

## Original Research

### Prevalence of mandibular fractures in patients visiting to Dental department in Saphthagiri Institute of Medical science, Karnataka

Vinay Kumar K<sup>1</sup>, Bharati R Doni<sup>2</sup>, Shrinivas<sup>3</sup>

<sup>1</sup>Professor, Department of Dentistry, Saphthagiri Institute of Medical Sciences & Research Institute, Bengaluru, Karnataka;

<sup>2</sup>Professor, Department of Dentistry, Koppal Institute of Medical Sciences, Karnataka;

<sup>3</sup>Assistant professor, Department of Dentistry, Kim's Koppal

#### ABSTRACT:

**Background:** Many causes of craniomaxillofacial fractures have been reported, including road traffic accidents (RTAs), assaults, sporting injuries, falls, and industrial accidents; and in some areas of the world, attacks by animals. Ill-treated or wrongly treated mandibular fractures culminating to significant functional and esthetic emanation including facial asymmetry, malocclusion, temporomandibular joint disorders (TMJDs), and osteomyelitis. **Aim of the study:** To study prevalence of mandibular fractures in patients visiting to Dental department in Saphthagiri Institute of Medical science. **Materials and methods:** The present study was conducted in the Department of Dentistry in Saphthagiri Institute of Medical science, Karnataka. The study was performed retrospectively for a period of 6 months that included all cases of mandibular fractures that were clinically and radiographically diagnosed at our institution. A total of 200 patients were included in the study population. The study population consists of individuals from 7 to 68 years of age, with either sex being included. **Results:** The highest frequency of mandibular fractures was seen in 18-35 years age group (n=85), followed by 36-50 years (n=72). Mandibular fractures were more common in males (75%). Most commonly seen mandibular fracture was parasymphiseal fracture. Angle fracture was second common fracture. Coronoid fractures were least common. **Conclusion:** Within the limitations of the present study, it can be concluded that in the patients reporting to our department with mandibular fractures, male cases are more common as compared to female cases. The young adult population was mostly affected by mandibular fractures as compared to older population. The most common type of mandibular fracture seen in our study population was parasymphiseal fracture.

**Keywords:** Mandible fracture, dental fracture, angle fracture.

Received: 12 December, 2020

Accepted: 16 February, 2021

**Corresponding author:** Dr. Bharati R Doni, Professor, Department of Dentistry, Koppal Institute of Medical Sciences, Karnataka.

**This article may be cited as:** K Kumar V, Doni BR, Shrinivas. Prevalence of mandibular fractures in patients visiting to Dental department in Saphthagiri Institute of Medical science, Karnataka. Int J Res Health Allied Sci 2021; 7(2):40-44.

#### INTRODUCTION:

The mandible is a unique bone having a complex role in esthetics of the face and functional occlusion. Because of the prominent position of the lower jaw, mandibular fractures are the most common fractures of the facial skeleton. It has been reported that fractures of the mandible account for 36% to 59% of all maxillofacial fractures.<sup>1</sup> Despite the fact that it is the largest and strongest facial bone, it is the tenth most often injured bone in the body<sup>2</sup> and second to nasal bone fractures<sup>3</sup>

and it is fractured two or three times more often than other facial bones.<sup>4</sup> The age distribution of persons sustaining craniomaxillofacial injuries differs from one country to another. Traditionally, there has been a high male-to-female ratio among craniomaxillofacial injury victims, ranging from 10:1 to 6.6:1. However, the recent literature shows a trend toward a more equal male-to-female ratio. This can be attributed to a changing workforce and the fact that more women work outdoors in more high-risk occupations, thus becoming

more exposed to RTA and other causes of craniomaxillofacial fractures. Many causes of craniomaxillofacial fractures have been reported, including road traffic accidents (RTAs), assaults, sporting injuries, falls, and industrial accidents; and in some areas of the world, attacks by animals.<sup>5</sup> Ill-treated or wrongly treated mandibular fractures culminating to significant functional and esthetic emanation including facial asymmetry, malocclusion, temporomandibular joint disorders (TMJDs), and osteomyelitis.<sup>6</sup> Hence, the present study was conducted to

**MATERIALS AND METHODS:**

The present study was conducted in the Department of Dentistry in Sathagiri Institute of Medical science, Karnataka. The ethical clearance for the study was approved from the ethical committee of the hospital. The study was performed retrospectively for a period of 6 months that included all cases of mandibular fractures that were clinically and radiographically diagnosed at our institution. A total of 200 patients were included in the study population. The study population consists of individuals from 7 to 68 years of age, with either sex being included. The study individuals having developmental disorders, pathology, and tumors of mandible were excluded from the study. The data about

mandibular fracture were collected by means of structured questionnaire including age, sex, and anatomic site of fracture.

The statistical analysis of the data was done using SPSS version 11.0 for windows. Chi-square and Student’s t-test were used for checking the significance of the data. A p-value of 0.05 and lesser was defined to be statistically significant.

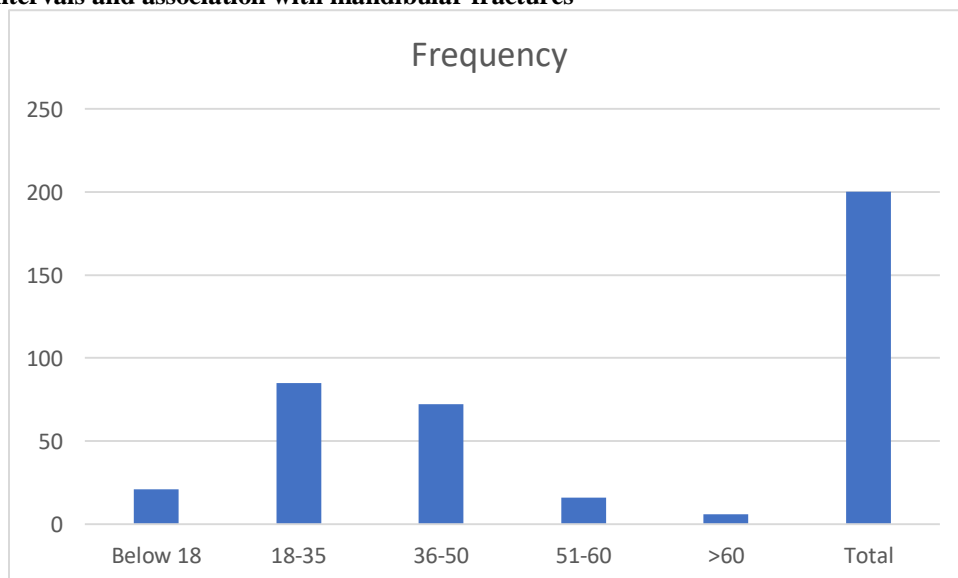
**RESULTS:**

A total of 200 patients with mandibular fractures were reviewed in our study. Table 1 shows the age intervals and association with mandibular fractures. The highest frequency of mandibular fractures was seen in 18-35 years age group (n=85), followed by 36-50 years (n=72). The least number of mandible fractures were seen in >60 years age group (n=6). Fig 2 shows gender predisposition and association with mandibular fractures. We observed that mandibular fractures were more common in males (75%). Fig 3 shows type of mandibular fractures and frequency. We observed that most commonly seen mandibular fracture was parasymphiseal fracture. Angle fracture was second common fracture. Coronoid fractures were least common.

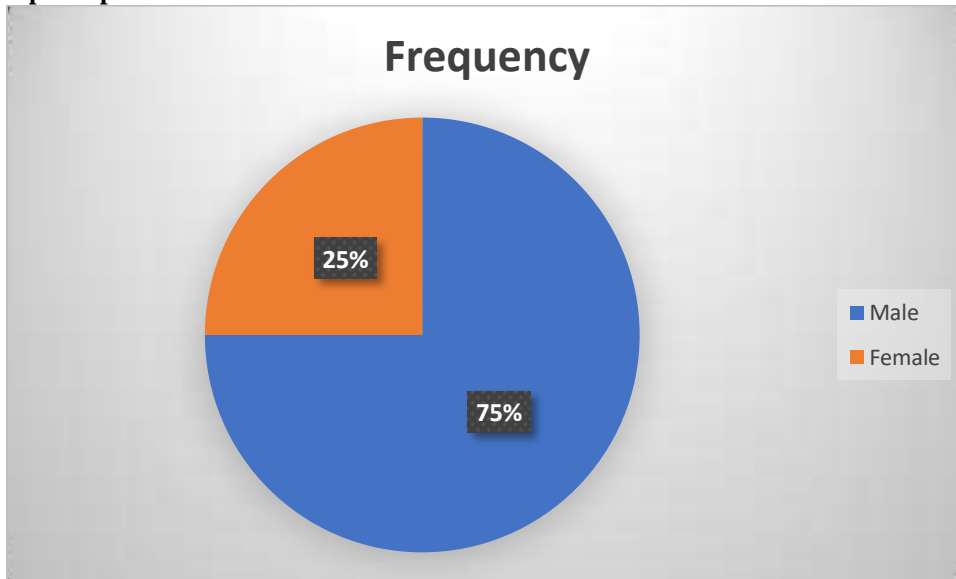
**Table 1: Age intervals and association with mandibular fractures**

Age intervals (years)	Frequency
Below 18	21
18-35	85
36-50	72
51-60	16
>60	6
Total	200

**Fig 1: Age intervals and association with mandibular fractures**



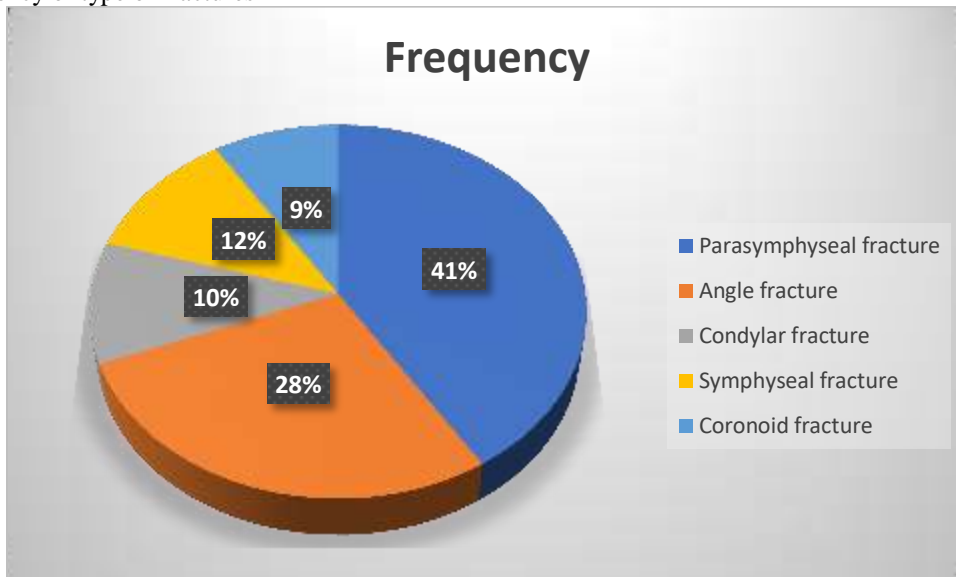
**Fig 2: Gender predisposition and association with mandibular fractures**



**Table 2: Type of mandibular fractures and frequency**

Type of fracture	Frequency
Parasymphiseal fracture	82
Angle fracture	56
Condylar fracture	21
Symphiseal fracture	23
Coronoid fracture	18
Total	100

**Fig 3: Frequency of type of fractures**



**DISCUSSION:**

In the present study, we studied the mandibular fractures on a total of 200 patients. 75 % were males and 25 % were females. It was observed that persons in age group of 18-35 years were highly effected by

mandibular fractures. The number of mandibular fractures were predominant in males as compared to females. The most common mandibular fracture in the study population was parasymphiseal fracture. The study results were compared with results from the

previous studies and were found to be consistent. Chaurasia A et al <sup>7</sup> studied the age- and sex-related prevalence of parasymphiseal fracture, fracture of angle, condylar fracture, symphyseal fracture, and coronoid fracture of mandible in North Indian population. All patients fulfilling the selection criteria and having mandible fracture were selected for the study. The data about mandibular fracture was collected by means of a structured questionnaire including age, sex, and anatomic site of fracture. Qualitative variables were compared using Chi-square test/Fisher's exact test as appropriate. The study population consists of 1015 individuals aged between 7 and 68 years with the mean age of  $33.49 \pm 11.79$  years. The most common anatomic site for mandibular fracture was parasymphiseal region (40.3%) followed by angle (28.8%), condyle (27.6%), and symphysis (12.5%) of mandible. The coronoid process of mandible (44, 4.3%) was least involved in mandibular fracture. Males (30.8%) are more predilected for condylar fracture than females (15.7%). The mandibular symphyseal fracture is more common in male (14.9%) than female (3.7%). They concluded that mandibular fractures occur in people of all ages and races, in a wide range of social settings. Their causes often reflect shifts in trauma patterns over time. Vyas A et al <sup>8</sup> compared with the existing literature on the etiology, pattern, gender, and anatomical distribution of mandibular fractures. The data of 225 cases were analyzed over a period of 5 years between March 2009 and November 2013. Of this 110 were unilateral, 23 bilateral, 18 symphysis and 74 multiple fractures. Males are more affected than females. The peak incidence rate is occurring in 30-35 years of age group. The most common fracture site is parasymphysis and least common site is ramus of mandible. The most common etiological factor is road traffic accident (RTA) (45.3%) followed by falls (42.6%), assaults (8.9%), sport injuries (2.2%), and gunshot wounds (0.89%). They concluded that RTA is the leading cause of mandibular fractures and males are more affected. The most common site is parasymphysis fracture in association with angle fracture. They observed that gender was significantly associated with body and angle fracture ( $P = 0.04$ ) and significant relationship between etiology with multiple site fracture such as (parasymphysis-angle), (body-condyle), (body-angle), and (symphysis-condyle) was observed ( $P \leq 0.05$ ).

Chandra L et al <sup>9</sup> evaluated the pattern, prevalence, etiology, site of fractures, and their management in patients with maxillofacial injury in Delhi-NCR region. A total of 1278 maxillofacial trauma patients visiting different registered hospitals from Delhi-NCR region from January 2012 to December 2017, treated by open reduction and internal fixation under general anesthesia (GA)/local anesthesia (LA) or closed reduction/conservatively, were taken into the study. The

parameters considered in the study were age and sex distribution, etiological factors and incidence of maxillofacial trauma, pattern and site distribution of maxillofacial fractures, and management. From a total of 2250 trauma patients, 1278 patients (1053 males and 225 females) had maxillofacial injury. The average prevalence rate was 56.8%. Yearly incidence rate was 20.4%. Road traffic accident (RTA) was the most common cause of trauma in 1029 (80.5%) patients, followed by physical assault [158 (12.3%)] with significant male predominance in different age groups. Isolated mandibular fractures were the most common [48.6% (parasymphysis 31.6%, condyle 28.2%)], followed by midface with maxilla fracture [27.6% (zygomatic bone and arch 50.2% and Lefort II fractures 18%)]. Treatment modalities were conservative management, closed reduction, and open reduction with internal fixation under GA/LA. They concluded that RTA followed by physical assault is still the leading cause of maxillofacial trauma in young males in Delhi-NCR region. Mini plate osteosynthesis is the main treatment procedure for maxillofacial trauma. Teshome A et al <sup>10</sup> determined the etiology, pattern, and management of maxillofacial trauma in Gondar university of Gondar hospital. A retrospective descriptive study design was used. Medical registration retrieving of patients with maxillofacial trauma visited dental center of University of Gondar Hospital from September 2013 to August 2015 was done. During data collection, etiology of trauma, pattern of fracture, treatment modality and complications were recorded using predesigned data collection template and analyzed using SPSS computer software version 20. Statistical analysis was done to show the sex distribution of maxillofacial trauma and the effect of alcohol intake on the incidence of trauma. During 2-year period, September 2013–August 2015, 326 patients of maxillofacial trauma were treated in the dental center of university of Gondar hospital. The mean age was 29.12 ( $\pm 8.62$ ) with age range of 11–75 years. Majority of the study participants (47.2%) were within the age group of 21–30 years. Eighty percent of the participants were male with a male to female ratio of 4.02:1. Interpersonal violence (75.8%) and Road traffic accident (21.5%) were the leading causes. Males are at high risk of maxillofacial trauma relative to females ( $P < 0.0001$ ). There was high incidence of trauma in the weekend, rural residents, December to February, mandibular fractures and soft tissue injuries were the most common injuries. There was an associated injury in 79 (24.2%) patients in head and neck area, thoracic, abdominal and extremities. Half of the patients were managed conservatively (49.7%) with debridement and suture, while 45.7% of the patients were closed reduction and 4.6% were surgical open reduction. There were 25 post procedure complications especially in

mandibular fractures. They concluded that interpersonal violence was the major cause of maxillofacial trauma, while mandible and soft tissue were the most affected maxillofacial areas.

#### **CONCLUSION:**

Within the limitations of the present study, it can be concluded that in the patients reporting to our department with mandibular fractures, male cases are more common as compared to female cases. The young adult population was mostly affected by mandibular fractures as compared to older population. The most common type of mandibular fracture seen in our study population was parasymphyseal fracture.

#### **REFERENCES:**

1. Shah AA, Salam A. Pattern and management of mandibular fractures: A study conducted on 264 patients. *Pakistan Oral Dent J.* 2007;27:103–5.
2. Sirimaharaj W, Pyungtanasup K. The epidemiology of mandibular fractures treated at Chiang Mai University Hospital: A review of 198 cases. *J Med Assoc Thai.* 2008;91:868–74.
3. Olasoji HO, Tahir A, Arotiba GT. Changing picture of facial fractures in northern Nigeria. *Br J Oral Maxillofac Surg.* 2002;40:140–3.
4. Subhashraj K, Ramkumar S, Ravindran C. Pattern of mandibular fractures in Chennai, India. *Br J Oral Maxillofac Surg.* 2008;46:126–7.
5. Al-Khateeb T, Abdullah FM. Craniomaxillofacial injuries in the United Arab Emirates: A retrospective study. *J Oral Maxillofac Surg.* 2007;65:1094–101.
6. Subhashraj K, Ramkumar S, Ravindran C. Pattern of mandibular fractures in Chennai, India. *Br J Oral Maxillofac Surg.* 2008;46:126–7.
7. Chaurasia A, Katheriya G. Prevalence of mandibular fracture in patients visiting a tertiary dental care hospital in North India. *Natl J Maxillofac Surg.* 2018;9(2):123-128. doi:10.4103/njms.NJMS\_8\_18
8. Vyas A, Mazumdar U, Khan F, Mehra M, Parihar L, Purohit C. A study of mandibular fractures over a 5-year period of time: A retrospective study. *Contemp Clin Dent.* 2014;5(4):452-455. doi:10.4103/0976-237X.142808
9. Chandra L, Deepa D, Atri M, et al. A retrospective cross-sectional study of maxillofacial trauma in Delhi-NCR Region. *J Family Med Prim Care.* 2019;8(4):1453-1459. doi:10.4103/jfmpc.jfmpc\_89\_19
10. Teshome A, Andualem G, Tsegie R, Seifu S. Two years retrospective study of maxillofacial trauma at a tertiary center in North West Ethiopia. *BMC Res Notes.* 2017;10(1):373. Published 2017 Aug 8. doi:10.1186/s13104-017-2670-1