

A Study on Sociodemographic Profile and Comparison of Pattern of Facial Injuries in Victims of Two Wheeler Road Traffic Accident with and without usage of Helmet in South Chennai

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Abstract

Background and Aim: Road traffic accident a cause of unnatural death is the third major preventable one amongst all death. Maxillofacial trauma is often encountered in accidents either as isolated injury or along with several injuries to the head, neck, chest and abdomen.

Materials and Method: A retrospective observational study was conducted in the Department of Forensic Medicine and Toxicology at Saveetha Medical College between January 2018 to December 2018 with an objective to analyse the Sociodemographic profile and compare the pattern of facial injuries in Road Traffic Accident cases with and without helmet usage.

Results: Out of total 2438 RTA cases analysed, 1523 were two wheeler RTAs (62.5%). Amongst 1523 cases, 173 (11.36%) had facial injuries. The peak incidence of maxillofacial injuries (42.7%) was observed in the age group of 21 to 30 years, with males outnumbering females in all age groups. The maximum number of trauma cases was reported in late evening hours. Maximum RTAs occurred in the months of winter usually in the semi urban areas. The injuries were sustained mostly due to frontal impact. Injuries to lip particularly laceration injuries were most frequent. Injuries occurred most commonly to the riders. The injuries were seen more amongst the non helmet usage cases amounting to 68% of cases.

Conclusion: The changing trend of etiology of maxillofacial injuries due to Road traffic Accidents in Chennai necessitates strict traffic legislation and better health care facilities with respect to maxillofacial units.

Keywords: Accident, Etiology, Demographic profile, maxillofacial trauma, helmet.

Introduction

India accounts for about 10 percent of road accident fatalities worldwide, 85% of all road accident deaths

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occurring in developing countries, and nearly half in the Asia-Pacific region. [1] The human face often constitute the first point of contact in various two wheeler RTAs. Maxillofacial trauma is thus a common presentation in accident and emergency department of hospitals either as an isolated injury or as a part of multiple injuries to the head, neck, chest and abdomen. These injuries may cause serious physical, psychological and emotional distress. The etiology of maxillofacial trauma varies from one geographical region to another and event within the same region depending on the prevailing socio-economic, cultural and environmental factors. The severity of injury may vary from simple soft

tissues lacerations to more complicated fractures of maxillofacial skeleton. [2] Injuries due to RTA of two wheelers depend upon a number of factors such as human errors, riders fatigue, poor traffic sense, mechanical fault of vehicle, speeding and overtaking, violation of traffic rules, poor road conditions, etc. Clearer insight into etiologic, epidemiologic and demographic factors related to maxillofacial trauma would help prepare more reliable preventive and health care in such cases. [3]

Method

This study was conducted in department of forensic medicine and toxicology in Saveetha Medical Hospital after obtaining clearance from the Institutional Ethics Committee(SMC/IEC/2018/11/559). The basis of the study was data obtained from RTA case record sheets of 173 two wheeler RTA cases who reported to the hospital emergency during the period from January 1st 2018 to December 31st 2018. The case sheets were thoroughly scrutinized and various Socio-demographic profile and maxillofacial injury profile were recorded in specially designed proformas. The data were analysed and interpreted with appropriate statistical tests using SPSS software.

Results

Out of total 2438 RTA cases analysed, 1023 were two wheeler RTAs (41.96%). Amongst 1023 cases, 173 (16.91%) had facial injuries. Out of 173 cases with facial injuries, 117 cases (68%) were found not to be using any helmet. More than 3/4th of maxillofacial injuries cases belonged to the riders (142, 82.08%) and pillion riders comprised (31, 17.92%) only. (Fig 1)

The age of patients was found to be between 4 to 79 years. Amongst these, more than half of the cases (60.12%) were in the second or third decade of their life, with peak incidence (43.36%) of maxillofacial trauma observed in the age group of 21-30 years. The least number of accident observed between 71-80

years (0.58%). A total of 107 males (61.85%) and 66 females (38.15%) were found in the study. The males outnumbered females in each age group with maximum sex ratio being in the age group of 11-20 Years (2.13:1). (Table-1)

The greatest incidence (42.77%) of maxillofacial trauma was observed in the evening hours between 6pm to 12am followed by 12pm to 6pm (32.37%). The least number of cases (10.99%) were reported between 12am to 6am. Majority of the cases were found to be in winter (53.17%) followed by monsoon (27.75%).

Majority of RTA cases (22.0%) comprised of unemployed, followed by semi-professional, professional, semiskilled, unskilled, clerical and the least number of RTA cases (4.62%) comprised of skilled workers. 26.01% of the cases belonged to lower class followed closely by upper middle class comprising of 21.97% of the cases.

The maximum incidence (70.52%) of maxillofacial trauma was observed in semi urban areas, followed by rural and the least incidence (12.13%) observed in urban areas. (Table-2)

About 1/3rd of the maxillofacial injuries were reported due to skid and fall followed by the impact with an offending vehicle. (Table-3) In 63.58% of maxillofacial trauma reported, the collision was from the front direction followed by left and right impact.

The greatest incidence of maxillofacial trauma was observed as laceration (28.32%) followed by abrasion and the least observed injuries were facial bone fractures (21.96%)(Table-4)

Majority of maxillofacial injuries in both cases of helmet and non helmet users were reported in lips(62.43%), followed by nose, eye and jaw, chin and the least were reported in cheek and maxilla(2.31%). (Table-2)

Table-1: Age and Sex Distribution

Age	Sex		Total(%)	Sex Ratio
	Male	Female		
1-10yrs	4	2	6 (3.47%)	2:1
11-20yrs	17	8	25(14.45%)	2.13:1
21-30yrs	43	32	75(43.36%)	1.34:1
31-40yrs	19	10	29(16.76%)	1.9:1
41-50yrs	15	9	24(13.87%)	1.67:1
51-60yrs	5	3	8(4.62%)	1.67:1
61-70yrs	3	2	5(2.89%)	1.5:1
71-80yrs	1	0	1(0.58%)	-
Total	107 (61.85%)	66 (38.15%)	173(100%)	1.62:1

Table 2: Profile of RTA cases with facial injury (N=173)

Characteristics	No. of Cases	(%)	
TIME OF ACCIDENT	12:01AM-06:00AM	19	10.99%
	06:01AM-12:00PM	24	13.87%
	12:01PM-06:00PM	56	32.36%
	06:01PM-12:00AM	74	42.78%
SEASON	SUMMER	33	19.08%
	MONSOON	48	27.75%
	WINTER	92	53.17%
PLACE OF RTAs	URBAN	21	12.13%
	SEMIURBAN	122	70.52%
	RURAL	30	17.35%
SOCIO ECONOMIC STATUS	UPPER CLASS	33	19.07%
	UPPER MIDDLE CLASS	38	21.97%
	LOWER MIDDLE CLASS	35	20.23%
	UPPER LOWER CLASS	22	12.72%
	LOWER CLASS	45	26.01%
CRASH DIRECTION	FRONT	110	63.58%
	BEHIND	05	2.89%
	RIGHT	26	15.03%
	LEFT	32	18.50%
AREA OF IMPACT	LIPS	108	62.43%
	EYE	14	8.09%
	CHIN	8	4.62%
	CHEEK	6	3.47%
	NOSE	26	15.03%
	MAXILLA	4	2.31%
	JAW	7	4.05%

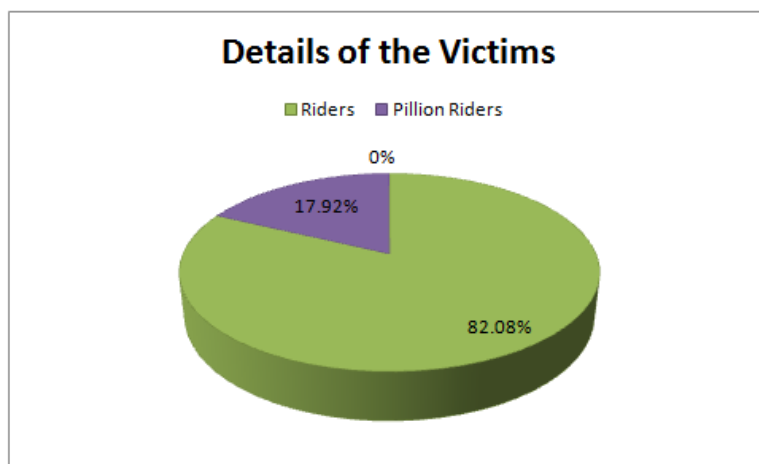


Fig 1: Details of the Victims

Table 3: Type Of Offending Vehicle:

Type Of Offending Vehicle	Total Numbers	Percentage
Motorbikes	56	32.38%
Three Wheelers	6	3.47%
Four Wheelers	19	10.98%
Bicycle	8	4.62%
Lorry	5	2.89%
Skid And Fall	61	35.26%
No Details Available	18	10.40%

Table 4: Injury Pattern With Respect To Helmet And Non Helmet Usage:

Type	Helmet Usage	Non Helmet Usage	Total Numbers
Abrasion	16	31	47
Contusion	11	28	39
Laceration	17	32	49
Fracture Of Facial Bones	12	26	38

Discussion

Considerable variation has been reported in profile of facial injuries with respect to geographical location, socio economic status and cultural background.

The pattern of age distribution in maxillofacial trauma demonstrated people of all ages were affected, the peak incidence was however observed in the age group 21-30 years followed by that between 31-40Years .The second and third decade is possibly the most active period of life where people tend to remain outdoors to explore their means of livelihood and are thus more

susceptible to vehicular accidents and falls. Individuals in extremes of life were found to be least affected and most of the injuries (78.61%) were observed in persons of working age group (21-60 Years).

The gender distribution revealed male preponderance in all age groups as has been reported in other studies. The lower socioeconomic group, which constitutes bulk of patients reporting to this particular hospital, men are often the primary bread winners of the family and tend to remain outdoors for a large period of time, thus making them susceptible to trauma in general and

maxillofacial trauma in particular. All so females drive less frequently and are thus less likely to be involved in vehicular accidents especially related to alcohol consumption. [4, 5]

The greatest incidence (42.77%) of maxillofacial trauma following RTA was observed in the evening hours between 6pm to 12am and it was followed by 12pm to 6pm. This finding accordance with those of Veerasha et al and may be attributed to sustainable increasing in traffic after the office hours, when people are returning home and to a tendency to consume alcohol in the evenings. [4]

The most common type of maxillofacial road traffic injury was found to be in semi urban areas (70.52%). Due to heavy congestion and traffic. This will lead to stress and lack of concentration result in accident.

Two factors have been consistently associated with facial injury namely alcohol and unemployment . Unemployment and the associated frustration and rage, particularly in youth of lower socio economic group drives them to take hasty decisions. In developing country, such as ours, RTA is generally believed to be the most common cause of facial trauma [6]. This is in consistency with our findings of cases been noticed more in the lower socioeconomic strata [7,8].

The most common type of maxillofacial injury was found to be soft tissue trauma. This finding is in accordance with that of Gassner et al [9], who demonstrated a very high frequency of soft tissue injuries in the comprehensive review of Cranio-maxillofacial trauma and also with those of Le et al [10], who reported that soft tissue injuries were the most common type of injuries: Facial Laceration was the most frequent type of soft tissue injury than abrasion and contusion.

The most common type of maxillofacial trauma subsequent to vehicular accident were reported from skid and fall due to lack of control during riding fast, overtaking and also due to consumption of alcohol, followed by hit and fall by opposite vehicle and the least incidence was observed as hit and fall by dog.

The most common type of maxillofacial trauma were reported for riders as they were about likely to have been involved in a loss of control crash or a collision with another motor vehicle, in comparison with the pillion riders. Possibly, the presence of pillion riders lessen the risk of loss of control and crashes by reducing risk taking or drowsiness [10].

Even though the use of helmets has been made mandatory for the rider and the pillion rider also, the strict adherence to the law is yet to be seen. The type of helmets worn also plays a role in the etiology of trauma. Full-faced helmets protect the rider from brutal injuries when compared to open-face helmets. In our study, non helmet wearers were found to be more than twice likely to have injuries than the helmet wearers. This is in concurrence with another study done in South India that reported four times more likely chance to sustain head injuries amongst victims not wearing helmets. [11]

Conclusion

The maxillofacial injuries is proved to be due to traumatic injuries, especially from Road injuries. Provision of well lit pedestrian friendly trail, roads and streets, isolation of heavy and light motor vehicles and strict governance by traffic personnel is must to minimize the physical, psychological and emotional distress associated with trauma in general and maxillofacial trauma in particular. The high incidence of maxillofacial trauma also has implication for the establishment of dedicated maxillofacial units in districts and tertiary care hospital. The effectiveness of various preventive and educational programs with respect to maxillofacial trauma may be publicized through continuing audit of pattern of such trauma in different parts of world.

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