

Fall, Slip & Trip (FST) Hazard at workplace

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ABSTRACT

In this world, each & every day several peoples injured at work place due to fall, Slip & Trip (FST) hazard. FSTs also cause of serious injury and fatality. Over all injury, Major numbers of fall related Injury occur or people losses their life at workplace. Greater risk of fall, Slip & Trip at work place are due to poor work place condition and unsafe behaviour of people. Major injury or fatality occurred when person sustained injury in head, neck or other sensitive body parts. Basically fall are two types, fall from elevated area or fall on same level. To control Risk due to fall, Slip, Tripp is challenging job for everyone.

Objective to publish this paper is to study & analyse the causes of fall, slip & trip and ensuring their suitable control measure to prevent similar incident. In this paper case study is carried out to collect accident data from different sector to identify causes wise accident and to select effective procedures to prevent person falling. So This Paper is very helpful to control injury or fatality that occurs at workplace due to fall, slip & trip.

.Keywords:

Work Place Risk Control, Causes of fall, Slip & Trip (FST) Hazard, Fall, Slip & Trip (FST) related Injury prevention method, Work place Safety Factor, Effective Safety Management system, Engineering Administrative & Health Factor Contribution in fall, Slip & Trip related injury.

1. Objective

- Study & Analyse of Fall, Slip & Trip (FST) hazard
- Risk Control at work place
- To prevent Fall, Slip & Trip related injury
- Cost control to prevent Fall, Slip & Trip related injury
- Identify Factor those lead to cause of Fall, Slip & Trip related injury
- Design parameter to control Fall, Slip & Trip hazard.
- Behaviour issue & control
- Fulfilling statutory requirements.
- Increasing employees morale and maintain better relation with stake holders.

2. Introduction:

At current scenario, each and every day several people injured due to fall, slip & Trip related injury. To control fall, Slip & Trip related injury is challenging job for every organisation. Injury causes pain and Loss of Earning capacity and badly effect to organisational growth. Accident decreases organisation employees morale including workmen.

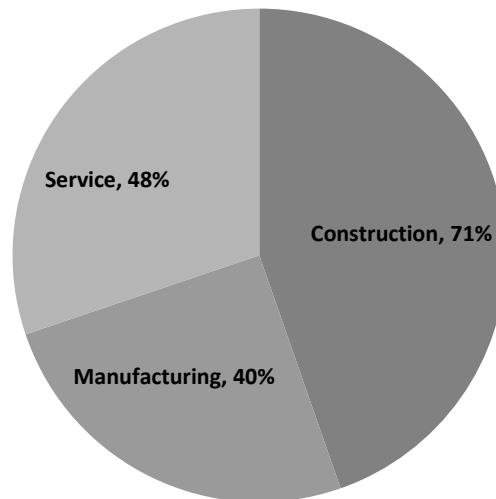
Fall, slip & Trip are major causes of workplace injury and in over all injury, fall, Slip & Trip related injury percentage is more than other injury. Greater risk of person falling at workplace are caused of ineffective method selection of work, Poor planning, poor factor consideration during workplace design and poor quality materials used with access and work platform. Person can fall from Elevated area or on same level during working or moving from one place to other. Poor condition of work place, Slippery floor, Railing missing of stair case, Floor Opening, loose material in access, Cable in access, Over speeding or use of defective equipments such as ladder are causes of fall, slip & trip. In simple way we can say that poor condition of workplace and unsafe people behaviour are main causes of Person fall. Poor Health condition like factor also leads to cause of person fall.



Fig. 1

Institution of Safety Engineers (India) carried out a studies in different sector industries in year 2018 including Construction, Manufacturing and Service sector industries to identify cause of fall, slip & Trip (FST) related injury and found that Construction sector industries are more fall prone industries respect to other sector industries. As Per Institution of Safety Engineers (India), **71 percent** Fall, Slip & Trip related injury occur in Construction Sector industries of overall injury, **40 percent** Fall, Slip & Trip related injury occur in manufacturing sector industries of overall injury and **48 percent** Fall, Slip & Trip related injury occur in service sector industries of overall injury. In every 7 injury result 1 serious injury. Elevated falls and same-level falls are basically two types of fall. 63-65

percent fall related injuries occur during working on same level or walking. 35-37 percent fall related injuries occur during working in elevated area. Elevated fall are more danger than same level fall because elevated fall have potential of multiple and serious injuries. 65 Percent elevated falls are less than 3 meter height.



Fall, Slip & Trip related injury percentage sector (Construction, Manufacturing & Service) wise Fig.2

According to Occupational Safety and Health Administration (OSHA), falls, Slip & Trip cause 15% of all accidental deaths. According to the Centre for Disease Control and Prevention (CDC) and the Bureau of Labor Statistics (BLS) U.S,

- 65% fall related Injuries occur during working on same level working and walking
- 16 % injuries occur in manufacturing sector on Same level fall
- Over one million Americans people suffer every year from Fall, Slip & Trip Related injury
- In every 6 FST related injuries, 1 result lost time injury.
- Over all elevated fall, 60 Percent elevated fall are from height less than 10 feet.
- Elevated fall are more serious than Same level fall
- An estimated 20-30 Percent People suffers with serious injury such as Fracture, Head injury
- In U.S approx. 19,565 people die due to unintentional fall related injuries
- Approx. \$40,000 per incident cost bear by employers from Fall, Slip & Trip Related Injury

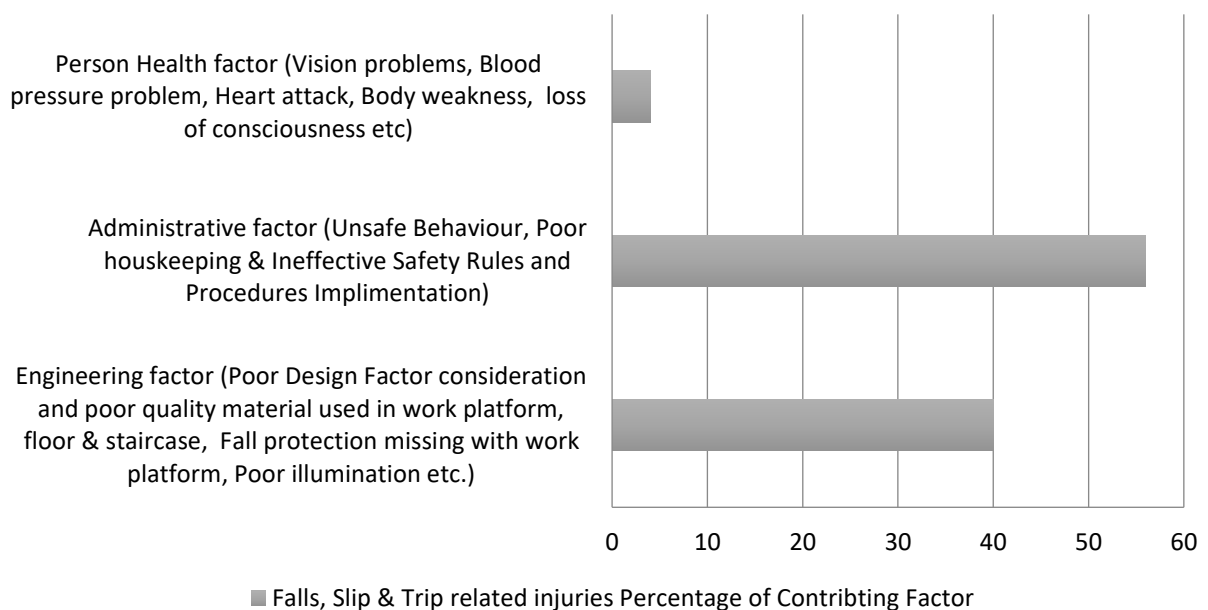
2.1 Cause & control prevention strategies of fall, Slip & Trip (FST)

On based on accident data collection, Institution of Safety Engineers India) categorised cause wise fall, slip & trip related injuries and found that **40 percent engineering Factors** (Defective & Non-standard work platform, Poor condition of Access and Stair, poor slope or uneven floor, Railing missing, Defective material used with work platform such as stair, scaffold, Poor Illumination at workplace etc) are responsible of overall fall, slip & trip related injuries.

Overall **56 Percent** fall occur due to **Administrative factor** (Human factor, Lack of Training, Ineffective implementation of safety Rules & procedures, Poor safety culture, not use of fall arrest system etc) including **31 percent** of poor housekeeping (Slipper Floor, loose material in access, obstruction on floor, Power cable laying on floor or access etc).

4 Percent Fall related injury occur at workplace due to **poor health factor such** as Vision problems, Blood pressure problem, Heart attack, Body weakness, loss of consciousness etc. Exposure of Toxic & dangerous chemical can also lead to cause of fall due to unconsciousness but not included in this study report. Good housekeeping can be ensured at work place through administrative control, So Housekeeping is considered under administrative Factor.

Percentage



Cause wise injury on based on data collection from Construction, Manufacturing & Service Sector Industries

2.1.1 Cause of fall, Slip & Trip

Poor housekeeping, slippery or uneven floor, unsafe behavior including not using fall protection/ arrest system during working in elevated area, poor illumination at workplace, Poor health condition of person, Defective ladder or workplace or platform, hand railing missing, Floor opening, cable laying on floor etc are cause of Fall, Slip & Trip. Simply cause of fall, slip & Trip can be justified with following ways.

2.1.1.1 Common causes of falls: Poor Condition of workplace, Obstruction in access, uneven surfaces, use of defective ladder, Not using fall arrest system, Poor housekeeping, unsafe behavior, Inadequate access, Defective staircase, Fall protection missing on work platform, Obstruction during carrying objects may cause of person fall.

2.1.1.2 Common Cause of Slip: Slippery floor surface e.g oil spillage, wet floor, More slope, Inappropriate footwear, slippery rug of ladder, over speeding, Poor Housekeeping, Poor drainage system, over speeding, working or walking on round shape materials like small diameter pipe etc lead to cause of Slip hazard.

2.1.1.3 Common causes of Trips:

Poor housekeeping, Material storage in passageway/ Access, Uneven floor surfaces, Cable in access, Obstruction or defect on floor, Poorly maintained floor, Cracked tiles, defective floor, poor condition of Stair, exposed steel bar on floor, worn of loose full paint/ trouser lead to cause of trip hazard with exposed material of floor or platform.

2.1.2 Fall, Slip & Trip Related injuries prevention method:

2.1.2.1 Engineering Control: Non-standard work platform (Poor safety parameter consideration for floor, stair & work platform, Poor Slope of floor, Floor opening, inadequate work platform (railing missing, Toe guard missing, Inadequate access), Poor quality (defective) material selection and poor method use for scaffolding erection, Poor illumination like factor increase the potential of fall related injury.

Always Ensure, Slip resistance floor, even floor, Suitable railing with stair and ensure fall protection at work platform. Ensure adequate illumination at workplace to notice hazard easily and avoid person fall. Suitable illumination reduces the likelihood of person falling. During working and movement, people easily notice to hazard. Ensure all safety parameter related to lighting like lighting should be no adverse health effect and no potential to cause of person falling. Ensure emergency or back up lighting arrangement to prevent person fall in case of power failure. Engineering control is best option to control risk of Fall, Slip &

Trip. Adequate engineering control measure should be taken to prevent fall, Slip & Trip related injury on based of respective Province and state Laws and standard.

2.1.2.1 Administrative Control: Ineffective administrative control increase unsafe behaviour within organisation and increases the risk of fall, slip & Trip. Ineffective implementation of safety rules & procedure, inadequate Training, Poor supervision increases unsafe behaviour among organisation people.

Administrative Control play vital role to prevent fall, slip & Trip related injury. Effective enforcement of Rule & procedures prevent to fall, slip and Trip related injury. Safety awareness activity like Training, motivational program and display of safety signage and notice always help to create safety awareness among employees to develop positive safety culture at workplace. Carry out Risk assessment & close supervision by skill and experience person to identify workplace fall, slip and trip related hazard and prevent untoward happening.

Use of fall arrest system reduces the consequence of injury. When person working more that 1.8 meter height they must be use personnel fall protection. Suitable foot wear help to avoid slipping and preventing to person falling. Use of Personnel Protective equipments (PPE's) is mostly related to behavioural issue, so Personnel Protective equipments is considered under administrative control because behaviour related issue could be resolve through administrative control method.

Poor housekeeping are major contributing factor that lead to cause of fall, Slip & Trip related injuries, So always ensure good housekeeping at work place. Avoid to keep materials in access. Avoid to laying power cable in access, Clean to floor regular and floor should be free from slippery. Suitable mark to access and barricades to floor area where are potential of person falling help to prevent fall related accident.

2.1.2.3 Health Control: Poor health condition such as Vision problems, Blood pressure problem, Heart attack, Body weakness, loss of consciousness can cause of person fall. To avoid similar incident always ensure good health and take consultation with health specialist time to time. Create work place stress free. Take suitable food to ensure good health.

3. Conclusion

Fall, slip and trip are major cause of injury at workplace in overall injuries. Fracture, Pain, Swelling, multiple injury, fatality like accidents occur at workplace due to fall, Slip & trip related hazard. Head injury, Neck injury, Spine injury are main cause of serious and fatal injury.

Fall, Slip & Trip Related injury can be controlled through Engineering Method, Administrative Control method and to ensure people good Health Condition. Ensure adequate illumination at workplace to notice hazard easily and to avoid person fall. Carry out Close supervision and motivate to people to avoid unsafe practices. Always use fall arrest system during working in elevated area. Effective implementation of safety rules and procedures help to prevent unsafe behaviour of people and workplace unsafe condition that have potential to cause of fall, slip and trip. Health Check program should be conducted time to time and develop behaviour based safety culture among employees including workmen to prevented fall related incident.

References

- Safety Management system in construction industries, Shahnawaz Rampuri, IJSEI, International Journal of Institution of Safety Engineers (India) Volume 1, Issue 1, Jan-Mar 2018
- Challenges to Control workplace Risk in Construction Industries, Mr. Sunil Bhalerao IJSEI, International Journal of Institution of Safety Engineers (India), Volume 1, Issue 4, Oct-Dec 2018
- Study & analysis of occupational health safety management system (ohsms) in organisation: a review nair. J sindhu,2shahnawaz rampuri, International Journal of Exploring Emerging Trends in Engineering (IJEETE) vol. 04, issue 01, jan- feb, 2017 pg. 34 – 39 www.ijeete.com , ISSN – 2394-0573
- OSHA—Occupational Safety and Health Administration, “Occupational Safety and Health Guidelines,” 2009, OSHA & BLS statistics
- Institution of Safety Engineers (India) Manual and Statistics