India.³ As government megaprojects are in progress, fatal occupational injuries among construction workers also raised in Uttarakhand. This study aims to present a profile of victims, contributory factors, and the consequences of fatal accidents at construction sites.

Materials and Methods :

This retrospective, cross sectional, descriptive study was conducted in the department of Forensic Medicine and Toxicology, AIIMS Rishikesh, Uttarakhand, India. Institutional ethics committee approval was taken prior to start of the study. Construction accident victims' data like demographic profile of the victim, casual/skilled worker, type of construction (building/highway), factors leading to accidental injuries and the

cause of death was collected between October 2018 to September 2020 for the period of two years. Data was collected from police requisitions, panchanama (inquest) reports and postmortem reports. A total of 18 deaths resulted from fatal construction site injuries during this period. Data obtained from records compiled and analyzed using Microsoft excel.

Results:

Total 736 autopsies were conducted during study period of two years out of which 18 autopsies were conducted on construction related death victims. Since sample size is small descriptive statistic is used for data analysis.

Construction related death victim autopsies account for 2.45% of total autopsies. All victims were male with an age range from 21 to 61 years. 16 (88.8%) victims were young adults between 21 to 40 years of age. Only 3 victims were from the native state of Uttarakhand, while 12 belong to another state and 3 from a neighboring country (Nepal). Among the victims, 12 (66.6%) were engaged in highway construction and the rest 6 (33.4%) were building construction workers. Most of the victims were casual workers 11 (61.1%) and the remaining were skilled workers.

Landslide,⁸ fall from height,³ and fall in the gorge along with dumper truck¹ was the cause of accident among the highway construction workers. Among these, two victims fell from a height in water filled area around the construction pillars of a bridge. Among the building workers, causes of injury were fall from the height,³ fall of concrete structure on the body² and fall of a heavy machine on the victim. The concrete structure of the roof and sidewalls fallen on the victim while doing building demolition work. Most of the victims died due to multiple injuries over the body,⁷ followed by head injury,⁵ traumatic asphyxia,²

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drowning,² abdominal injury¹ and electrocution.¹

Discussion :

As per National investment promotion and facilitation agency (Invest India) report 2017, after agricultural sector, the construction sector is the second largest in our country. It is employing about 5.1 million workers at present, 9% share in India's GDP and will emerge as the third-biggest by 2025 in the world.⁴ In our study construction related death victim autopsies account for 2.45% of total autopsies. In a 5-year study on workplace accident and injuries done at Bangalore, Karnataka, construction labour autopsies constitute 6.37 % of all autopsies.⁵ This may be because of urbanisation and more construction work in city like Bangalore. In our study all victims were male and mostly young adults of 21-40 years of age. This causes a huge loss in terms of economic as well as social and moral support to the family as male being the backbone of the family in India.

The government enacted the Building and Other Construction Workers (BOCW) Act in 1996 to regulate employment, conditions of service, and to provide safety, health, and welfare measures.⁶ Victims registration status as construction workers under the act was unknown to claim the benefits of various schemes of the welfare board. Although the construction industry is large, its workers still fall in the unorganized or informal sector without job security due to many reasons. To register under this act, workers need 90 days at a stretch employment proof, and the onus of filling the registration is on the workers.⁶ Most of them work for a short period in one place and keep moving which makes it difficult to show such employment proof. Non-portability of the registration system and low literacy among workers also make the process more complicated. The benefits of the scheme cease after the worker reaches 60 years of age, but they have to work to manage the expenses of self and family.⁶ In our study one victim was 61 years of age, who was working in highway construction work.

Labours in the construction sector is recruited through the informal (labor contractor) and formal (labor in-charge) system.⁶ Informalized recruitment of the workforce in India has significantly increased, indicated by a fall in the percentage of formally recruited workers from 25.4% in 2004-05 to 20.9% in 2011-12.⁷ As per government data by ministry of labour and employment released in 2019, only 3.5 million workers presently registered under the BOCW act.⁸ Many contractors do not register their workers to avoid the payment of cess, which is another reason for non-registration. As per Youth for Unity and Voluntary Action (YUVA) report, some casual labourers are hired even on an hourly basis that excludes them automatically from the system.⁹

Most of the victims were migrants (interstate and international) and even the family members or colleagues of the victims don't have much idea about the availability of welfare schemes. Any sort of compensation for their loss would be from the employer only. Even workers were unclear regarding their real employer and up to 85% workers consider that contractors employs them.¹⁰ They are more focused on getting payment after finishing work and search for new work or reach a new work destination. Even if

they want to avail such benefits, the process is lengthy and they have to live in hunger without income in due process as daily earning is of utmost importance. As per Centre for Policy Research 2017 report, interstate migrants constitute up to 42.6% among the rural-urban migrants in the construction industry.¹¹ In our study interstate migrants constitute 12 (66.67%) victims.

Though safety law exists, strict implementation of occupational health and safety has not given prime importance, causing accidents at workplaces. Inaccessibility or significant under reporting of construction mishaps prompts a condition where due attention with respect to safety is not paid.³ As per British Safety Council report 2018, 80% construction workers in India work in hazardous conditions and workplace deaths are 20 times higher than those in Britain.¹²

In our study the landslide was the major causative factor of fatal injuries as most of the victims engaged in the highway construction work. As per National bureau of soil survey and land use planning, the soil of this region developed on stratified, soft, sedimentary and tertiary rocks and geotectonic movements make the geologically weak landmass unstable, resulting in landslides.¹³ Landslides occurred in the form of fall of silt, silt and boulder, and rock cliff. In this study three victims died in an incident of the landslide while clearing debris of the previous landslide after rainfall. In an incident of fall from height where construction worker died from brain injury was not wearing helmet.

The lack of site inspection from the government (one inspector for every 506 registered units in India) is also a reason for accidents and even civil engineers, who oversee construction, are not trained in relation to safety measures.¹² Most of the victims died due to multiple injuries over the body that was due to the reason of impact, compressed or crushed in collapsing structure, fall of a heavy machine or fall along with the heavy machine.

Conclusion :

Fatal injuries cause a huge loss to the victim's families as male

Table 1. Age distribution of construction worker victims.

Age group	Number
21-30	11
31-40	05
41-50	01
51-60	00
61-70	01

Table 2. Cause of death in construction worker victims.

Cause of death	Number
Traumatic Asphyxia	02
Bodily injuries	13
Drowning	02
Electrocution	01

Table 3. Cause of injury among construction worker victims.

Cause of injury	Number
Landslide	08
Fall from height	06
Fall from height with truck	01
Fall of heavy object on body	03

being the backbone of the family in India. Each worker has basic rights to work in a safe and mishap free working environment. The existing law must be rectified to make it pro-worker and easily accessible with strict implementation to give safety, socio-economic security and justice which is their due.

Limitation: Since this is retrospective cross sectional study long-term effects on victims' families and communities was not possible to assess.

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References :

1. Sousa V, Almeida NM, Dias LA. Risk-based management of occupational safety and health in the construction industry - Part 1: Background knowledge. *Safety Science*. 2014; 66:75–86.
2. Kanchana S, Sivaprakash P, Joseph S. Studies on labour safety in construction sites. *Scientific World Journal*. 2015; 5:1-6.
3. Patel DA, Jha K N. An Estimate of Fatal Accidents in Indian Construction. In: P W Chan and C J Neilson (Eds.) *Proceedings of the 32nd Annual ARCOM Conference*, 5-7 September 2016, Manchester, UK, Association of Researchers in Construction Management, Vol 1, 577-586.
4. Indian Construction Industry Overview & Investment Opportunities [Internet]. [cited 2020 Nov 26]. Available from: <https://www.investindia.gov.in/sector/construction>
5. Ravikumar R, Shylaja N. A profile of workplace accidents and injuries at Bengaluru. *J Indian Acad of Forensic Med*. 2018;40 (4): 369-373.
6. Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996. 1996 Aug 19 [cited 2021 Aug 26]; Available from: <http://indiacode.nic.in/handle/123456789/1989>
7. Srivastava R.S. Myth and reality of labour flexibility in India. *Ind. J. Labour Econ*. 2016; 59: 1–38.
8. Getting India's Construction Workers Their Entitlements Inter Press Service [Internet]. [cited 2020 Nov 26]. Available from: <http://www.ipsnews.net/2020/08/getting-indias-construction-workers-entitlements/>
9. How India's construction workers get gypped of their due India Spend-Journalism India [Internet]. [cited 2021 Aug 26]. Available from: <https://archive.indiaspend.com/investigations/how-indias-construction-workers-get-gypped-of-their-due-51414>
10. Srivastava R, Sutradhar R. Migrating out of poverty? A study of migrant construction sector workers in India. New Delhi; 2016. [Internet]. [cited 2022 May 5]. Available from: <https://www.ihdindia.org/1.pdf>
11. Migrants in construction work : Evaluating their welfare framework. Centre for Policy Research [Internet]. [cited 2020 Nov 26]. Available from: <https://www.cprindia.org/research/reports/migrants-construction-work-evaluating-their-welfare-framework>
12. India's 80% construction sites “unsafe”, deaths 20 times higher than those in Britain [Internet]. [cited 2020 Nov 26]. Available from: <https://www.counterview.net/2019/05/indias-80-construction-sites-unsafe.html>
13. Uttarakhand landslides: State risks farming loss as its soil erodes at an alarming rate [Internet]. [cited 2021 Aug 30]. Available from: <https://scroll.in/article/894023/on-fragile-ground-uttarakhand-risks-agricultural-disaster-as-soil-is-eroded-at-an-alarming-rate>.