

Fall from Tree: A 14 Year Study

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Abstract

Background: Tribal of Bastar district of Chhattisgarh have a unique bondage of culture, food supply with the forests and trees of the region, during collection incidences of fall from trees occurs many times resulting in injuries including fatal ones, study has undertaken to prevent and suggestion for adequate implementation of treatment to specific injuries sustained during their fall.

Objective: The objective of the study was to identify and analyze the injuries sustained by the tribals and local of the Bastar region in fall from tree, and to suggest measures to prevent the injuries sustained during fall from tree

Material and Method: A data of postmortem reports of all cases of deaths occurred in 14 years (2009 to 2012), due to fall from tree, which had been brought to the mortuary of Forensic Medicine department.

Results: Out of total of 99 cases evaluated, it consisted predominantly of male population of the age 31-40 years, Maximum number of fall h from the Imali(*Tamarindus indica*) tree- 32 cases. Maximum cases were found in the year 2015- 13 cases. Maximum cases occurred in the Month of February 16 cases. Maximum injuries from fall were on Head region 79 cases with brain contusion predominant 23 cases. Chest injury sustained stood second 69 cases with rib fracture predominant 31 cases. Abdomen region 32 cases with liver injury predominant 11 cases. Upper limb injury 32 with radius/ulna fracture predominant 6 cases. Lower limb region 54 cases with femur fracture predominant 8 cases.

Conclusion: The significant number of injuries including fatal ones needs to be prevented. Adequate tree climbing programs and modernized equipment distribution need to do by forest department and state government, specialized Trauma center for head and chest injury need to be established at block level of the Bastar region

Keywords: Tribal, Injury, Age, Tree, Hemorrhage, Fracture

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Introduction

Bastar region is the country of tribes, about 70% of the total population of the Bastar region is tribal, which represents about 30% of total tribal population of Chhattisgarh. The trees are a most

vital part of tribal culture in Bastar, as they provide all resources to the tribal from food, medicine, oil, fertilizers. Main trees are like palm tree sap, plant is called sulfi (*Caryota urens*) tree in Chhattisgarh, the fermented sap (sulfi) is a favorite drink amongst the tribal of Bastar. Sal (*Shorea robusta*) tree is of great significance for the tribals of Bastar, each part of it is utilized like fruits for pharmaceutical in treatment of excessive salivation, epilepsy, chlorosis, dental problems etc.; leaves for smoking, perfume, fertilizer; seeds for burning oil. Lac trees for resins, chind (*Phoenix sylvestris*) for making jaggery; other trees include imali (*Tamarindus indica*), jamun (*Eugenia jambolana*), aam (*Mangifera indica*) which tribal used directly as the part of their food and culture. In the collection of fruits, leaves from these trees, sometimes leads to the fall from them, as these tree grow up to a substantiable heights like sulfi (*Caryota urens*) tree up to 15 meters, sal (*Shorea robusta*) tree up to 35 meters, imali up to 24 meters, aam (*Mangifera indica*) up to 18 meters, jamun (*Eugenia jambolana*) up to 10.5 meters enough to cause severe injuries including deaths. In this study we have tried to co-relate the main trees from which the tribal usually fall and manner of injuries sustained from the fall from these trees. The main objective is that Trauma prevention programs can be conducted by the government authorities to aware the tribal of the injuries that can occur from climbing these particular trees and provide them adequate equipment's for their safety and also the

Health authorities for giving adequate training to health care workers for dealing with the type of injury which occur from the fall from trees of this region.

Material and Method

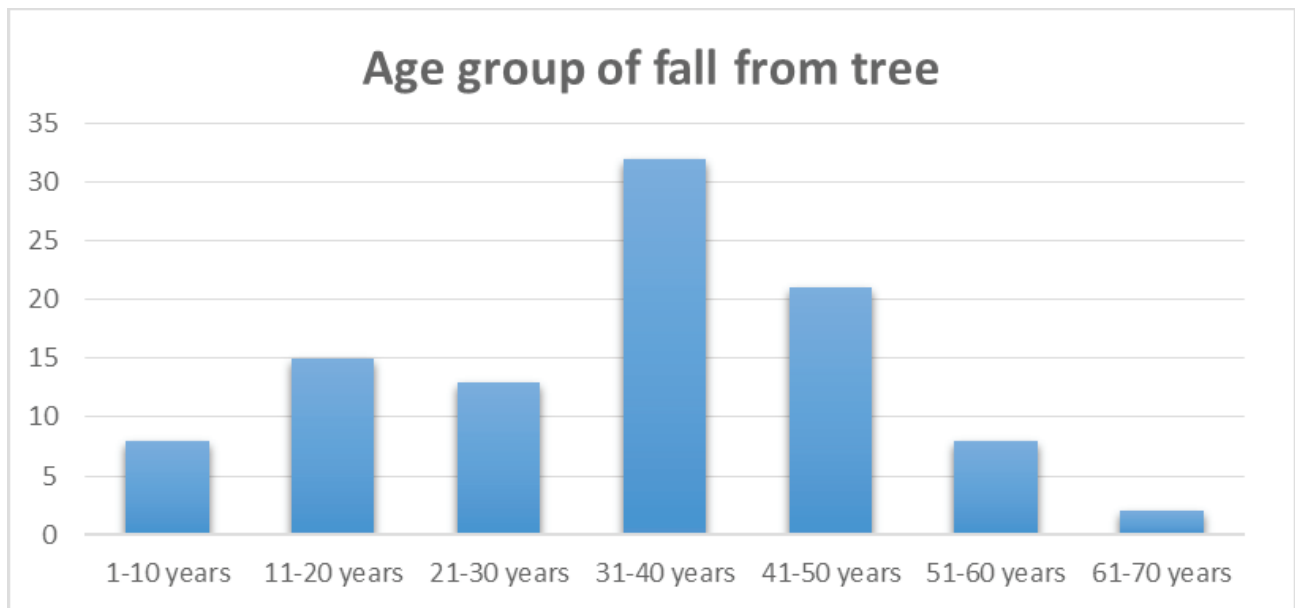
A data of post mortem reports of all cases of deaths occurred due to fall from tree, which had been brought to the mortuary of Forensic Medicine department, Late Baliram Kashyap Government Medical College Jagdalpur, District Bastar Chhattisgarh from 2009 to 2021, total 14 years has been scrutinized and evaluated. In each case a detailed examination was done on type of body region in which injuries were inflicted and type of injury occurred.

Results

In the study conducted it was found that total 99 cases of deaths were reported in the period of 14 years i.e., 2009 to 2014. The following the finding found out in the study.

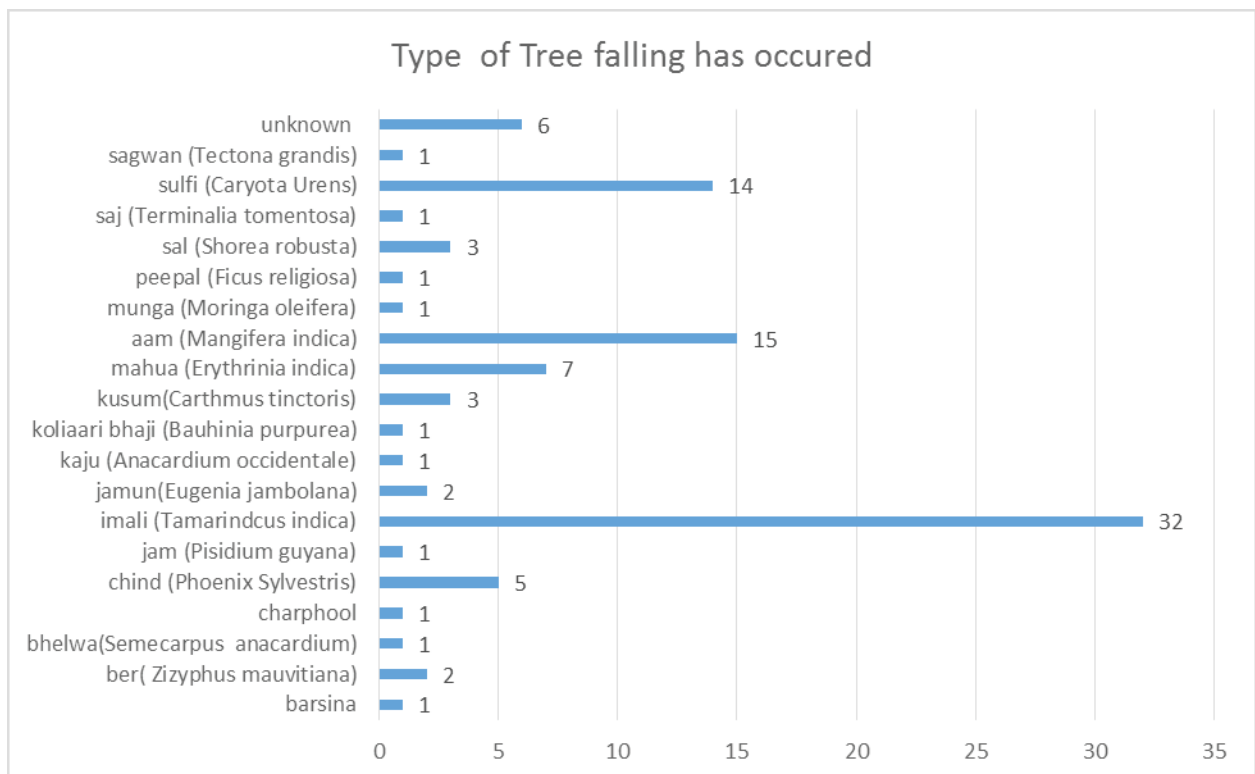
1. Sex Ratio in fall from tree: Male- 94 cases, Female-5 cases.

2. Age Group in cases of Fall from tree: It was divided in to 10-10 years age group e.g., 1-10 years, 11-20 years etc. Maximum number of cases were found in the age group of 31-40 years i.e., 32 cases and Minimum number in 61-70 years i.e., 2 cases. [Graph 1]



Graph 1

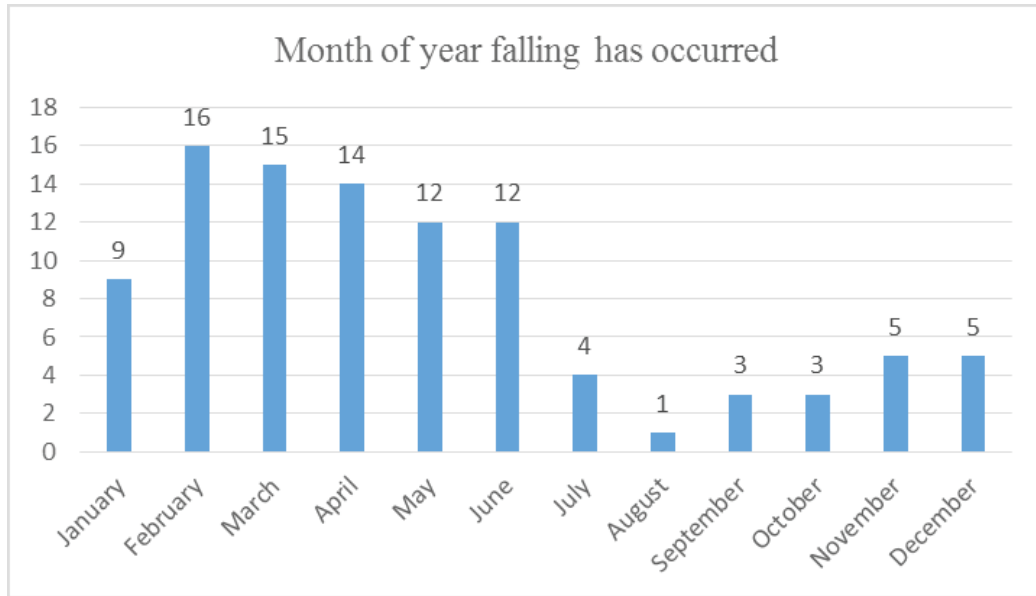
3. Type of Tree from which fall has occurred: A total of 22 tree variety have been identified in the study from which the fall has occurred, Maximum number of fall has found from the imali (*Tamarindus indica*) tree- 32 cases followed by aam (*Mangifera indica*) tree-15 cases, sulfi (*Caryota urens*) tree- 14 cases respectively. [Graph 2]



Graph 2

4. Year of Cases Reported: In detailed analysis of the cases reported, Maximum number of cases were found in the year 2015- 13 cases, 2018-12, 2019,2020,2021-11,2014-9, 2011-8, 2016-7,2012,2017-6, 2013-4, 2009-1 case.

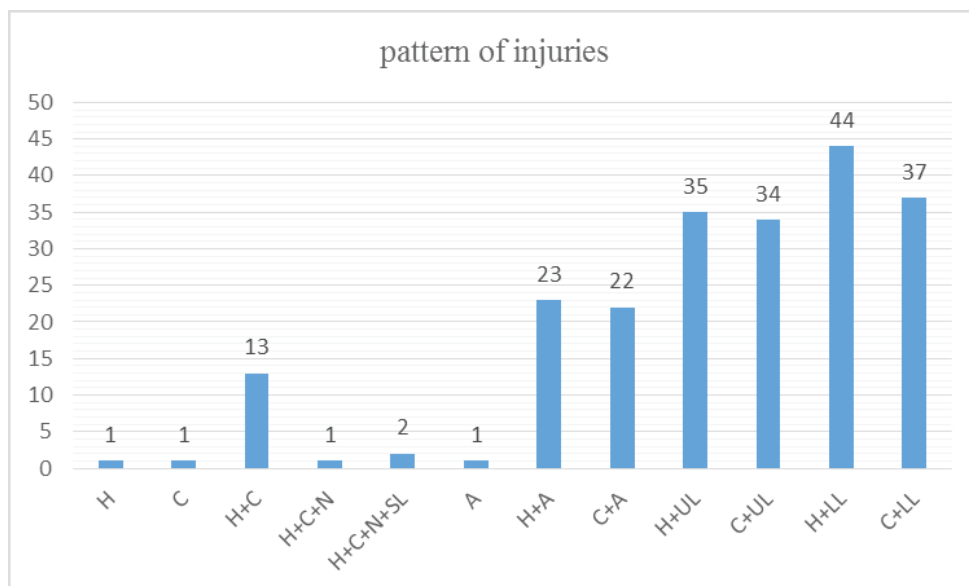
5. Month of reported cases in the period of 2009-2021: In detailed analysis of the cases reported, it was found that maximum number of cases occurred in the Month of February-16 cases followed by March -14, April- 12 cases. [Graph 3]



Graph 3

6. Pattern of injury and regions inflicted: On detailed analysis of the cases of fall from tree reported from 2009-2021, it was found that body region in which maximum injury occurred during

fall from tree in this region was in Head + Lower Limb = 44 cases, followed by Chest + Lower Limb=37 cases, Head + Upper Limb = 35 cases respectively. [Graph 4]

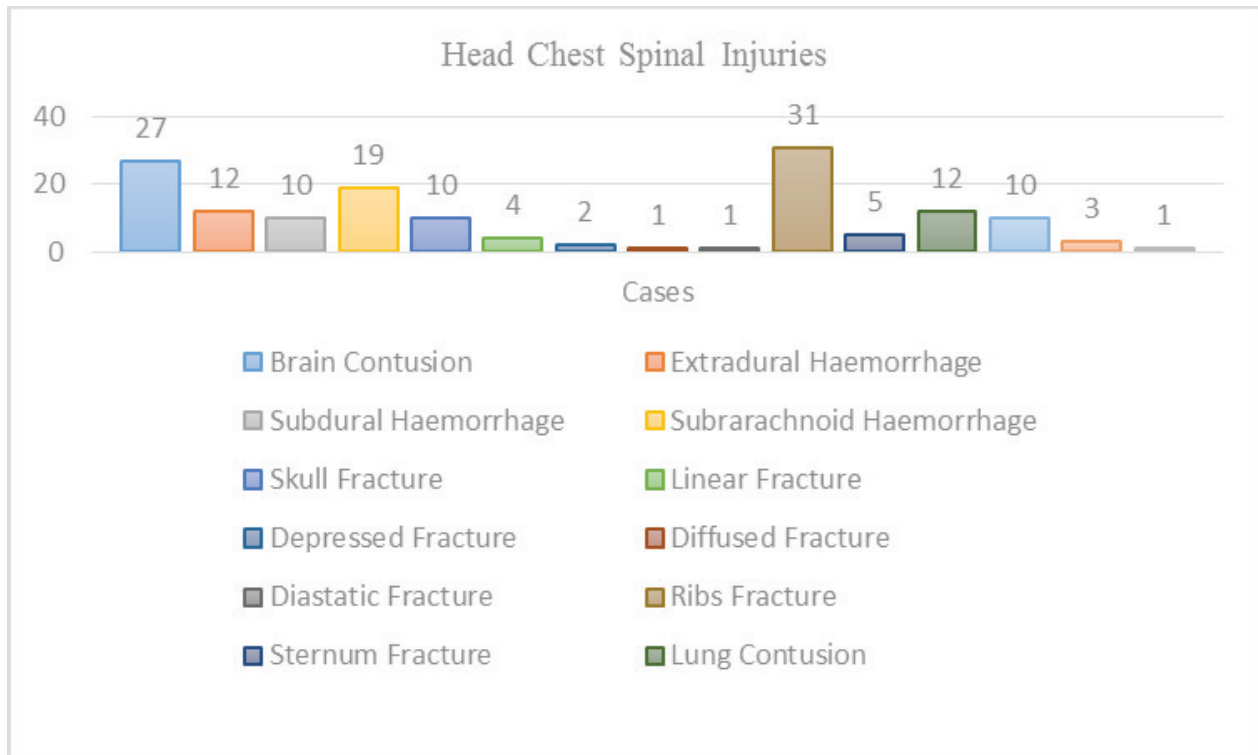


Graph 4

H=Head; C=Chest; H+C=Head and Chest; H+C+N=Head Chest Neck; H+C+N+S/L=Head Chest Neck Sacral/Lumber; A=Abdomen; H+A=Head Abdomen; C+A=Chest Abdomen; H+UL=Head Upper Limb; C+UL=Chest + Upper Limb; H+LL=Head Lower Limb; C+LL=Chest Lower Limb

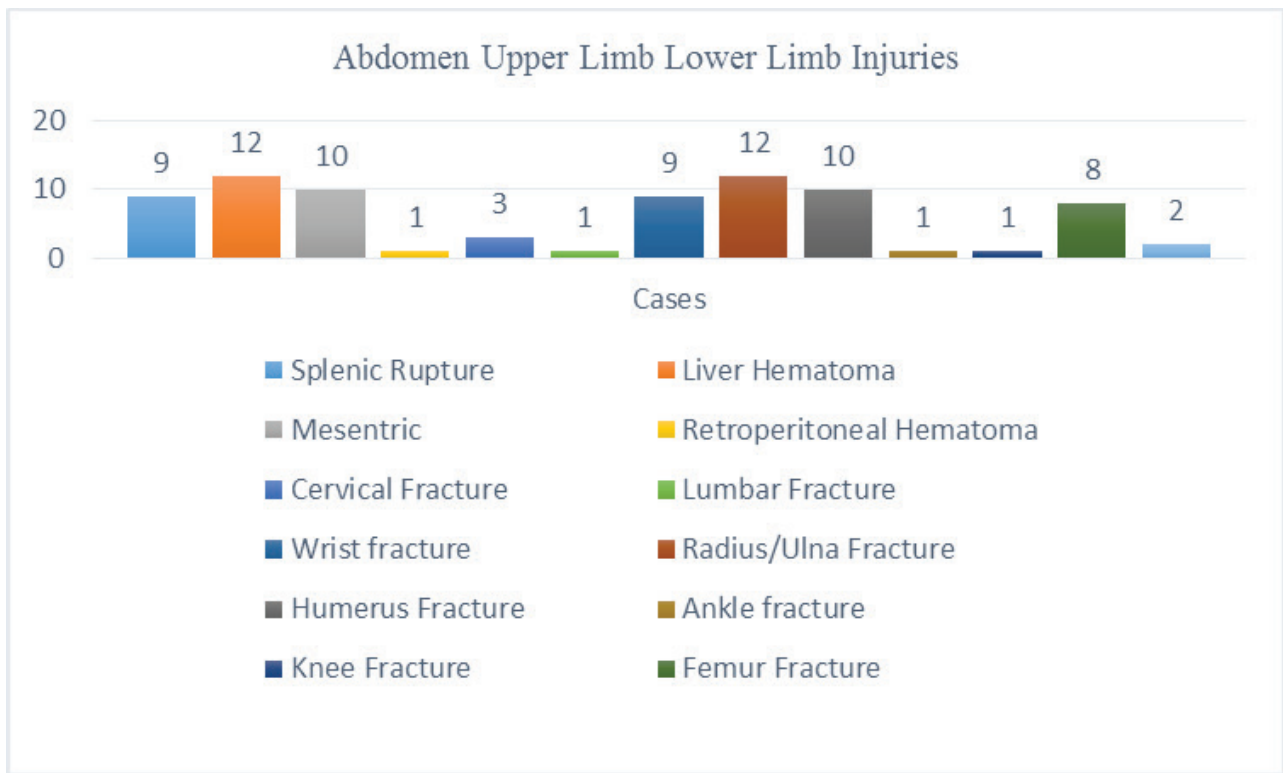
7. Type of Injury to regions inflicted:

- i. **Head Chest and Spine:** Head:- 79 cases had head injury out of 99 cases, Brain Contusion-27, Extradural Haemorrhage-12, Subdural Haemorrhage-10, Subarachnoid Haemorrhage-19, Skull Fracture-10, Linear Fracture-4, Depressed Fracture-2, Diffused Fracture-1, Diastatic Fracture-1. Chest Injury:- 69 cases had chest injury out of 99 cases, Ribs Fracture-31, Sternum Fracture-5, Lung Contusion-12, Hemathorax-10. Spinal Injury:- 9 cases had spinal injury, Cervical Fracture-3, Lumbar Fracture-1 [Graph 5]



Graph 5

- ii. **Abdomen, Upper Limb and Lower Limb:-** Abdomen:- 32 cases had abdomen injury out of 99 cases, Splenic Rupture-9, Liver Hematoma-12, Mesentric-10, Retroperitoneal Hematoma-1. Upper Limb:- 32 cases had Upper Limb injury out of 99, Wrist fracture- 9, Radius/Ulna Fracture- 12, Humerus Fracture- 10. Lower Limb:- 54 cases had Lower Limb injury out of 99 cases, Ankle fracture -1, Knee fracture -1, Femur fracture- 8, Tibia/Fibula fracture-2 [Graph 6]



Graph 6

Discussion

Ersoy et al. had reported that males more commonly were subjected to injuries (92.6%) and the injury rate (29.8%) was highest between 51-60 years of age¹. Wani et al. have reported maximum injury in age group 31-40 years². Ahmed SR et al. had reported maximum injury in age group 31-40 years³; Lado DK had reported maximum injury in age group 11-16 years with males predominating 3.5:1⁴. In our study we have found males mainly subjected to injury(94.9%), the injury rate was highest between 31-40 year of age group.

Negin et al. had reported that maximum number of injury sustained from fall from coconut to be 239 cases followed by Mango tree 151 cases out of 1107 cases⁵. In our study maximum number of injuries sustained from fall from Imali tree 32 cases

followed by Mango tree 15 cases out of 99 cases.

Turgut et al. had reported that the majority of injuries were to the skin and subcutaneous tissue (37.4%) and head(73.1%) and subarachnoid hemorrhages(50%)⁶. Wani I et al. had reported maximum injury in upper limb, with splenic laceration 8 cases, liver trauma 3 cases and mesenteric tear 1 case². Ahmed SR et al. had reported maximum injury in abdomen 18 cases with splenic injury 7 cases, liver laceration 4 cases, mesenteric laceration 1 case out of 60 cases³. Tabish SA et al. had reported most patients had multiple injuries with head injury predominating (54.02%) in it Brain contusion-23 patients, Extradural/ Subdural hematomas- 15, Subarachnoid-4, Depressed fracture-7, linear fracture-15 patients In chest injury Hemothorax-11, lung contusion-7, rib

fracture-6, In abdominal injuries total 15 injuries in it splenic injury-7, Liver injury-5, In limb fractures total 23 injuries in it femur fracture-11, tibia/fibula fracture-7 patients⁷. Lado DK et al. have reported most injuries from fall from mango tree were in upper limbs 40% followed by lower limb 20%, head injury 16.6%⁴. In our study out of 99 cases we have thoroughly examined maximum injuries from fall was on Head region 79 out of 99 cases, in its brain contusion were maximum 26 cases followed by Subarachnoid hemorrhage 19 cases; Chest injury sustained stood second 69 out of 99 cases in it rib fracture were maximum 31 cases followed by Lung contusion 12 cases; in Abdomen region 32 out of 99 cases in it liver injury were maximum 11 cases followed by spleen injury 8 cases; in Upper limb injury 32 out of 99 cases in it radius/ulna fracture were maximum 6 cases followed by humerus fracture 2 cases; in Lower limb region 54 out of 99 cases in it femur fracture were maximum 8 cases followed by tibia/fibula fracture 2 cases.

Conclusion

The significant number of injuries including fatal ones needs to be prevented, stopping the tribal and locals of the Bastar region from climbing trees is not possible as their culture, tradition and food is totally connected with the trees, the best method will be providing the tribal and locals with adequate training by the forest departments of the districts, the state government should provide them harness and other climbing equipment's and programs should be regularly conducted in the villages, towns and tribal communities. The health department should provide trauma handling training mainly for head injuries, chest injuries to the health workers posted

at the block levels so that in time injuries can be managed before bringing to tertiary healthcare.

Ethical Clearance: Not Applicable

Source of Funding: Self

Conflict of Interest: Nil

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