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INCIDENCE OF ROAD TRAFFIC ACCIDENTS COMPARED WITH OTHER ETIOLOGIC FACTORS FOR MAXILLOFACIAL TRAUMA.

Dental Science

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ABSTRACT

Objective: The objective of this study was to evaluate prevalence of various etiological factors of maxillofacial trauma in an attempt to identify most common etiological factor in order to implement safety measures for the same.

Materials and method: This was a retrospective study on selected cases of maxillofacial trauma reported to the department of oral and maxillofacial surgery from 2012 to 2014. Data including demographic data, etiology and type of facial fracture were been recorded.

Results: 160 patients were evaluated for study in which 142 were males and 18 were females. There was a vast male predominance in all age groups with an overall male-to-female ratio of 7.88:1. The age group 31 to 40 years accounted largest in both sexes. 110(68.75%) patients were involved in road accident injuries 29(18.12%) were involved in fall injury, 9(5.625%) were involved in violence and 12(7.5%) were involved industrial accident

Conclusion: This study concludes that the incidence of maxillofacial trauma due to road traffic accidents was more than fall, violence and industrial accidents noted at Krishna Institute of Medical Sciences, Karad, for the given time period of two years.

KEYWORDS:

maxillofacial trauma, road traffic accident, zygoma,

INTRODUCTION:

This was a retrospective study on all cases of maxillofacial trauma reporting to the department of oral and maxillofacial surgery. Data was statistically evaluated at the end of study. Road accident is a global tragedy with the ever-rising trend. According to Sergio monterio et al, high impact collisions are mostly observed in motorcycle accidents.[1] According to zargar et al, helmets were not used at the time of collision.[2] Other causes such as domestic assault is the intentional use of physical force or power to threaten or actually used against oneself or another person with a high likelihood of maxillofacial injuries. The gender inequality can be a major section for domestic violence. Other causes such as fall of a worker at his workplace can be a reason for maxillofacial injuries. Fall could be due to misbalance or loss of self-control from over a height without any protection. According to maliska MCS et al, a study in brazil revealed the most common

Age (in years)	Patients	%	Sex			
			M	%	F	%
0-10	3	2	3	2	0	0
11—20	16	10	14	10	2	11
21-30	48	30	45	32	3	16
31-40	49	30	42	30	7	39
41-50	21	13	16	11	5	28
51-50	9	6	9	6	0	0
>60	14	9	13	9	1	6
Total	160	100	142	100	18	100

anatomical site of injury was mandibular body (20%) and condyle (13%) and and zygoma being the second most common anatomical site.[3] Another study by karkhaneh M et al, in iran suggested one fourth of injured cyclist had severe head injuries (24.5%).[4] This study will evaluate the major cause of maxillofacial injuries and will demonstrate the peculiarities associated with it regarding age, gender, commonly associated bone.

MATERIALS AND METHOD:

It is a retrospective study. Records of selected maxillofacial trauma patients reported from Jan 2012 to De/c 2014 to Department of Oral and Maxillofacial Surgery, KIMS Hospital were checked for this study. The data was obtained from clinical notes and surgical records of each patient. The data includes patient's name, age, gender, type of facial fracture, dental injuries and aetiology of trauma.

RESULT:

A total of 160 patients were evaluated for study in which 142 were males and 18 were females. There was a vast male predominance in all age groups with an overall male-to-female ratio of 7.88:1. The age group 31 to 40 years accounted largest in both sexes (in males and in females) followed by patients in the age group 21 to 30 years. We can conclude, the number of male patients were significantly higher than females, most of fractures highlights age group of 21-30 years and 31-40 years in males whereas in females fracture highlights age group of 31-40 years. **Table 1.** The most common cause of injury throughout the study was road accident and fall, followed by industrial accident and violence.

TABLE.1: DISTRIBUTION OF FRACTURE TYPE BASED ON GENDER.

The mean age of the patients involved in road accident was 39.33 years (SD, 17.41years), whereas the mean age of the patients involved in fall was 36.03 years(SD, 16.09 years), mean age

of the patients involved in violence was 40.33 years (SD, 13.25years) and also mean age of the patients involved in industrial accident was 34.58 years (SD, 14.61 years).**Table2**

Almost maximum patients out of 160, 110(68.75%) are involved in road accident injuries 29(18.12%) involved in fall injury, 9(5.625%) involved in violence and 12(7.5%) involved industrial accident. It means prevalence of road traffic accident in cases of maxillofacial trauma reporting oral and maxillofacial surgery was 68.75%. **Table 2**

TABLE.2: DISTRIBUTION OF CAUSE OF FRACTURE WITH MEAN AGE.

Type of Accident	No.	%	Mean Age	S.D
Road Accident	110	68	39.33	17.41
Fall	29	18	36.03	16.09
Violence	9	6	40.33	13.25
Industrial Accident	12	8	34.58	14.61

TABLE 3: CAUSE OF FRACTURE DISTRIBUTION OF PATIENTS.

Age	Type of Accident				ANOVA (F-value)	P-value
	RTA	F	V	I		
0-10	3	0	0	0	6.614	0.0021*
11--20	11	3	1	1		
21-30	35	10	2	1		
31-40	33	7	2	7		
41-50	16	3	2	0		
51-60	3	4	0	2		
>60	9	2	2	1		
Total	110	29	9	12		

RTA- road traffic accident, F-fall, V-violence, I-industrial)

*Significant P<0.05

ANOVA-analysis of variance between types of accident}

In overall 160 facial trauma patients, 106(66.25%) were simple maxilla fractures and remaining 54(33.75%) were mandible fractures, Significantly, maxilla fractures were the most common among all facial bone fractures, accounting all fractures ($p < 0.05$), mandible were next common cause. **Table 2 & Table 4,**

In all the age groups, road accident and fall constituted the main causes of fractures with a significant higher difference than other causes ($p < 0.05$).

In patients younger than 20 years, the fractures were mostly due to fall from height. Falling was common cause of injury in children younger than 15 years. Violence was a more common cause in all age groups whereas industrial accident was a common cause for age older than 30 years. Although road accident was a common cause of injury in people younger than 20 years. For comparison between different types of accident we use ANOVA test where P-value 0.0021 i.e. P<0.05 indicates there was statistical significant association between different types of accidents. **Table 3**

TABLE 4: DISTRIBUTION OF ETIOLOGICAL FACTOR

SITE	No. of Patient	%
Maxilla	110	69
Mandible	50	31
Total	160	100

Hypothesis:

H0 : Both maxilla and mandible were not significantly associated at 95% level of Significance if ($p > 0.05$)

H1 : Both maxilla and mandible were not significantly associated at 95% level of Significance if ($p > 0.05$)

Table5: Association between Etiological Factors with (Maxilla and Mandible)

Type of Accident	Maxilla	Mandible	Chi-square Value	P-value
Road Accident	76	34	8.218	0.0417
Fall	19	10		
Violence	9	0		
Industrial Accident	6	6		

Here chi-square value was 8.218 and p-value was 0.0417 i.e. P>0.05 it means alternative hypothesis is accepted. Hence we can say that there was statistical association between maxilla and mandible

DISCUSSION: This is a report that compares the various causes of the injuries and distribution of maxillofacial trauma with the most common cause being the road traffic accidents. A study by world health organisation on road traffic injuries suggests that wearing helmets decrease about 70% risk of injury and 40% risk of mortality.5 This stresses the need for compulsory legislation for helmet use with faceguards for cyclist and motorcyclist. According to Thompson DC et al, lower face remains unprotected even with the use of helmets.6 Cycling is a common and cost effective form of transportation for lower classes and school aged children. Motorcyclist and cyclist are at a disadvantage by the lack of available safety equipments like seat belts and air bags. The only safety measure that could be implemented is helmet and good condition of roads for two wheelers. Gassner et al, suggested more dentoalveolar injuries in cyclist and mid face fractures in bikers.7 . It was noted that accidents were mostly observed with the age group ranging from 20 to 40 and were seen most commonly in males. Illingworth et al, reported that most of all the patients showed some degree of trauma to the head and face and accidents with cycles and motorcycles were frequent cause of maxillofacial trauma.8 Oginni et al, showed that mid face injuries with soft tissue abrasion were more common.9 Harrison MG et al, suggested that using face-bar in helmet design can prevent mid face fractures.10 Injury to maxilla is more as compared to mandible in fall cases. Reports by lindqvist C et al, suggests that chin area is not efficiently protected by most of the helmets.11 This indicates the effective design of helmets should be made available. Only the industrial accident shows almost equal involvement of maxilla and mandible. While in violence it shows no injury to mandible within the tested samples. Road accident shows almost twice the injury to maxilla as compared to mandible. Lee and chou et al reported a male to female ratio of 3:1 in accidents and 76% were below 30 years of age.12 Men are more prone to accidents as outdoor and long distance travelling mostly includes male category. Another study published by ramli at el, reported 113 cases of motorcycle accidents including 106 male and 7 female patients respectively with an average age of 28.5 years.13 According to MC dermott et al, the effectiveness of bicycle helmets was studied, and their use decreased head injuries by 39% and the risk of facial injury by 28%.14 Reports by brandt MM et al, suggested only 33% used helmets out of maxillofacial injuries.15 The high incidence of male patients is not surprising because male individuals engage in risky behaviour more than female. According to Thompson MJ et al, factors such as hazardous conditions or mechanical failures can play a role in causes accidents.16 Good strategies and with the participation of both government and individual, we can easily overcome with this potential problem. For two-wheelers fixing the chinstrap of the helmet should be made compulsory. Good quality helmets should be made available. Although the present data cannot pinpoint the errors, common sense indicates that imprudent behaviour and a willingness to ignore the rules are the main reason for accidents.

CONCLUSION: This study concludes that the incidence of maxillofacial trauma due to road traffic accidents was more than fall, violence and industrial accidents noted at Krishna Institute of Medical Sciences, Karad, for the given time period of two years. Further it was noted that maxillary region was more affected than the other maxillofacial region. The above study suggests that use of proper protection of maxillofacial region is mandatory for preventing maxillofacial trauma.

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