

# Incidence, Demographic Distribution and Treatment Rendered for Facial Fractures at Department of Dentistry, Government Medical College, Jagadalpur, Chhattisgarh.

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## ABSTRACT

**Background:** Head and facial injuries account for 30% of all injuries and cause 26% of deaths. Cervical spine injuries associated with these injuries causes hemiplegia, paraplegia and quadriplegia. When such morbid injuries occurs, the only bread winner of the family loses source of income and the entire family suffers. The hospital stay significantly increases further leading to financial burden. **Methods:** A retrospective study was conducted at Department of Dentistry, Government Medical College, Dimrapal, Jagadalpur over a period of 5 years. This is a cross sectional study with descriptive analysis of the data. Cases of Maxillofacial Injuries were retrieved from database of the medical records department and from Department OPD register. Demographic data included gender, age group, the region from where the patient represented. The clinical presentation of the fracture site, etiology, and associate injuries was included in the study. Data is presented as frequency tables and percentages. **Results:** Of the 658 patients with facial fractures, 321 were males, 217 females and the rest 120 in the pediatric age group (up to 14 years of age). Road traffic accidents amounted to predominant group of patients with facial fractures(n=341), Inter-personal fights lead to 49 facial fractures. 132 patient's had facial fractures due to fall. Animal attacks caused 11 facial fractures. 125 patients were categorized in the "other category". **Conclusion:** The incidence and pattern of maxillofacial fractures vary from country to country depending upon prevailing geographical, social, cultural and environmental factors. Management of maxillofacial injuries in a pre-hospital setup is definitely different from the regular protocol of managing abdominal or long bone injuries. The importance of cervical spine control and its undue consequences is well known to all medical professionals.

**Keywords:** Maxillofacial Injuries, Chhattisgarh, Patterns of Injury, Animal Attacks.

## INTRODUCTION

Injuries to the facial region are clinically highly significant.<sup>[1]</sup> In a report issued by World Health Organization (WHO). Road traffic injuries are one of the leading causes of death worldwide resulting in more than 1.27 million deaths. Over 65% accidents occur because of excess speed, drivers disobeying traffic signals or use of cell phone while driving.<sup>[2]</sup> World Health Organization has estimated that nearly 25% of all injuries fatalities worldwide are a result of road traffic crashes with 90% of the fatalities occurring in low and middle income countries.<sup>[3]</sup> Maxillofacial region being prominent, mobile and supported by cervical spine is more to injuries in road traffic accidents. Death and

disability is almost instantaneous in severe maxillofacial injuries. Another important concern is the head injury sustained in such accidents. The accident victim may escape with facial deformity in mild to moderate maxillofacial injuries, but with the involvement of head injuries, fatalities are more of significance. The amount of finances lost is definitely significant, not more so the psychological impact on family members is of distressing significance. The loss of a family member leads to a change in the family dynamics and the society.<sup>[4]</sup>

The socioeconomic burden, depletion of human resources, the emotional and psychological stress on families, and the strain on healthcare facilities are also increasing.<sup>[5]</sup> The incidence and causes of road traffic accidents vary with geographical location, socioeconomic status and era.<sup>[6]</sup> The incidence of traffic accidents is high in Bastar region of Chhattisgarh state. Age of the driver, education level, profession, violation record, vehicle ownership, joy riding, poor eye sight, sun haze, sand storm, long hours driving, non-

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observance of speed limit, emerging and exiting from roads without signals, presence of stray animals, non-marking of the road, non-familiarity with the road, lack of regular checking of vehicles, lack of regular servicing of vehicles and driving under medication are factors associated with high incidence of road traffic accidents. The highest incidence of trauma occurs in the most active and productive age group (21-49 years) and lower in the older age group.<sup>[7]</sup> The predominance of male victims is mainly due to exposure and the activity of the males. Majority of the road traffic accidents are due to Motor-cycle and two wheeler accidents. Patient's also present with animal attacks such as "Bear Bite's", as the region is densely forested. This paper aims to review the magnitude of maxillofacial injuries in Bastar region of Chhattisgarh and to report the number and type of maxillofacial injuries presented at Department of Dentistry, Government Medical College, Dimrapal, Jagadapur. Type of treatment rendered to patient's is also presented. Patients are categorized as presenting with mandible fracture, middle-third fractures and with pan facial trauma. The etiological factors, impact on socio-economic life, preventive strategies are discussed herewith.

### MATERIALS AND METHODS

A retrospective study was conducted at Department of Dentistry, Government Medical College, Dimrapal, Jagadapur. over a period of 5 years. This is a cross sectional study with descriptive analysis of the data. The study included patients who directly reported to the OPD/Casualty Department and also patient's referred from Peripheral health centers and District Hospitals of surrounding areas/districts. Majority of the patients are referred from: a) District hospital of Dantewada, Chhattisgarh, b) Bijapur District of Chhattisgarh, c) Sukuma district of Chhattisgarh and d) District Hospital of Koraput District, Orissa. Cases of Maxillofacial Injuries were retrieved from database of the medical records department and from Department OPD register. Demographic data included gender, age group, the region from where the patient represented. The clinical presentation of the fracture site, etiology, and associate injuries was included in the study. Data is presented as frequency tables and percentages.

### RESULTS

A total of 2850 patient files were screened over a period of 10 years. 658 patients presented with Maxillofacial Injuries. Of the 658 patients with facial fractures, 321 were males, 217 females and the rest 120 in the pediatric age group (up to 14 years of age) [Figure 1]. Road traffic accidents amounted to predominant group of

patients with facial fractures(n=341), Inter-personal fights lead to 49 facial fractures. 132 patient's had facial fractures due to fall. Animal attacks caused 11 facial fractures. 125 patients were categorized in the "other category". These are the patient's whose data was missing or the patients were unwilling to reveal the cause of injury [Figure 2].

Majority of the patient's were referred from dantewada district (n=89). 74 patient's referred from Bijapur, 46 from Sukuma. Patients referred from Orissa were 38 in number and others amounted to 69 patient's. [Figure 3].

Majority of the patient's presented with mandible fractures(n=314), 169 patient's had middle -face fractures, 121 had Pan-facial Trauma and the rest 54 patient's had facial fractures with associated injuries [Figure 4].

Open reduction and Internal Fixation was performed for most of the patient's (n=427), Closed reduction was done for 114 patients. 24 patients were treated conservatively and the rest 93 patient's were either referred or not treated at our center [Figure 5].

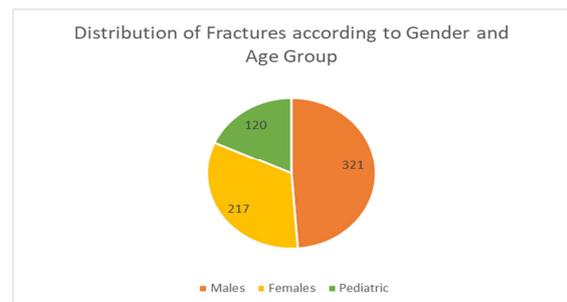


Figure 1:

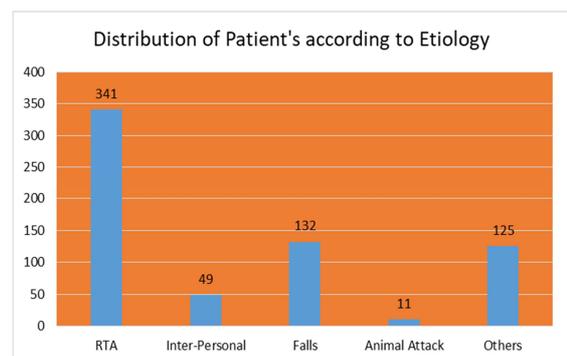


Figure 2:

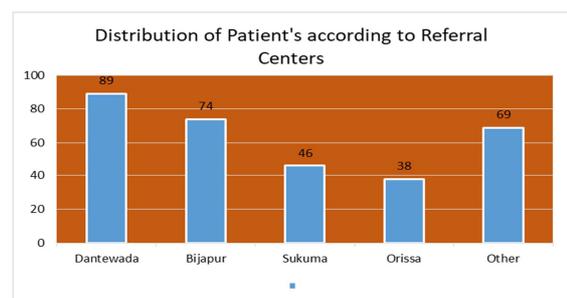


Figure 3:

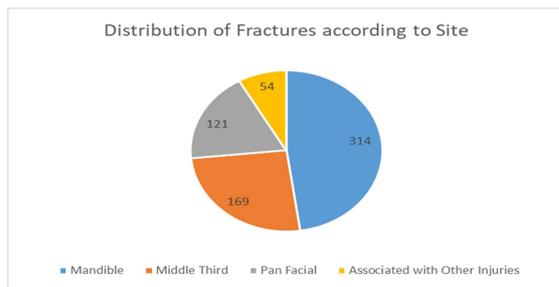


Figure 4:

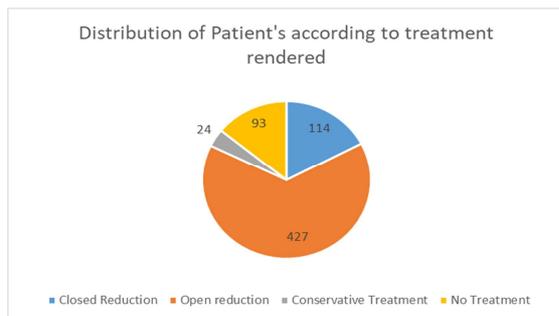


Figure 5:

## DISCUSSION

According to world report on road traffic injury prevention, about 3000 people worldwide die every day from road traffic injuries.<sup>[8,9]</sup> Head and facial injuries account for 30% of all injuries and cause 26% of deaths.<sup>[10]</sup> Cervical spine injuries associated with these injuries causes hemiplegia, paraplegia and quadriplegia. When such morbid injuries occurs, the only bread winner of the family loses source of income and the entire family suffers. The hospital stay significantly increases further leading to financial burden. Driver errors account for about 80% of all RTAs.<sup>[11]</sup> Driver related errors are more common in the younger generation. Road rage, overconfidence, non-compliance of signals, tail gating, undue overtaking, over speeding are few of the factors associated. To keep up with the time, youngsters over speed and violate the traffic signals amounting to road traffic accidents.

In the present study, males had significantly higher percentage of facial fractures than females as the two-wheelers are mostly driven by men. Road Traffic accidents was the most common etiological factor causing fractures. As the region is surrounded by dense forest, and patient's are mostly from farming or labor background, they get attacked by animals. At our center, we follow rigorous course of retro-viral therapy for animal bite patient's followed by definitive management of fractures. Open reduction and internal fixation remains to be the definitive line of treatment at our center. However, patient's with undisplaced fractures, medically compromised patients and patient's unwilling to undergo surgery have been treated by closed reduction and by conservative mode.

Al Ahmed HE et al., reviewed the pattern of maxillofacial fractures among 230 cases.<sup>[12]</sup> They stated that Road traffic fatalities are the second most common cause of death in all age groups in the UAE. Shekar BRC and CVK Reddy conducted a five-year retrospective statistical analysis of maxillofacial injuries in patients admitted and treated at two hospitals of Mysore city, India.<sup>[13]</sup> According to their findings, alcohol consumption was the major factor causing road traffic accidents. The incidence of road traffic accidents in few of the studies suggest speed, violence of traffic laws as the major factor<sup>1,2,5</sup>. Irrespective of the etiological factor, most of the road traffic accidents occur in younger age group. Reasons for higher incidence in this age group has been cited earlier in this review which include road rage, jumping signals, over confidence, use of mobile phones while driving. Most of the literature concludes with the fact that the incidence of road traffic accidents is comparatively more in males than in females.<sup>[6,7]</sup> Road traffic accident is the first major cause of death among dead on arrival cases affecting the most active and productive age group as stated by Batouk AN et al., in their analysis of 303 road traffic victims seen.<sup>[7]</sup> The time of arrival at the accident scene plays a very crucial role in saving the life of the victim. The "Golden Hour" of trauma is in the hands of pre-hospital care. Most of the disabilities can be avoided and deaths prevented if appropriate care is rendered in this golden hour. In a survey conducted by Al-Ghamdi AS, only 3% of those interviewed could recognize/recall that the emergency number is 997. Majority felt that the number is 911 (70%).<sup>[14]</sup> Wang Z, Jiang J in an overview of research advances in road traffic trauma in China stated that the statistical analysis from every country showed that human factors were still the main cause of RTAs, accounting for more than 90%. According to them, vehicle and road factors caused 3-5% and less than 2% of the total RTAs, respectively. The incidence and pattern of maxillofacial fractures vary from country to country depending upon prevailing geographical, social, cultural and environmental factors.<sup>[15]</sup> Management of maxillofacial injuries in a pre-hospital setup is definitely different from the regular protocol of managing abdominal or long bone injuries. The importance of cervical spine control and its undue consequences is well known to all medical professionals.

### Preventive Strategies

- Awareness:** proper counseling, conducting traffic safety weeks, awarding prizes or by announcement in social media can significantly reduce the incidence of accidents.
- Financing:** A specific budget needs to be allotted each financial year for trauma care systems. This would include training of existing staff, recruitment

of trained personal, upgrading the ambulance services, procurement of latest emergency equipment. Provision of air delivery systems wherever feasible.

- c) **Trauma Care Centers:** Centers with facilities exclusively meant for management of maxillofacial injuries would be a better option. This will require more trained maxillofacial surgeons along with colleagues from neuro-surgery. Advanced emergency medical technicians (EMT) must be efficient in performing in cricothyroidotomy, tracheostomy, endotracheal intubation.
- d) **Research:** Research is the core of trauma care systems. It drives the system and provides the foundation for system development and performance improvement. Regular prospective studies on the incidence of road traffic accidents is suggested. Individual studies by traffic regulation authorities, finance ministry, human resources development personnel, health care workers and maxillofacial surgeons in collaboration with other medical specialties will significantly increase the collaboration. It will also help in implementing corrective measures and providing safety to the society.

## CONCLUSION

Trauma is a preventable cause of death, morbidity, depression and unemployment. Simple measures such as seat belt legislation, traffic monitoring, creation of awareness among youth will significantly bring down loss of lives. This will create a better society to live and enjoy life. The amount of finances spent on road traffic accidents can be utilized in overall growth and development of the country.

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