Maxillofacial Fractures Treated in a Dental Department of a Tertiary Care Hospital Karachi, Pakistan: a 5-Year Retrospective Analysis

Samreen Khowaja¹, Jehan Alam¹, Mushir Mulla², Freah Alshammary³, Ammar Ahmed Siddiqui³, Hassaan Anwer Rathore⁴, Mohammad Khursheed Alam⁵

ABSTRACT

Background: Maxillofacial fractures are one of the major public health issues, its impact is more in young adults of developing countries however they are quite prevalent throughout the globe. It is crucial to measure different cause, and pattern of maxillofacial trauma for better understanding, and planning a primary prevention strategy for a population of Karachi, Pakistan.

Method: It was a five-year retrospective epidemiologic Analysis. Data was collected from Jinnah Postgraduate Medical Centre, Karachi from 2014 to 2018. All those cases were included which had complete history, diagnosis and treatment. Data was displayed as numbers and percentages. A statistical analysis was done by using STATA.

Result: Maxillofacial fractures were more prevalent among males. Nearly 65% of respondent with fracture were young individuals and was in their early or late twenties. Overall road traffic accidents were account for more than 73% of trauma. For site of fracture, mandibular fracture was prominent in more than 85% of study participants. Multiple bone fracture was common (31.5%) among young male adults.

Conclusion: The present study concluded that maxillofacial fractures was most common in young males, the most affected site was mandible, and the most common cause of fracture was road traffic accident. Based on the finding of current study, it can be said that road traffic accidents are a serious concern for the said population, it is a leading cause of morbidity and mortality. Measures needs to be taken to avoid or decrease its prevalence, ideally through strategic primary prevention approach.

KEY WORDS

Road Traffic Accident, Maxillofacial fractures and Retrospective Analysis.

INTRODUCTION

Globally, the burden of injury is enormous and growing exponen-
tially in a world especially in low- and middle-income countries. For that reason, Pakistani population is of no exemption. The underlying objective of the present study was to provide a descriptive picture of maxillofacial trauma among the registered cases of Jinnah postgraduate medical center (JPMC) during the period of 5 years. It has been revealed that mandible fractures range from 36% to 59% in different communities. It indicates that probable reason of fracture is either road traffic accident (RTA) or fall. The difference in prevalence of fractures is correlated with gender, age, environment, and socio-economic status of patient, as well as the mechanism of the injury. That is probably because in general, and in most of developing countries, especially countries having a demographic feature like Pakistan where most of the motorbike riders, or car drivers are male, and they belong to early adult age group, (in their twenties). World Health Organization (WHO) statistics explained, more than 1 million people annually in the world lose their lives and approximately, 15 to 20 million people endure trauma due to road traffic accidents annually. This statics from WHO is massive, measurement of its description in a sample of Pakistani population is almost crucial, so that policies on its primary prevention can be prepare and implemented. The present study was also planned to account that. The incidence and causes ranges from country to country as social, cultural, and environmental norms differ between countries. Road Traffic Accident (RTA) is the fifth major cause of morbidity and mortality in South-East Asia. The important thing to notice here is RTA alone are among one of the leading cause of disability, impairment and even death, ranked above many chronic diseases, and that to affecting mostly the young population of countries belong to south-east Asia region, which is compromising of countries belongs to developing nation category. It can seriously have negative impact on country economy and growth, as younger individuals are corner stone of any country develop-
The face of a human is usually a first point of contact in all interactions and is preferred target for majority of assault cases. Maxillofacial trauma is among a common reported case in accident and emergency departments of tertiary care hospitals, presentation can vary from isolated injury to the multiple injuries of head and neck, chest, and abdomen [9]. Maxillofacial region (MFR) is a broad term which implicates soft and hard tissues of face and covers all anatomical regions from frontal bone to the mandible. The face is one of the disclose part of the body, explicitly prone to trauma. Facial trauma give rise to skeletal injuries to soft tissues and dentition. Maxillofacial injuries are associated with increase road transportation and socioeconomic activities of the population [4]. It is a major problem in the younger population, especially in men, because of increase physical and social activities. All these activities lead to increase in traffic accidents, fall, assaults, and sports activities [2]. World countries while interpersonal alterations are major cause in the developed countries. Gunshot injuries are most destructive inflictions of all other type of injuries. Gunshot injuries are a major challenge maxillofacial surgeon and a multidimensional team to provide good management and rehabilitation [10]. However, gunshot injuries are not very common, compared to other possible causes, however its management can be more logistic, stressful and complicated.

The aim of this study was to determine the prevalence of facial fractures among gender, age groups. Frequency of various etiological factors and pattern of maxillofacial injuries in the tertiary care hospital of Karachi.

### METHODOLOGY

It was an observational study. A retrospective analysis of maxillofacial trauma cases was done at dental department of JPMC Karachi, from January 2014 till December 2018. The study included the data from 224 reported cases of maxillofacial fractures. The data was taken from patients registered in JPMC hospital during the stipulated time mentioned above. The only inclusive criteria were all reported cases of facial fractures with complete history mentioned in the patient history records was considered. All incomplete cases were excluded from analysis. Data from patient history records was looked and recorded by single individual.

Demographic data was captured from variables such as, age, sex, gender, variable of interest was causes of facial fractures and fracture sites. The fracture site was classified into six main groups as mandible, maxillary bone fractures, nasal bone fractures, zygomatic bone fractures, lefort I and lefort II. Descriptive data was reported as numbers and Percentages for all categorical variables using South Texas Art Therapy Association (STATA) software. The present study was approved by Institutional Review Board of Jinnah Postgraduate Medical Centre.

### RESULTS

This retrospective analysis conducted in dental department of Jinnah postgraduate Medical Centre. There were total 270 reported cases of fracture from 2014 to 2018. Out of all reported cases, 224 (83%) cases had completed cases history and were included in the study. Among 224 cases, 197 (87.9%) were males and 27 (12.1%) were females. Male to female patient's ratio was more than one fourth.

Among all reported cases, majority of fracture cases were found between ages of early and late twenties 77 (34.38%) whereas, 67 (29.91%) cases were found between ages below twenties and third most common reported cases were between ages thirty to forties. Moreover, around 20% cases were found between ages 40's to 60's. However, around 15 (6%) cases were reported by old age people (Table 1).

Most common cause of fracture in our setting was Road Traffic Accident (RTA). Around 164 (73.21%) cases were reported. Additionally, 43 (19.21%) patients had a history of fall and other uncommon causes were trauma 8 (3.57%) and gunshot 3 (1.34%), few other causes were 6 (2.68%) violence, fighting (Table 2).

In males, more than 75% patients were reported of Road Traffic Accident (RTA) 150 (76.14%) and fall 31 (15.73%) males were reported around 15 (6%) cases were reported by old age people (Table 1).

The ratio of mandibular and maxillary fracture was 5:1 in our setting. Overall, 192 (85.65%) mandibular fracture cases and 32 (14.35) cases were of maxillary fracture were found. (Table 4)
The commonest fracture was multiple fractures 70 (31.39%) and the common fracture reported was para Symphyseal and Symphyseal 46 (20.63%) and least common fracture were coronoid 33 (14.80%). (Table 5)

DISCUSSION

The aim of this study was to determine the epidemiologic analysis of maxillofacial fractures in Karachi, Pakistan. The study aimed to document the most affected age groups, site, and cause of fractures, to provide a descriptive picture of the said problem. To the best of our knowledge we did not find any related study of this regard in our concerned population, except a single study which only measured the pattern of RTA.

Road Traffic Accident is the most prevalent cause of fracture in adult males. The finding of the present study was in agreement with it in which more than 70% of fractures were because of RTA. However, in female's RTA and fall both were equally distributed cause of maxillofacial fractures and assault and physical aggression are the third contributed factor in our setting. It is important to note that sample from female participant compromised only 12% of whole studied sample. Our findings are slightly in contrast to the Brazilian epidemiologic survey, conducted from 2008 to 2010 where assault was the main contributing cause after Road Traffic Accident[8]. Whereas, these findings are similar to the study done in Iraq by Hossein et al and Pohchi et al in Kelantan, Malaysia[11,12].

Shafi et al depicts in an epidemiologic study that adults between ages 21-30 years were more prone to accidents as compared to other age groups. Results from the present study supported his argument, as nearly 65% of fracture cases affected the same population group. Although, a significant association of gender and RTA. Males are more affected by RTA as compared to females and fall is more established cause among females[8,16]. Which is in harmony with the finding of present study, sample from the female was less, but the trend of fall was almost similar to that of trauma, 45% to 52% respectively. Surprisingly, these findings were slightly different to the study conducted in rural teaching institution of Karachi in 2017[10]. A five year retrospective study conducted by Hossein et al and Pohchi et al showed mandibular bone is more prone to fracture followed by maxillary fracture. Parasymphysesal, Symphysesal, ramus and condyle are the most prevailing sites of mandible. Our findings were very similar to these retrospective analyses[11,12]. In the current study mandible was the most affected site of fracture, accounting in almost 85% of all fracture cases.

The possible reasons behind this finding and why it cannot be accurately generalized to whole city is because the data was collected from single tertiary care hospital, moreover, more than 20% cases were excluded because of incompleteness. There is a strong need of more studies, covering most of the part of city to make a more reliable estimate, however this present study can be taken as baseline and trends of trauma must be noticed and communicated to relevant authorities for preventive action.

These findings will help in planning of better roads, infrastructure, and provide a way forward for the local governments to make transportation safer. These findings will also enable the local government to better the transport facilities and help the health governs in curbing mortality and morbidity pertaining to RTA. We also suggest training of basic life support to traffic police officers, which could enable to save more lives. There is an urgent need of education and awareness messages regarding road safety. We recommend legislature to be very strict, updated, use of seatbelts and helmets should be strictly followed.

CONCLUSION

The data when consolidated depicted that RTA’s were the prime cause of mandibular fracture and males being more exposed as per the statistics. We believe that this study will help in designing and directing policies at primary prevention level to prevent RTA. We also feel that future studies should measure the needs of educating community regarding health hazards related to road traffic accidents, and how it can be prevented.

ACKNOWLEDGEMENT

We acknowledge the untiring efforts of Hafiza Kiran in data collection.

REFERENCES