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Original Research Article

Profile and Determinants of Occupational Injuries Reporting To a Tea Garden Hospital over the Past Decades – A Mixed Method Study

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Abstract: Occupational injuries have a major impact on public health and exact a huge toll in the workplace. Workers in the tea planting industry are exposed to a variety of occupational health and safety hazards, of which injuries are of paramount health concern. The objective is to study the profile of occupational injuries reporting to garden hospital and to describe the time trend of these occupational accidents and to study the factors associated with and determinants of occupational injuries among plantation workers. A Mixed methods study was undertaken in a Garden hospital of South India in three selected estates for a period of two months (January– February, 2015). A record based review of injuries happened among 425 workers reported over the period of 2004-2014 was done. Qualitative methods were used to assess the determinants of injury. The maximum number 153(36 %) of occupational accidents occurred in the age group of 41 – 50 years and men sustained more injuries. In our study the time trend of injuries among the three estates followed a similar pattern over the past ten years. Contusions were the most common type of injury followed by cut injuries. Inadequate health and safety training, limited use of personal protective devices, prolonged duration of working hours along with behavioural factors like smoking and alcohol were found to be the major factors that accounted for the occurrence of injury. Along with addressing behavioural factors the existing method of educating labourers with regard to safety, benefits of following safety precautions and use of personal protective equipment's especially at the work place should also be strengthened.
Keywords: Occupational injuries, determinants, mixed method study.

INTRODUCTION:

Occupational injuries have a major impact on public health and exact a huge toll in the workplace. According to the ILO, an occupational accident is an unexpected and unplanned occurrence, including acts of violence, arising out of or in connection with work, which results in one or more workers incurring a personal injury, disease or death [1].

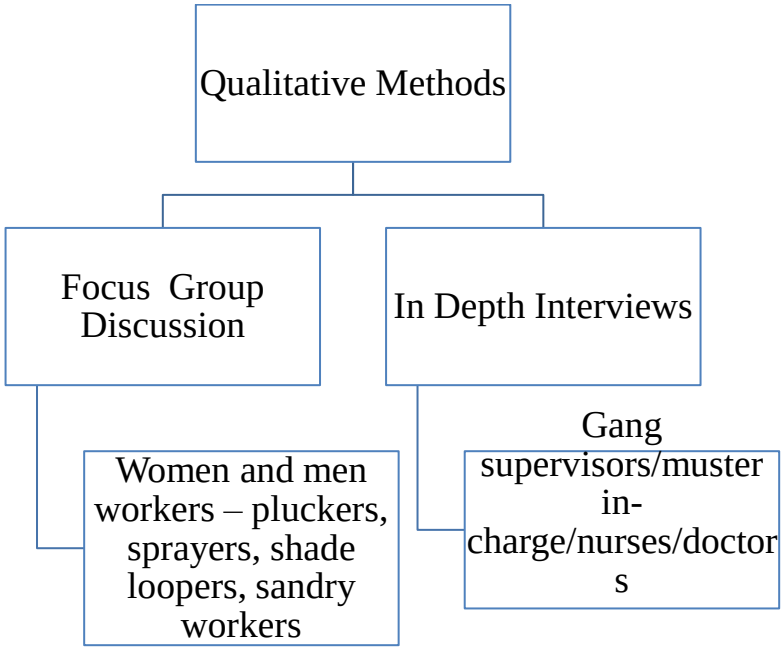
The tea planting industry in southern India accounts for 66,050 planters and employs a population of about 2.46 lakhs as labour [1]. History reveals that most of the plantation areas were "distinctly unhealthy" with primary health care issues such as communicable diseases and mother and child survival occupying the minds of the early planters. Over the years, planting companies have started focusing on occupation health and safety issues.

Workers in the tea planting industry are exposed to a variety of occupational health and safety hazards, of which injuries are of paramount health concern. In India, legislation to take care of occupational safety in tea plantations is also found wanting. Unlike the Factories Act, the Plantations Labour Act does not provide any guidance for occupational safety in the plantations. The Plantation workforce, are among the most exploited workforce in the organized sector – low wages, working and living conditions are poor, work in remote and isolated areas and are illiterate and or migrants with no awareness or information about their rights [2].

Workplace related injuries are by large preventable with the use of appropriate occupational safety and health services. Few studies have been published regarding occupational accidents occurring among Indian plantation workers. There are not many studies done as yet in India regarding the determinants of occupational injuries. Hence there is scope to explore this area of research further. Studies of this nature helps in developing appropriate preventive strategies.

METHODS:

This was a descriptive hospital based record review which included all the patients presenting to estate hospital with an occupational accident from January 2004 to December 2014. It was conducted in three selected estates that employ workers in the fields and factories. The data was collected from the Medical Records Department of the Garden Hospital. Data included socio demographic details, type of injuries, site and consequences of injury. Data was entered in the excel spread sheet and analysis was done using standard statistical software. Frequencies were calculated for categorical variables. Determinants of the nature of injury were assessed using qualitative methods of focus group discussions and key informant interviews.



FOCUS GROUP DISCUSSION (FGD):

Topic guide was prepared. Both women and men workers (8 – 12 participants/ FGD) were selected. FGDs were conducted at the three estates. All FGDs were recorded with consent.

IN DEPTH INTERVIEWS (IDI)

In-depth Interviews were conducted with supervisors, field officers, doctors and nurses. The interviews were recorded with consent. On an average each interview lasted for about 30 minutes.

RESULTS:

A total of 425 workers reported to the garden hospital with occupational injuries during the study period of 10 years from January 2004 to December 2014.

The demographic profiles of the workers reported with the injuries are as follows

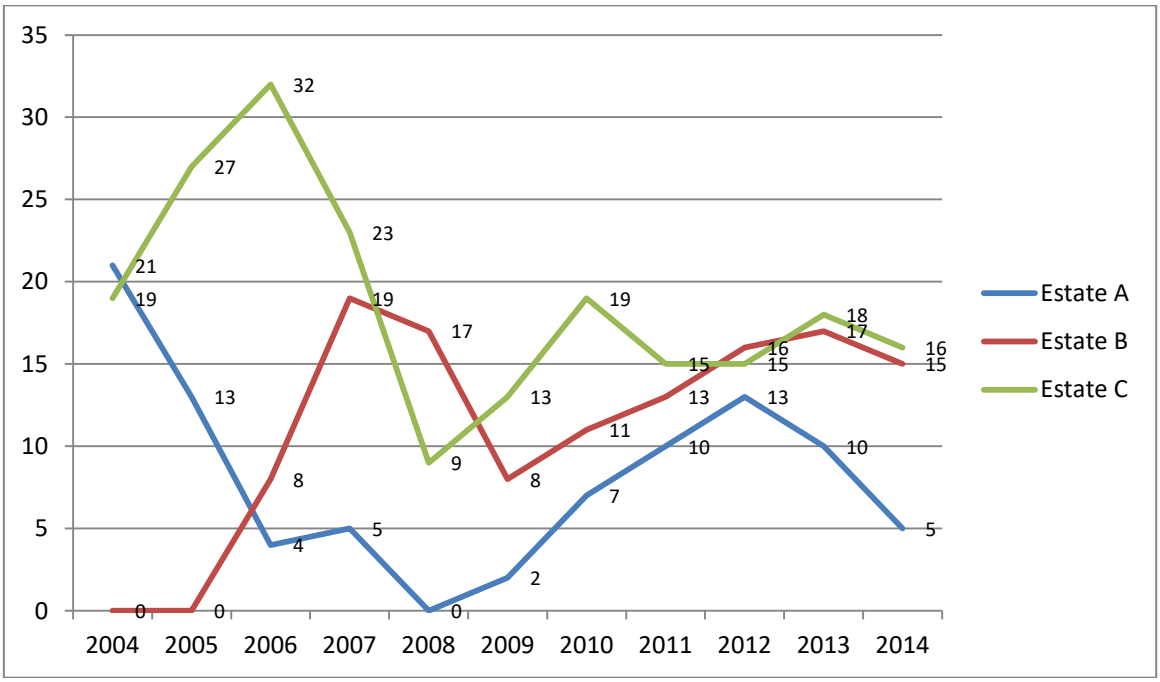
The demographic profiles of the workers reported with the injuries are as follows:

Table: 1 Socio Demographic Details

AGE (in yrs)	FREQUENCY	PERCENTAGE
20-30	45	10.6%
31-40	141	33.1%
41-50	153	36%
51-60	84	19.8%
>60	2	0.5%

Among the 425 reported injuries, 227(53.4%) were males and 198(46.5%) were females. Also, the reported injuries were more among permanent workers (322) when compared with the temporary workers (103).

ESTATE WISE INJURY PROFILE



Estate A:

A total of 90 workers reported from Estate A with injuries. Injuries were maximum in the year 2004-05 periods which gradually decline towards 2008-09 followed by a gradual rise over the next few years and a subsequent fall. Injuries were found to be more during the month of August. Contusions were the most common form of injuries 28(31%) followed by cut injury 23 (26%), whereas other types of injury include fracture, abrasion and laceration. Lower limb was the commonest site 40(44%) followed by upper limb. Of all 51 (56.6%) of the total number of injured were reported to the hospital within half an hour of occurrence of the injury and 42 (46.6%) of the injured reported back to work within 15 days of injury.

Estate B:

A total of 124 workers reported from Estate B with injuries. Injuries were maximum in the year 2007-08 periods which gradually declined towards 2008-09 followed by a gradual rise over the next few years and a subsequent fall. Injuries were found to be more during the month of July. Cut injuries were the most common form of injuries 47 (37%) followed by contusions37 (29%) and upper limb 46 (37%) was the commonest site followed by lower limb. Of all, 84 (67.7%) of the total no of injured took half an hour to two hour time period to report to the hospital and 80 (64.5%) of the injured reported back to work within 15 days of injury.

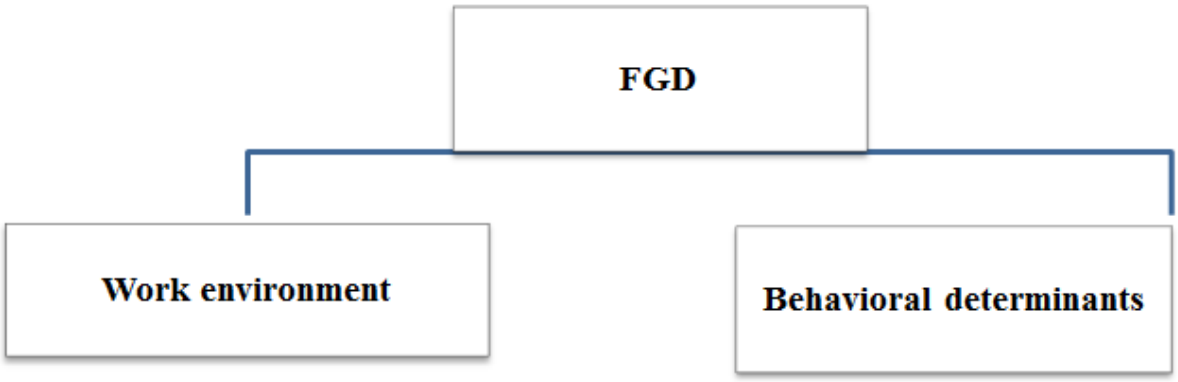
Estate C:

A total of 211 workers reported from Estate C with injuries. Injuries were maximum in the year 2005-06 periods which gradually decline towards 2008-09

followed by a gradual rise over the next few years and a subsequent fall. Injuries were found to be more during the month of May. Contusions were the most common form of injuries 67 (32%) followed by cut injury 51 (24%) and sprain 28 (13%). Lower limb was the commonest site 105 (50%) followed by upper limb. Of all 97 (46.6%) of the total no of injured were reported to the hospital within half an hour of occurrence of the injury and97 (46.6%) of the injured reported back to work within 15 days of injury.

QUALITATIVE METHODS:

Methods of focus group discussions and key informant interviews were used to assess the determinants of injury. Each focus group discussion had 8-12 workers and was conducted in all three estates. In depth interviews were conducted with the field officers, nurses and the senior medical officer. All interviews and discussions were recorded with consent. The focus of the discussion was on two aspects of determinants of injury namely work environment and behavioural determinants. Post analysis we got themes and identified different subthemes.



• **Access to health and safety information**	**Personal Protective Equipments**
• Work place supervision	Alcohol
• Training in work place safety	Pan chewing
• Working department	Cigarette/Beedi smoking
• Work duration & experience	Sleeping disturbance
• Seasonal effect	Job stress
• Common causes	Job satisfaction

The conclusions drawn from the discussions are as follows

- Terrain and the seasonal variations are the major determinants of injury
- Training programmes on work place safety and use of personal protective equipment are not strictly enforced
- The medical facilities available are limited

IN-DEPTH INTERVIEWS (IDI):

The in-depth interviews conducted with each interviewer lasted for about 30 minutes. Some of the striking verbatim heard during the interviews is as follows:

- Field officer 1 -"We ensure that every worker who reports to us with an injury on duty is send to the nearest dispensary at the earliest either in the ambulance or the tractor depending on availability"
- Field officer 2- "If we suspect any worker is drunk we immediately send them back home from work. But the workers don't reveal any stress issues or sleep disturbances to us and hence we don't know if it's affecting their work"
- Doctor- "The facilities here are limited and the nearest tertiary centre is 60km away, even for USG and CT scans"
- Nurse- "We try to manage every case in the best possible way with available resources"

DISCUSSION:

The maximum number of occupational accidents i.e. 36 % occurred in the age group of 41 – 50 years. In our study men were found to have more injury when compared to women workers which is similar to a

study done by Naveen et al in coffee plantations [2]. This can be explained due to the fact that high willingness of male workers to engage in risk taking behaviour and in at risk work than female workers.

In a study done in tea plantations at Sri Lanka fracture, sprain and dislocation are the most common type of injury followed by cuts and bruises [2]. But in our study contusions were the most common type of injury followed by cut injuries. This is explained by the fact that most workers carry out their tasks in the field walking barefoot over a rough terrain and are prone to injuries with stones, thorns, etc. Our results are similar to the findings of study done by Joseph *et al.;* where most of the workers had suffered an injury which was minor in nature (cuts, abrasions and contusions) [2]. In a study done among the carpet thread factory workers in Uttar Pradesh, regarding occupational injury and its deteriorating factors, the major behavioural determinants were personal protective equipment use, alcoholic drink consumption, sleeping disturbance [2]. On the other hand seasonal variations and terrain of the place were the major determinants of occupational injuries in our study. In another study done by Osman *et al.;* on Assessment of occupational injuries in Tendaho Agricultural Development [2]. The absence of workplace supervision and health and safety training, limited use of personal protective devices, prolonged duration of working hours, and being a daily labourer were major factors that accounted the occurrence of injury which is similar to the findings of our study.

In a study done on Prevalence of occupational injury and its contributing factors among rubber tappers in Galle, Sri Lanka, Qualitative findings suggest three interventions to address injuries: (1) landscaping, (2) personal protective equipment, and (3) provision of eyeglasses [2]. Whereas in our study training programmes on work place safety and use of personal protective equipment were identified as interventions to address injuries.

Job dissatisfaction, sleep disorders, and excess alcohol are common risk factors of occupational injuries [2, 3]. These risk factors were also consistent among workers of various occupations. Absence of health and safety training, sleeping disorder, alcohol consumption, job dissatisfaction and absence of protective devices were significant factors that contributed to the prevailing occupational injuries among workers of Tendaho State Farm located in Afar Region [2] which is similar to our study findings. Injuries not reported could not be assessed; poorly maintained reports; not all workers were interviewed owing to their work timings were some of the limitations of our study.

CONCLUSION

In our study the time trend of injuries among the three estates followed a similar pattern over the past ten years. The workers of the plantation are putting the best use of the medical resources available, which is evident from the fact that majority of them were reported within half an hour of occurrence of injury. Also some of the determinants of injuries were assessed using qualitative methods.

The existing method of educating labours with regard to safety, benefits of following safety precautions and use of personal protective equipment's especially at the work place should be strengthened. Along with factors of work environment, behavioural determinants should also be addressed as occupational injuries not only affect the health and productivity of the injured worker, but also have monetary consequences for the employing authorities.

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Conflict of interest: Nil

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