

## ORIGINAL RESEARCH

# Prevalence and Patterns of Maxillofacial Trauma in Bundelkhand region- A Retrospective Study for 4 Years

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### ABSTRACT

**Background:** Trauma represents a major epidemic of non-communicable disease in present century. They are no longer considered accidental but are part of the price we pay for the technological progress. **Materials and methods:** A descriptive cross-sectional study was conducted in Govt. Hospital, Datia for 4 years from 2019 to 2023 to analyze the patterns and prevalence of maxillofacial trauma. Patients demographic and clinical data were retrieved and analyzed using MS Office excel 2007. **Results:** The total number of patients treated were N=352. The results show that males suffered more fractures than females. The most common etiology of trauma being RTA (motorcycle followed by truck) followed by assault and then falls and sports injuries. With respect to type of fractures the most common maxillofacial fracture reported in this region is mandible followed by maxilla and then zygomatic fractures. **Conclusion:** Recordings of Prevalence and patterns of maxillofacial trauma from this region clearly demonstrates that these fractures are more common in this part of bundelkhand region.

**Keywords:** Maxillofacial Trauma, Mandible, Maxilla, Prevalence.

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### INTRODUCTION

Trauma has its own natural history and follow the same epidemic pattern as any other disease that is agent, the host and the environment interacting together to produce injury or damage. They occur more frequently in certain age group, at certain times of day and the week and at certain localities. Injuries caused 9% of the total deaths. Among the total disability-adjusted life-years (DALYs), 13% were due to injuries. The WHO–World Bank Report, which reviewed the disease transformation scenarios, indicates that RTIs will be the third leading cause of mortality by 2020, moving up from their present ninth position. Similarly, suicide and violence will move from the twelfth and sixteenth to tenth and fourteenth positions by 2020. <sup>1</sup> Among both children aged 5–14 years, and young people aged 15–29 years, road traffic injuries are the second- leading cause of death worldwide<sup>2</sup>. The mortality and economic losses imposed by morbidity resulting from injuries are

largely preventable. However, the development of effective injury prevention efforts depends on reliable and detailed information on the incidence and pattern of injury. Maxillofacial trauma is encountered routinely in emergency medicine departments and dental colleges in India. The etiology of maxillofacial trauma in India differs from region to region due to difference in topography, increased urbanization and socio-economic factors. Introduction of high-speed engines in two wheelers, alcohol addiction and disproportionate increase in two wheelers for the available roads are seen as major causative factor for increase in maxillofacial trauma in India. Documentation of prevalence and patterns from various parts of India and throughout the world is essential for dissemination of knowledge, to see the trends in trauma from various parts of the world and for the analysis of etiology and treatment patterns. A descriptive cross-sectional study was done in

Govtmedical college, Datia to analyze the prevalence and patterns of maxillofacial fractures.

The data retrieved were entered in Microsoft office excel 2007 and analyzed.

## MATERIALS AND METHODS

The study was approved by institutional review and ethical committee of GMC Datia. Case records of patients who were treated in dentistry wing were retrieved and analyzed for demographic data, types of fracture and etiology for trauma from may 2019 to may 2023.

### Inclusion criterion

- Age group of 18 to 65 yrs.
- Fractures treated under GA

### Exclusion criteria

- Dentoalveolar fractures
- Soft Tissue injuries
- Paediatric fractures
- Fractures treated by closed reduction and
- Fractures treated by conservative management. All patients fulfilling the above criteria were included in the study and no specific sampling method was used.

## RESULTS

The total number of patients treated were N=352. The results had shown that the proportion of males N=262 (74.4%) suffered maxillofacial fractures more than females N=90 (25.5%)

The most common aetiology was found to be RTA N=284(80.6%) followed by assault N=60 (17%) and then followed by fall from height and sports injury N=(5%). The type fracture that was most common was mandible N=292(82.9%), maxilla N=66(17%) and then zygoma including the arch N=26(6.7%). The distribution of mandibular fractures based on Dingman and Natvig classification were symphysis N=67(13%), parasymphysis N=127(25%) Body N=77(15%), Angle N=92(18%), Ramus N=25(5%), Condyle N=112(22%), Coronoid N=11(2%) and Alveolar Fractures 0%. The distribution of Maxillary fractures based on Lefort classification were Lefort I N=47(32%), Lefort II N=67(46%) and Lefort III N=32(22 %).

**Table: 1 Gender wise distribution of pt versus year**

Year	Nu of patients	Male	Female
1 MAY 2019- 1 MAY 2020	92	66	26
02 MAY 2020--02 MAY 2021	70	52	18
03 MAY 2021-03 JUNE 2022	88	62	26
03 MAY 2021-03 JUNE 2022	102	82	20
	352	262	90

**Table: 2 No of Fractures versus Site of Fractures in Year wise distribution**

Year	Nu of fractures	Mandible	Maxilla	Zygoma
1 MAY 2019- 1 MAY 2020	106	72	18	6
02 MAY 2020--02 MAY 2021	88	56	24	8
03 MAY 2021-03 JUNE 2022	98	84	10	4
03 MAY 2021-03 JUNE 2022	112	90	14	8
		292	66	26

**Table: 3 Reasons Of Fractures Versus Year Wise Distribution**

YEARWISE DISTRIBUTION	Nu of patients	REASONS OF FRACTURES		
		RTA	ASSAULT	FALL from height
1 MAY 2019- 1 MAY 2020	92	78	12	02
02 MAY 2020---02 MAY 2021	70	52	20	08
03 MAY 2021-03 JUNE 2022	88	70	12	06
03 MAY 2021-03 JUNE 2022	102	84	16	02

## DISCUSSION

The region from frontal bone to the mandible is maxillofacial region. Face being the most exposed part with paper thin bones to protect the cranium are prone for trauma<sup>2</sup>. RTA leads to mortality and morbidity worldwide especially in younger population. Trauma is the leading cause of death in people less than 40 years<sup>1</sup>. 20 to 60% of any RTA involves fractures in maxillofacial region and out of which 62% is due motorised two wheelers. GMC DATIA, is the tertiary care hospital and is situated

on highways Our study shows male (74.4%) preponderance for the fracture than females (25-5%) and this is in concurrence with studies from other parts of the world<sup>3-5</sup>. This may be due to increased social, sporting activity and extensive travelling for commuting to work place from urban areas. The male preponderance is also due to increased alcohol addiction in males and driving MTW under the influence of alcohol. Previous Studies<sup>6-8</sup>, clearly established the fact that driving under the influence of alcohol increased the incidence of maxillofacial

fractures. The injuries were also due to the application of sudden brake by the innocent driver to safeguard the drunken pedestrian. The most common aetiology found in our study was RTA (80.6%) especially two wheelers (MTW). This may be self-fall from the bike due to inability to control the speed [ due to bad bumpy roads with pot holes, by hitting on animals in the road(stray dogs and cattle)], collision with other two wheelers and four wheelers). The second common most reason is interpersonal assault (17%) in males and domestic violence in females. Studies across the world had proved that 34% to 73% of maxillofacial trauma in females is due to domestic violence<sup>9</sup>. As far as proportion of maxillofacial fractures are concerned the study revealed that fracture mandible(82%) as the most common fracture(The distribution of mandibular fractures based on Dingman and Natvig classification were symphysis 13%, parasymphysis 25%, Body 15%, Angle 18%, Ramus 5%, Condyle 22%, Coronoid 2% and Alveolar Fractures 0%).The second most common being maxilla(17%)(The distribution of Maxillary fractures based on Lefort classification were Lefort I 32%, Lefort II 46% and Lefort III 22% and the third most common was the zygoma(6%)[both ZMC and the arch].This in contrary with the studies from various parts of the world which depicts zygoma<sup>10,11</sup> as the most common fracture type. Increase in fracture mandible may be attributed for not wearing the helmet by the trauma victims and due to fall from bike while unable to control the speed. Maxillary fractures are mainly due to head on collision either with a two-wheeler or a fourwheeler. Zygomatic fractures were due to fall from two-wheeler or interpersonal assaults. The maxillofacial trauma disability causes both cosmetic and functional deformity. It is the most bothersome entity from the patient's perspective as these fractures are prevalent in the younger age group. Maxillofacial fractures require sophisticated equipments like panoramic radiographs to CT for the proper diagnosis failing which it leads to sub optimal treatment of the severe underlying injury. Further, the fracture can be properly managed only by the specialists, oral and maxillofacial surgeons. The cost of the hardware (titanium miniplates and screws) and operation theatre expenditure is expensive as<sup>12-15</sup> these surgeries are done by and large under GA only. It increases the burden on health care system in the developing country like India. Further the study of patterns of these maxillofacial fractures and their prevalence in the particular region of the world indirectly helps for the quantification of the global burden of the disease (GBF) and years lived with disability.

## CONCLUSION

The descriptive cross-sectional study from Datia medical college clearly revealed the prevalence of maxillofacial fractures with male preponderance for

maxillofacial trauma, RTA as the most common aetiology and mandible as the commonest fracture treated in this centre. These types of studies are valuable from different regions of the country and worldwide for improving the resources for treatment of these life-threatening injuries, prevention strategies, improvement of roads and enforcement of strict traffic rules.

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