



THE PREVALANCE AND PATTERN OF FACIAL BONE FRACTURES IN CENTRAL KONASEEMA – A RETROSPECTIVE STUDY.

¹V.SS. Kameswari, ^{2*}K. Arjun Gopinath, ³Phani Himaja Devi Vaaka,
⁴Rayudu Naren Kishore, ⁵Velagana. Mounika, ⁶Ch. Shanthi Pushpa

¹Post graduate, ORAL and maxillofacial surgery Dr YSR University of health sciences

^{2*}MDS omfs, Professor&HOD KIMS Dental College, Amalapuram, Andhra Pradesh
Dr YSR University of Health sciences, Vijayawada AP

³MDS, Reader, Dept of Oral & Maxillo Facial Surgery, Affiliated to Dr. YSRUHS

⁴MDS, Reader, KIMS dental college Amalapuram APSDC A-12819 AOMSI LM 3031

⁵Post graduate – OMFS Dr. Ysr university of health Sciences

⁶Post graduate -omfs Dr. YSR University of Health sciences

Article History: Received: 02.10.2022

Revised: 23.12.2022

Accepted: 17.01.2023

ABSTRACT

AIM: The aim of this study is to analyze the data of facial bone fractures that reported to KIMS General hospital and KIMS Dental college and hospital between 2019 to 2021.

MATERIALS AND METHODS: A total of 215 patients were included into this retrospective study conducted at KIMS Dental College Amalapuram to analyze the prevalence of facial bone fractures in central konaseema region since past 2 years. Hospital and college records were scrutinized and all the cases of facial bone fractures were extracted and a table was prepared with required data. The reported facial bone fractures were analyzed under parameters like age, gender and cause of trauma, type of fracture and influence of alcohol. Statistics were made using Mann Whitney test. Tabular forms and graphs were given with inferences for every parameter.

RESULTS: The majority of fractures were sustained by males predominantly under age group of 25-35 years resulting due to road traffic accidents. Zygomaticomaxillary complex fractures were majorly reported which accounted for 30% of all facial bone fractures. Fractures in middle third of face were reported highest which accounted for 51.16%, lower third fractures 35.3%, upper third fractures 8.37%, combination fractures 6.51% of all facial bone fractures. In this study we observed that the influence of alcohol does not determine the occurrence of fracture as 71.1% of patients were not under alcohol influence at the time of trauma. The results were compatible with the articles in the literature.

CONCLUSION: The study revealed interesting facts on occurrence of road traffic accidents where the influence of alcohol is misjudged. Though many studies show zygomaticomaxillary fractures are second most common fractures our study concluded it is the commonest which is supported by other few studies which also supported higher prevalence of middle third of face fractures and is most common in age group of 25 – 35 years due to rash driving without self protection. The findings of this study bring about information of prevalence of maxillofacial fractures in central konaseema region which insist on huge role of maxillofacial surgeons as well as awareness of road safety among public.

KEY WORDS: Facial bone fractures, trauma, road traffic accidents.

¹Post graduate, ORAL and maxillofacial surgery Dr YSR University of health sciences

^{2*}MDS omfs, Professor&HOD KIMS Dental College, Amalapuram, Andhra Pradesh Dr YSR University of Health sciences, Vijayawada AP

³MDS, Reader, Dept of Oral & Maxillo Facial Surgery, Affiliated to Dr. YSRUHS

⁴MDS, Reader, KIMS dental college Amalapuram APSDC A-12819 AOMSI LM 3031

⁵Post graduate – OMFS Dr. Ysr university of health Sciences

⁶Post graduate -omfs Dr. YSR University of Health sciences

INTRODUCTION:

Maxillofacial fractures occur in a significant proportion worldwide and can occur as an isolated injury or in combination with other severe injuries including cranial, spinal, and upper and lower body injuries requiring prompt diagnosis with possible emergency interventions.⁵ Facial fractures can have long-term consequences, both functionally and aesthetically and hence treating them appropriately is at utmost priority. Face establishes an identity to every individual and hence injuries to the facial structures may have a disastrous and long lasting influence on the quality of life of the victims with the current situation witnessing an increased demand for esthetics. Thus treating facial trauma becomes an important aspect of the patient's esthetic outcome. The treatment of facial trauma usually depends upon the type of bone involved and the etiology of the fracture. The department of oral and maxillofacial surgery at KIMS Amalapuram receives a huge inflow of trauma cases in which the maxillofacial trauma is most common and hence there is an absolute need for maxillofacial surgeons to have knowledge about epidemiology of maxillofacial trauma. Hence the aim of the present retrospective study was to evaluate the prevalence of facial trauma with respect to the cause of injury and type of fracture.

MATERIALS AND METHODS:

This is a retrospective study conducted at KIMS Dental College Amalapuram to analyze the prevalence of facial bone fractures in central konaseema region since past 2 years. Hospital

and college records were scrutinized and all the cases of facial bone fractures were extracted and a table was prepared with required data. Case data of those patients were collected only if they have the complete inpatient data. A total of 215 patients were included into the retrospective study based on the inclusion criteria. The reported facial bone fractures were analyzed under parameters like age, gender and cause of trauma, type of fracture and influence of alcohol while the entire patient data was divided into the following age groups- 11 to 21 yrs, 22 to 35 yrs, 36 to 50 yrs, 51 to 64 yrs and 66 to 84 yrs. All the required and included data from January 2019 to December 2021 were made as an excel sheet.

The study was conducted after getting ethical approval from the Institutional Ethical Committee.

RESULTS:

Table-1&Graph-1 shows the demographic data of the study population who have suffered facial trauma.

PARAMETER	PERCENTAGE
11-21 years	16.7
22-35years	45.6
36-50 years	23.7
51-64 years	12.1
65-84 years	1.9
Male	86.5
Female	13.5

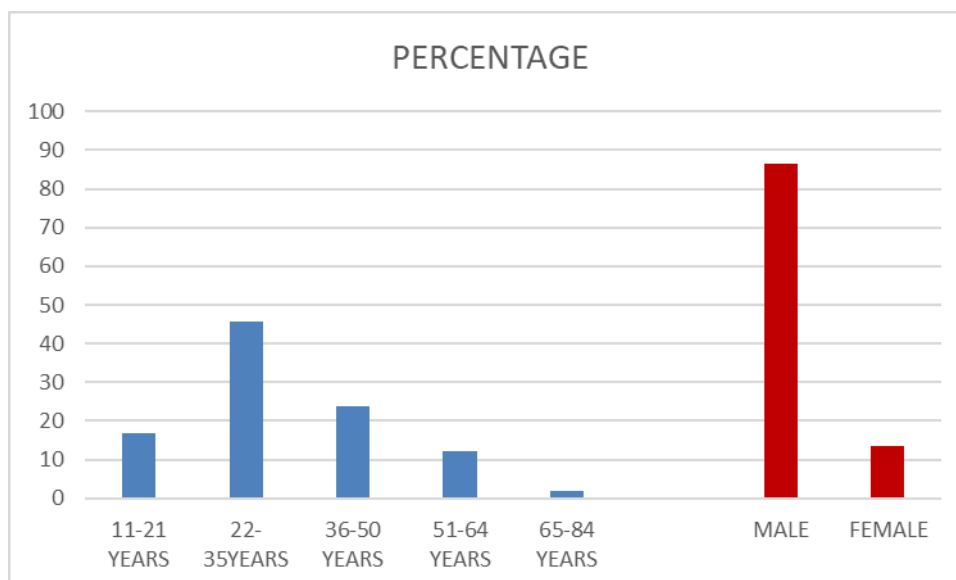


Table-2 & Graph-2 shows the prevalence of different types of fractures. Out of the total 33 types of fractures the right and the zygomatic complex fractures accounted for the maximum type of fractures which accounted to 29.3%. The least type of fractures was the combination type of fractures which accounted to 15.9%. The descending order of the various types of fractures was left zygomatico-maxillary complex fracture (18.1%) > right zygomatico-maxillary complex fracture (11.2%) > right mandibular body fractures (6%) > lefort I(5.1%)> left maxillary bone fractures (4.2%) > right zygomatic arch fractures (3.7%) > bilateral nasal bone fractures(3.3%) > lefort II fractures (3.3%) > right nasal bone fractures(2.8%) > symphysis fractures (2.8%) > symphysis with

bilateral condyle fractures (2.8%) > left zygomatic arch fractures (2.8%) > left parasymphysis fractures, dentoalveolar fractures, right zygomaticomaxillary complex fractures and right parasymphysis fractures(1.9%) >polytrauma , left parasymphysis and right condyle fractures, right orbit fractures (1.4%) > left nasal bone fractures , left condyle and right parasymphysis fractures , bilateral maxillary bone fractures , right zmc with lefort II fractures , right zmc with right nasal bone fractures(0.9%) > left zygomaticomaxillary complex fractures with lefort I, left zygomaticomaxillary fracture with left petrous bone fracture, left zygomaticomaxillary fracture with frontal bone fracture , right maxillary with right nasal bone fracture , left mandibular condyle (0.5%).

Type of fracture	Percentage
Left zygomatico-maxillary complex fracture	18.10
Right zygomatico-maxillary complex fracture	11.20
Right mandibular body fractures	6.00
Lefort I fractures	5.10
Left maxillary bone fractures	4.20
Right zygomatic arch fractures	3.70
Bilateral nasal bone fractures	3.30
Lefort II fractures	3.30
Right nasal bone fractures	2.80
Symphysis fractures	2.80
Symphysis with bilateral condyle fractures	2.80
Left zygomatic arch fractures	2.80
Left parasymphysis fractures	1.90
Dentoalveolar fractures	1.90

Right zygomaticomaxillary complex fractures	1.90
Right parasymphysis fractures	1.90
Polytrauma	0.90
Left parasymphysis	0.90
Right condyle fractures	0.90
Right orbit fractures	0.90
Left nasal bone fractures	0.90
Left condyle	0.90
Right parasymphysis fractures	0.90
Bilateral maxillary bone fractures	0.90
Right zmc with lefort ii fractures	0.90
Right zmc with right nasal bone fractures	0.90
Left zygomaticomaxillary complex fractures with lefort i	0.50
Left zygomaticomaxillary fracture with left petrous bone fracture	0.50
Left zygomaticomaxillary fracture with frontal bone fracture	0.50
Right maxillary with right nasal bone fracture	0.50
Left mandibular condyle	0.50

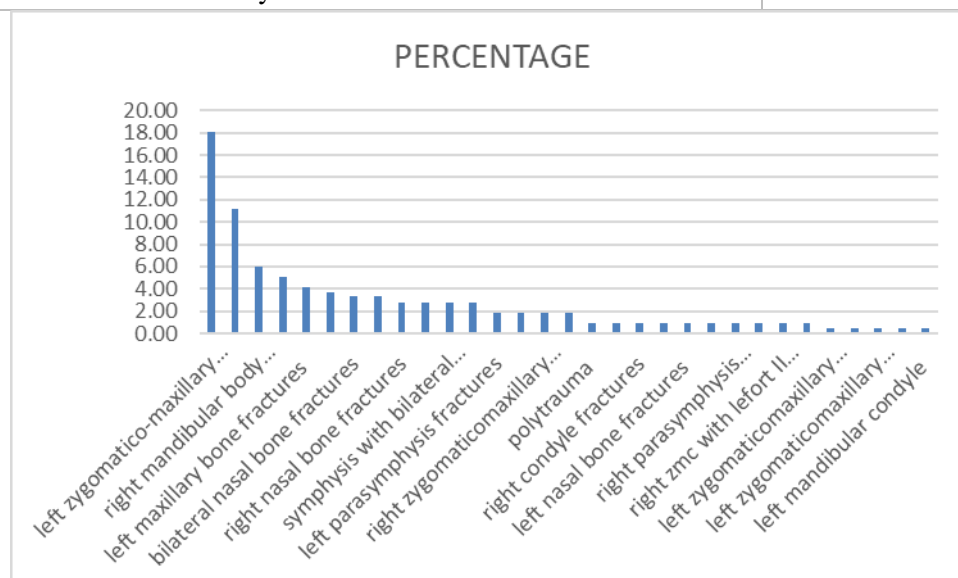


Table-3& Graph-3 shows the prevalence of the fractures for upper third (8.37%), middle third (51.16%), lower third (35,3%) and combination fractures (6.5%) of face.

Middle third	51.16
Lower third	35.3
Combination	6.5

Region of face	Percentage of fractures
Upper third	8.37

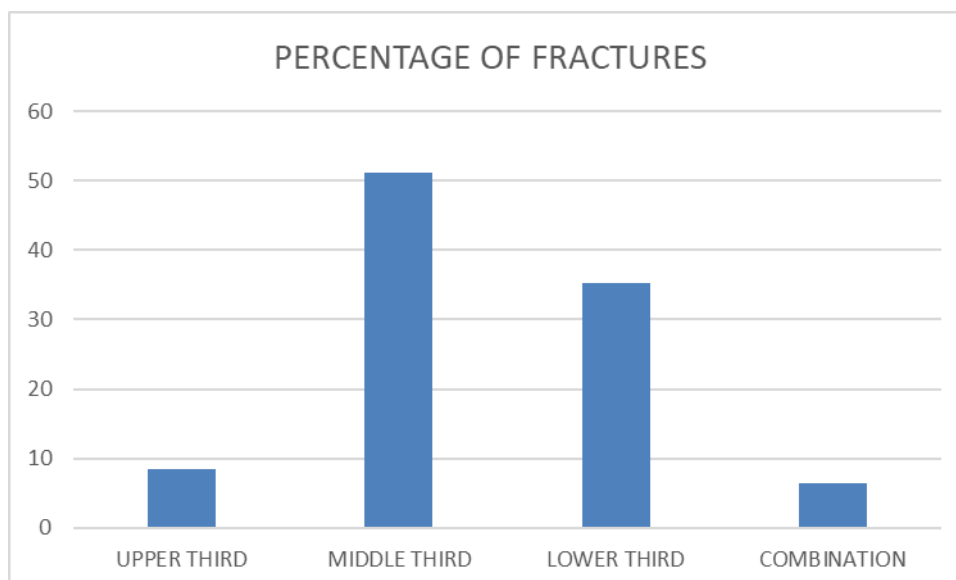


Table-4 & Graph-4 shows the percentage of patients that were under the influence of alcohol when they suffered the fracture. These patients may include those who have suffered the fracture due to any of the following causes such as Road Traffic Accident (RTA), Sports,

Physical Violence and Self Fall. Out of the total 215 patients, 28.4% of the patients were under the influence of alcohol while 71.6% were not under the influence of alcohol.

	Yes	No
Influence of alcohol	28.4	71.6

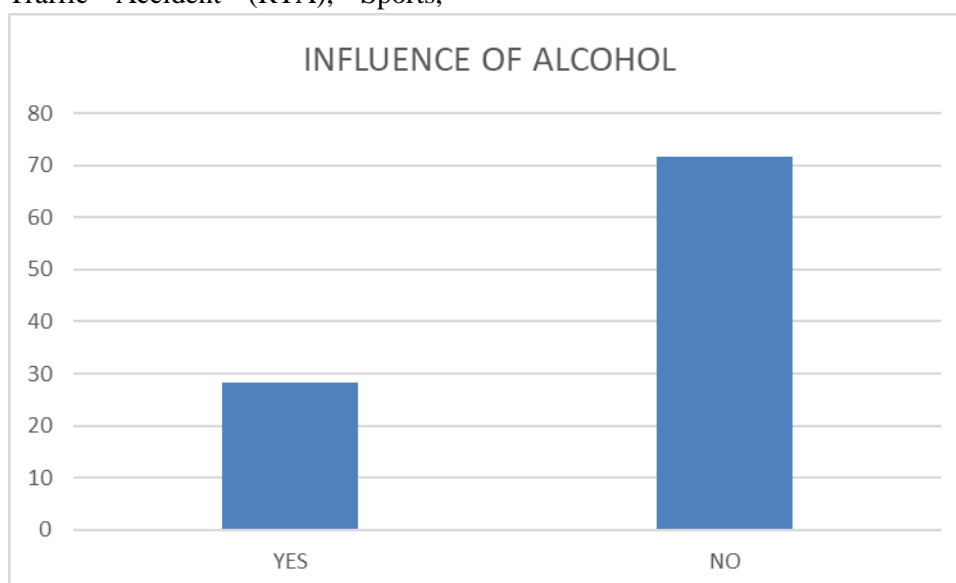
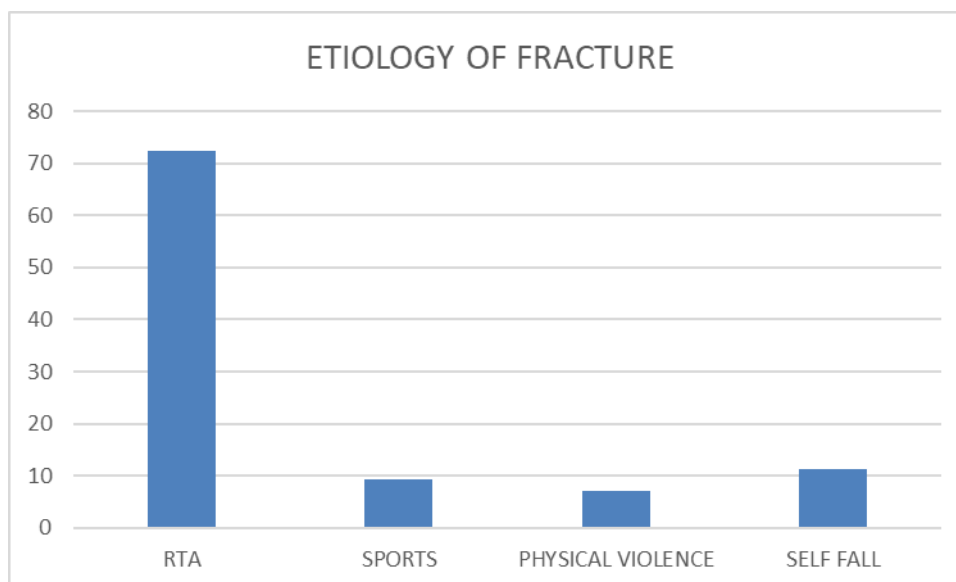


Table-5 & Graph-5 shows the percentage of various kinds of etiology that lead to the fracture. Out of the total 215 patients who have suffered fractures 72.6% of them have suffered due to RTA followed by self-fall (11.2%), sports (9.3%) and physical violence (7%).

Etiology of trauma	Percentage
RTA	72.5
Sports	9.3
Physical violence	7
Self-fall	11.2



DISCUSSION

The current retrospective study on facial fractures was done to understand the prevalence of facial trauma in the central Konaseema region for the last 6 years. For this purpose, patient records having 3D CT scans were included into the study. The results of the present study show that zygomaticomaxillary complex fractures were the most prevalent (29.3%). The reason for the more prevalence of ZMC fractures is due its prominence in facial region when this bone hits the surface¹. Anurdha et al stated that the zygomatic complex fractures represent the second most frequent fractures of the middle face after the nasal bones. In combination with those of the orbit and naso-orbito-ethmoidal (NOE) complexes, they account for 30 to 55% of facial injuries.² In our study the highest number of fractures were reported in the age group of 22-35 years. Br Chandrashekar et al in their five year retrospective statistical analysis of oral and maxillofacial injuries published that the peak incidence of mid-face fracture was found in the age range of 21–30 years, which is in accordance with other studies³. Anuradha et al found that sports accidents and falls were dominant in the first decade of life, traffic accidents, assaults and sport injuries were most prevalent in the second and third decade of life and accidental falls were frequent cause in the later decade of life. In our study we found the etiology was RTA (72.5%), sports (9.3%), falls (11.2%), and assault (7%). This is well matched

with other studies^{2,3}. A significant proportion of these accidents are associated with drug and alcohol abuse, speeding and disregard for the use of seat belts and mandatory helmet. In our study we found that the influence of alcohol is present only in 28.6% of population which is contradicting other studies. Chandra L.etal stated that 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%)]^{4,5}. According to Agnihothri et al in his prospective study on 350 patients of maxillofacial trauma found that only 10.85 % patients were found to be under the influence of alcohol at the time of accident. Factors such as alcohol consumption urban violence and the violation of traffic rules contribute to the increasing prevalence of maxillofacial trauma^{6,7,8}.The literature indicates a greater tendency for MFT to be more prevalent in men in age group of young adults mainly because, in general, they more actively participate in social activities, sports activities, urban violence, traffic accidents, and drug use, including alcohol use.^{9,10,11,12,13,14,16-20} The high incidence of these fractures probably relates to their prominent position within the facial skeleton ,which frequently primarily exposes them to the traumatic forces first, compared to others bones of facial skeleton .However the incidence ,cause ,age and gender predilection vary depending on largely on social , economic ,

political ,and educational status of the population being studied¹.

CONCLUSION:

The study revealed interesting facts on occurrence of road traffic accidents where the influence of alcohol is misjudged. Though many studies show zygomaticomaxillary fractures are second most common fractures our study concluded it is the commonest which is supported by other few studies which also supported higher prevalence of middle third of face fractures and is most common in age group of 25 – 35 years due to rash driving without self protection. The findings of this study bring about information of prevalence of maxillofacial fractures in central konaseema region which insist on huge role of maxillofacial surgeons as well as awareness of road safety among public.

REFERENCES:

1. Ahmed R, Dhararathan P, Muthusekhar MR (2020): Incidence and etiology of midface fracture: A retrospective study, *Ann Trop Med & Public Health*; 23(S22): SP232315.
2. Anuradha J Patil, Tanvi Tolat, Avinash Yelikar & Jiten Kulkarni; Incidence and Management of Zygomaticomaxillary Complex Fractures Treated at Mahatma Gandhi Mission Hospital, Aurangabad, Maharashtra : *International Journal of Current Medical and Applied sciences*; 2019, 22(2), 11-15.
3. Chandra Shekar B R, Reddy C. A five-year retrospective statistical analysis of maxillofacial injuries in patients admitted and treated at two hospitals of Mysore city. *Indian J Dent Res* 2008;19:304-8
4. 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.
5. Agnihotri A, Galfat D, Agnihotri D. Incidence and pattern of maxillofacial trauma due to road traffic accidents: a prospective study. *J Maxillofac Oral Surg*. 2014;13(2):184-188.
6. Pita Neto IC, Franco JMPL, Junior JLA, Santana MDR, de Abreu LC, Bezerra ÍMP, et al. Factors Associated With the Complexity of Facial Trauma. *J Craniofac Surg*. 2018;29:e562-6.
7. Nogami S, Yamauchi K, Bottini GB, Otake Y, Sai Y, Morishima H, et al. Fall-related mandible fractures in a Japanese population: A retrospective study. *Dent Traumatol*. 2019;35:194-8.
8. Goulart DR, Durante L, de Moraes M, Asprino L. Characteristics of Maxillofacial Trauma Among Alcohol and Drug Users. *J Craniofac Surg*. 2015;26:e783-6.
9. Farneze RB, Prosdocimo ML, Nogueira AP, Cavalcante MA, Hespanhol W, Teixeira TF, et al. Study of the causes of facial fractures in a reference center in Rio de Janeiro, Brazil from 2003-2012. *Dent Traumatol*. 2016;32:507-9.
10. Ribeiro AL, da Silva Gillet LC, de Vasconcelos HG, de Castro Rodrigues L, de Jesus Viana Pinheiro J, de Melo Alves-Junior S. Facial Fractures: Large Epidemiologic Survey in Northern Brazil Reveals Some Unique Characteristics. *J Oral Maxillofac Surg*. 2016;74:2480.e1-12.
11. Rampa S, Wilson FA, Tak HJ, Roy S, Wani RJ, Markiewicz MR, et al. Patient Characteristics and Causes of Facial Fractures in the State of California. *J Oral Maxillofac Surg*. 2019;77:1855-66.
12. Einy S, Abdel Rahman N, Siman-Tov M, Aizenbud D, Peleg K. Maxillofacial Trauma Following Road Accidents and Falls. *J Craniofac Surg*. 2016;27:857-61.
13. Pita Neto IC, Franco JMPL, Junior JLA, Santana MDR, de Abreu LC, Bezerra ÍMP, et al. Factors Associated With the Complexity of Facial Trauma. *J Craniofac Surg*. 2018;29:e562-6.
14. Hino S, Yamada M, Araki R, Kaneko T, Horie N. Effects of loss of consciousness on maxillofacial fractures in simple falls. *Dent Traumatol*. 2019;35:48-53.
15. Saperi BS, Ramli R, Ahmed Z, Muhd Nur A, Ibrahim MI, Rashdi MF, et al. Cost analysis of facial injury treatment in two university

- hospitals in Malaysia: a prospective study. Clinicoecon Outcomes Res. 2017;9:107-13.
16. Boffano P, Roccia F, Zavattero E, Dediol E, Uglešić V, Kovačić Ž, et al. European Maxillofacial Trauma (EURMAT) project: a multicentre and prospective study. J Craniomaxillofac Surg. 2015;43:62-70.
 17. Agarwal P, Mehrotra D, Agarwal R, Kumar S, Pandey R. Patterns of Maxillofacial Fractures in Uttar Pradesh, India. Craniomaxillofac Trauma Reconstr. 2017;10:48-55.
 18. Mosaddad SA, Gheisari R, Erfani M. Oral and maxillofacial trauma in motorcyclists in an Iranian subpopulation. Dent Traumatol. 2018;34:347-52.
 19. de Lucena AL, da Silva Filho GF, de Almeida Pinto Sarmiento TC, de Carvalho SH, Fonseca FR, de Santana Sarmiento DJ, et al. Epidemiological profile of facial fractures and their relationship with clinical-epidemiological variables. J Craniofac Surg. 2016;27:345-49.
 20. Choi SH, Gu JH, Kang DH. Analysis of Traffic Accident-Related Facial Trauma. J Craniofac Surg. 2016;27:1682-85.
 17. Khan SR, Khan ZA, Hanif S, Riaz N, Warraich RA. Patterns of facial fractures in children. Br J Oral Maxillofac Surg. 2019;57:1009-13.