Research Article

Oral and Maxillofacial Trauma among Different Age Groups: A Retrospective Study

Cinthura C, Madhulaxmi Marimuthu*and Arvina Rajasekaran

Department of Oral Surgery, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Chennai, India

Corresponding author: Madhulaxmi M., Senior Lecturer, Department of Oral Surgery, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Chennai, India, E-mail:madhulaxi@saveetha.com

Abstract

Aim: The anatomical complexities involving maxillofacial injuries and its associated effect on the psychological aspect of the patient is distinctive from other injuries. To improve preventive measures and health care services, a better understanding of its pattern is crucial. This study was done to evaluate the frequency of types of maxillofacial trauma among different age groups. **Materials & Methods:** Data of 70 maxillofacial trauma patients who reported to the Department of Oral Surgery from June 2019 to April 2020 were obtained. Maxillofacial trauma and its distribution in terms of age and sex were studied. **Results:** The results showed that maxillofacial trauma had a male predilection (88.57%) and victims were from the age group of 10 to 35 years (70%) predominantly. Fractures of the mandible (62.9%) were common followed by maxillary fractures. The least prevalent were fractures of the nasal bone, orbital floor and pan facial fractures. Types of trauma distributed among different age groups showed no statistically significant association (p=0.646). **Conclusion:** Trauma to the mandible was more common in our study population. Age group of 10-35 years had higher incidences of trauma and men were predominantly injured. However, the age of the patient did not prove to have a strong association with the type of injury. The study draws attention to the fact that the trauma patterns within a community or a country as such, can be reflected by assessing the etiology and pattern of maxillofacial injuries thus providing a guide for building up programs catered towards prevention and treatment.

Keywords: Fracture; Mandible; Maxillofacial injuries; Road traffic accidents; Trauma

Introduction

Violence or other forces causing physical injury is termed as trauma. Patients affected severely are at a risk of loss of function or death. [1]

It's one of the leading causes of morbidity and mortality among many age groups, especially in developing countries like India. Trauma presents with a variety of injuries which require rapid evaluation and intervention to save the life of the victim and prevent disability. [2,3]

Physical trauma affecting the facial region is termed as maxillofacial trauma.

The regions of the face with regard to trauma can be classified into three parts: (a) Upper face-frontal bone and sinus, (b) Midface-ethmoid, nasal, zygomaticand other bones of maxilla (c) Lower face-comprising the mandible. They can be clinically isolated injuries or occur [4] along with injuries to the abdomen, head, spine, and extremities presenting as multiple injuries. [5,6] Road traffic accidents are the leading cause of trauma in developing countries like India. [7] But, assaults were found to be the common cause of injuries in developed countries. [8] Similarly, fracture patterns show variability between different regions of study. [9] Complications such as alveolar osteitis and fracture of mandible can also be iatrogenic due to traumatic extractions. [10,11]

Medical departments of various countries have repeatedly made innumerable efforts to decrease the mortality due to trauma. Injuries cause 16,000 deaths every day globally and about 5.8 million deaths every year [12] posing definite needs to study the risk factors and pattern extensively.

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Epidemiologists have conducted many studies on maxillofacial trauma in different regions of India including Delhi, Northern Kerala etc. [13]

But, there exists a dearth in literature on epidemiology of maxillofacial trauma in Southern India. Till date, several clinical trials have been conducted by the institutional team, [14-17] *in vitro* studies and many awareness surveys in the field of oral and maxillofacial surgery. There are studies on antibiotics and its use in prophylaxis management as well. [18-35]

Updated knowledge about the common type of trauma and its severity can prove to be beneficial in treatment of victims effectively. Hence, this study was designed in a retrospective epidemiological setup, in order to study the population based difference in the trends in trauma.

Materials and Methods

A retrospective hospital based study of maxillofacial trauma patients was carried out by accessing the data of the Department of Oral and Maxillofacial Surgery from June 2019 to March 2020. Institutional ethical committee clearance was obtained for data retrieval and usage as needed for the study (SDC/SIHEC/2020/DIASDATA/0619-0320). In patients with maxillofacial injuries were identified using digital records. Patients with incomplete records and double entries were excluded from the study. Sites of fractures were confirmed using data from radiographic examinations. Mid facial fractures were described according to Le Fort classification and mandibular fractures were classified using Dingman and Natvig classification. [36]

For each patient, details on the site of injury, age and gender were collected. All analyses were performed using SPSS for Windows, ver. 19.0; SPSS Science, Chicago, IL, USA [37] on a computer. Distribution percentages were obtained and associations were done using chi-squaretests.

Results

Seventy patients were identified with maxillofacial trauma from the Department of Oral and Maxillofacial Surgery. Highly prevalent age range for maxillofacial trauma was found to be 10-35 years (70%), followed by 20% among 36-55 years and 10% belonged to the 56-75 age group [Table 1].

Table 1: Table shows the age distribution of maxillofacial trauma, it was observed that 70% belonged to the age range of 10-35 years, 20% belonged to 36-55 years and 10% belonged to the 56-75 age groups.

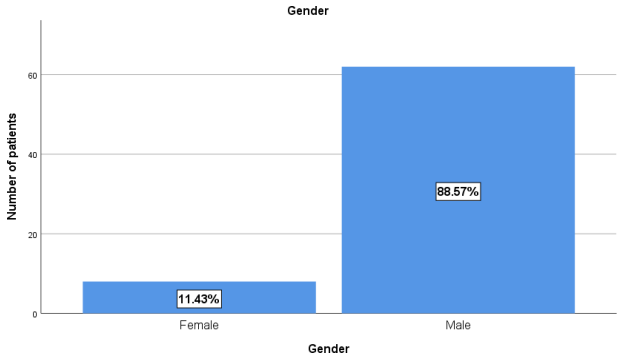
Age groups (in years)	Frequency	Percentage
10-35	49	70%
36-55	14	20%
56-75	7	10%
Total	70	100%

Out of the 70 patients with maxillofacial injuries, 62.9% had mandibular fractures, followed by fracture of the maxilla (15.7%). Only 14.3% of nasal bone fractures, 2.9% of orbital floor fractures and avulsions were observed in the study population. Pan facial fractures were least common (1.4%) [Table 2].

Table 2: This table depicts the distribution of types of oral and maxillofacial trauma among the study population. Mandibular fractures were most common (62.9%), followed by 15.7% of fractures of maxilla and 14.6% of nasal fractures. 2.9% of orbital fractures, avulsion and 1.4% of pan facial fractures was the least common.

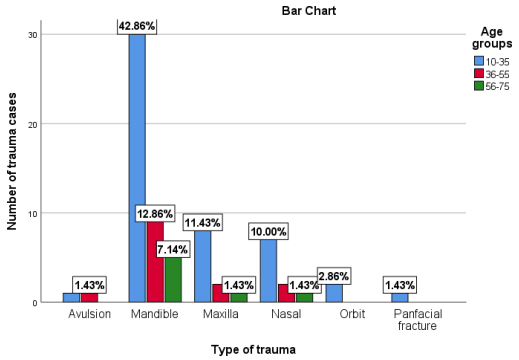
Type of trauma	Frequency	Percentage
Avulsion	2	2.9%
Mandible	44	62.9%
Maxilla	11	15.7%
Nasal	10	14.3%
Orbit	2	2.9%
Panfacial fracture	1	1.4%
Total	70	100%

Distribution of gender among maxillofacial trauma patients had a significant male predominance (88.57%) [Graph 1].



Graph 1: Graph depicts the gender distribution of oral and maxillofacial trauma among the study population. X axis represents gender and Y axis represents the number of trauma cases (N=70). 88.57% were males whereas 11.4% were females.

Patients within the age range of 10-35 years had higher incidences of mandibular fractures (42.86%), followed by 11.43% of fractures of maxilla. They also had higher incidences of nasal (10%), orbital (2.86%) and panfacial fractures (1.43%). However, types of trauma distributed among different age groups showed no statistically significant association (p=0.646) [Graph 2].



Graph 2: Bar graph depicts the association between the type of trauma and age of the patients. X axis represents types of trauma and Y axis represents the frequency of trauma cases. Blue depicts 10-35 years, red depicts 36-55 years and green depicts 56-75 years. Most patients within the age range of 10-35 years had higher incidences of mandibular fractures (42.86%) followed by 11.43% of fractures of maxilla. They also had higher incidences of nasal (10%), orbital (2.86%) and panfacial fractures (1.43%). Therefore, individuals within the age range of 10-35 years can be considered as the most vulnerable among the study population. However, the type of trauma and age of the patient had no statistically significant association at all times (Pearson chi-square test, p=0.646, p>0.05).

Discussion

Studies on prevalence patterns of oral and maxillofacial trauma differs for each region due to various economical and cultural influences. In the present study, patients within the age range of 10-35 (70%) [Table 1] years had the highest prevalence of maxillofacial trauma. Younger adults generally have higher social responsibilities and activities compared to the geriatric population and children which may be the reason for higher chances of trauma. Previous studies by Subhash Raj et al, conducted in India also had consistent findings that people within the age range of 20-30 years were mostly affected, which falls within the present study's prevalent age range suggesting a common pattern of trauma among age groups. [38]

According to Graph 1 of the present study, there was a clear predominance of maxillofacial trauma among male patients (88.57%). This higher chance of trauma to men may be due to the fact that they are exposed to more contact sports, alcohol abuse and travelling at high speed. Many studies such as a study conducted in Haryana, India by Gupta *et al.* suggests that Road traffic accidents are the most common etiology for maxillofacial trauma [39] following which domestic abuse also plays a minor role. Since domestic abuse is only a small fraction causing trauma and it is mostly encountered by women in India, it is evident that there is more of male predominance than females. [40-46]

In a study by Abhinav *et al.* alcohol consumption before the injury was recorded in 17.4% of cases [47] which may also contribute to the higher number of trauma cases among the male gender as they are usually associated with alcohol abuse. This is in line with a study which proves that among those who consume alcohol, the main cause of injury were road traffic accidents (69.8%), followed by assaults (19.0%) and falls (11.2%). [48] Women also tend to have more anxiety towards dental treatments prohibiting them from reporting to the clinic. [49] However, there is a changing trend in the incidence of maxillofacial trauma as women are more career oriented now and are engaged in external activities to render financial support to their families making them prone to trauma as well.

In this study [Table 2], mandibular fractures (62.9%) followed by maxillary fractures (15.7%) were the most common types of fractures. This is contradictory to the study conducted by Hussain *et al.* which suggests that midface fractures involving maxillary arch were more common than dentoalveolar and mandibular fractures. [50] There are some studies suggesting that nasal bone fractures were the commonest. [51] But, in this study, only 14.3% of nasal bone fractures were observed. These differences can be due to the geographical variations in the studies conducted. However, fractures involving mandible were the most common type of trauma in this study and it is in agreement with another study that suggests that mandible is more prone to injury due to its mobility and lesser bony support compared to the maxilla. [52] With the advent of age, porosity of the mandible increased in a study by Monalisa *et al.* [53] making it weaker and prone to fracture. In another study by Pravahitha *et al.* the results are coherent with the present study concluding that mandibular fractures are more common especially condylar fractures. [54]

Most patients within the age range of 10-35 years had higher incidences of mandibular fractures (42.86%), followed by 11.43% of fractures of maxilla. They also had higher

incidences of nasal (10%), orbital (2.86%) and panfacial fractures (1.43%).

Despite the fact that the mandible becomes fragile over the years and can easily fracture when subjected to force, it is more prevalent among the age range of 10-35 years which is the youngest group among the study population. This may be because of the aforementioned reasons like younger adults indulge in assaults and accidents more often than older age groups, which led to higher chances of them getting mandible fractures, due to a blow to their face or chin. However, there was no statistically significant association between the type of trauma and age (p=0.646) [Graph 2].

This suggests that the cause of injury is directly related to the location of the fracture site, and it probably reflects the direction from which force was applied and this may differ in every incidence and may not relate with age or gender. [55]

Various studies like a study by Krishnan *et al*. conducted in the same region concluded that there was very low awareness about dental trauma and its management which reiterates the need for emphasis on awareness programs. [56-58]

Conclusion

In summary, within the limits of the present study, it was found that the most common type of trauma were mandibular fractures followed by fracture of the maxilla. Male predominance was observed among the trauma patients. Incidence of maxillofacial trauma was higher among the age group of 10 to 35 years. Awareness programs should be implemented on the road safety protocols. Thus, the etiology and pattern of maxillofacial injuries reflect the trauma patterns within the community and can provide a guide to the help design programs toward prevention and treatment.

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