Maxillofacial Trauma and Alcohol Abuse: A Descriptive Cross Sectional Study

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Abstract

Background: To assess the relationship of alcohol abuse in maxillofacial trauma in a tertiary care hospital, Puducherry, South India.

Materials and Method: A descriptive cross sectional study was done by retrieving the patient's inpatient and operative records from the year 2011 to 2018. The parameters that were assessed includes association of the alcohol during injury, etiology, demographic data and the type of fracture.

Conclusion: The descriptive analysis of the facial fractures in Puducherry, INDIA provides an insight in to type of facial fractures and their etiology recorded in patients with alcohol abuse during injury. These kinds of studies in the particular geographical region are important in developing prevention strategies.

Keywords: *Alcohol abuse, maxillofacial, fracture, mandible, zygoma.*

Introduction

Alcohol consumption is an increasing social trend nowadays in any part of India. Over indulgence of alcohol and injuries under the influence of alcohol is commonly encountered in maxillofacial trauma management settings. Face is the most targeted part of the body for all interpersonal violence throughout the world. Interpersonal violence and alcohol consumption has an inseparable correlation. Roads should have made safer for all citizens because a large percentage of population–children, pedestrians, cyclists, motorcyclists, and the elderly are most vulnerable[1]. Indian researches on road safety measures claim that alcohol consumption is a threat to our civilization leading to premature life loss and downstream ones economic status. This must be prevented by a holistic approach on this firing issue[2]. According to WHO, RTA accounts for 9 th position of DALY (*disability-adjusted life year)* loss but in 2020 it can reach to third position[3,4,5]. With the present scenario of alcohol consumption due to increase social activities in young adults, we conducted a descriptive cross sectional study on the influence of alcohol and the correlation with maxillofacial trauma patterns in Puducherry, south India.

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Materials and Method

The descriptive study was carried out for the period of 7 years (2011-2018) at the Department of Dentistry,

IGMC & RI after getting ethical committee clearance (IEC no: 17/163/IEC/PP/2018).In patient records were retrieved and data were entered in a structured proforma. Data retrieved were analysed using SPSS SOFTWARE - 24. The compiled data were analysed using descriptive and inferential statistics. The parameters that were assessed include association of the alcohol during injury, etiology, demographic data and the type of fracture.

Inclusion Criteria: Maxillofacial trauma victims of both the genders in the age group of 18 to 65 years were included in the study.

Maxillofacial fractures that had occurred when patient was under the influence of alcohol (H/O alcohol consumption within six hours before the trauma)

Patients with isolated maxillofacial fractures

Patients who underwent surgery for maxillofacial fractures

RTA involving -motorised/non motorised two wheelers (both as riders and pillion riders),

- Light motor vehicles/heavy motor vehicles
- and pedestrians vs. any motorised vehicle

Self fall under the influence of alcohol

Interpersonal assault

Exclusion Criteria:

Pregnant females

Unconscious patients

Poly trauma

Pan facial fractures

Maxillofacial fractures treated by conservative method

Soft tissue injuries without fractures

Isolated Dentoalveolar fractures

The study population of 100 (N=100) samples fulfilled the above criteria and were included in the study.

Results

Out of 163 patients operated for 7 years (2011-2018) in the Department of Dentistry,100 patients suffered maxillofacial fracture under the influence of alcohol (N=100).

Table 1: Frequencies and proportions of parameters assessed.

Parameters	Group	Frequency	Percent
Age	20 and below	9	9.0
	21-30	33	33.0
	31-40	24	24.0
	41-50	24	24.0
	51-60	8	8.0
	>60	2	2.0
Gender	Male	94	94.0
	Female	6	6.0
Etiology	Assault	14	14.0
	RTA	60	60.0
	Self fall	26	26.0
Type of Fracture	Angle Mandible	22	22.0
	Body Mandible	12	12.0
	Condyle Mandible	14	14.0
	Parasymphysis Mandible	8	8.0
	Symphysis Mandible	4	4.0
	Lefort I Maxilla	1	1.0
	Lefort II Maxilla	2	2.0
	Lefort III Maxilla	1	1.0
	Zygoma	10	10.0
	Zygomatic Arch	26	26.0

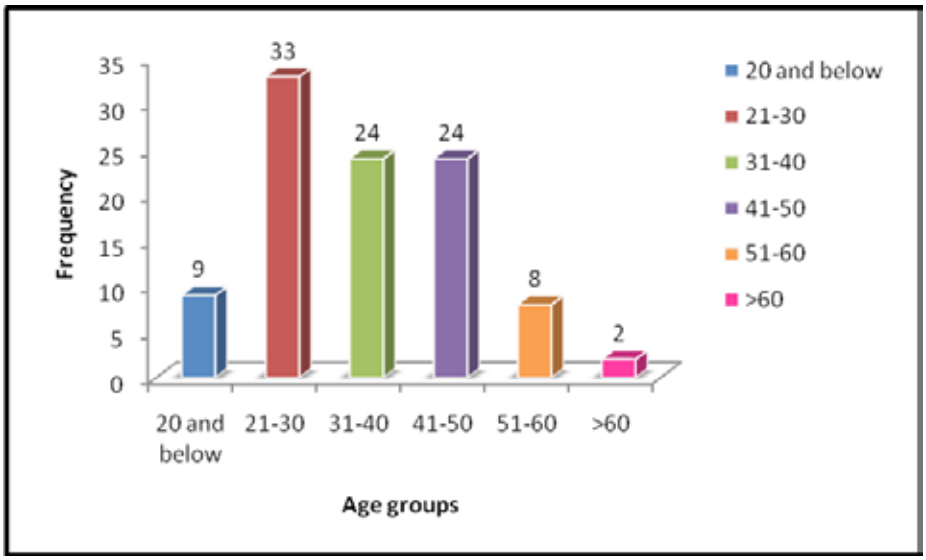

Fig:1 Frequency –age group.

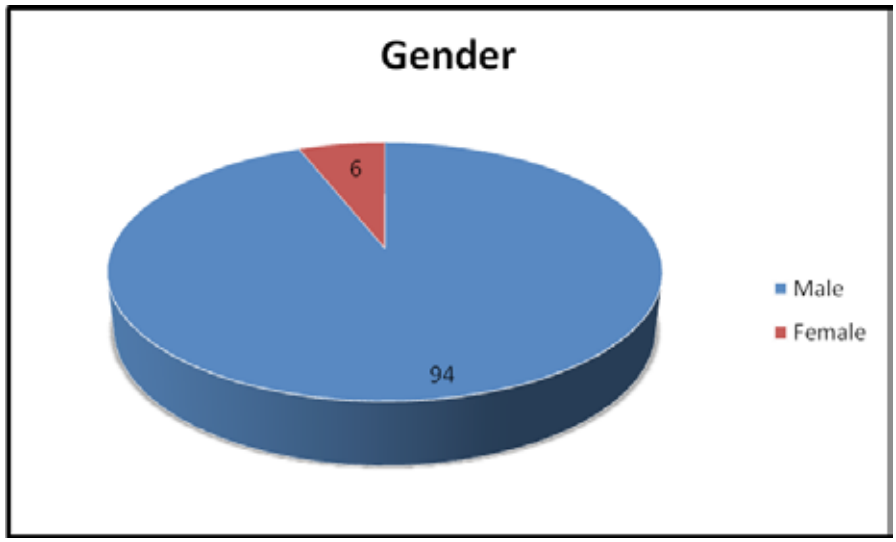

Fig:2 Gender distribution

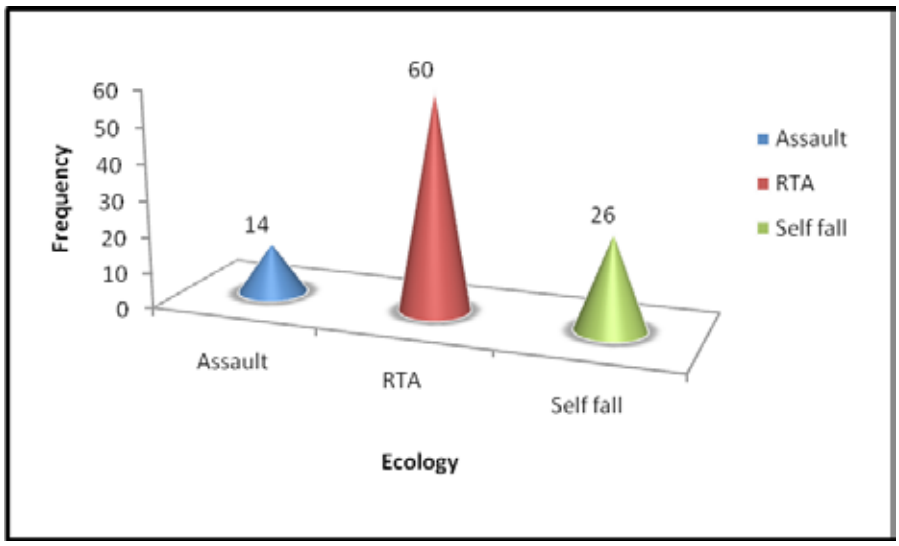

Fig :3 Frequency-Etiology

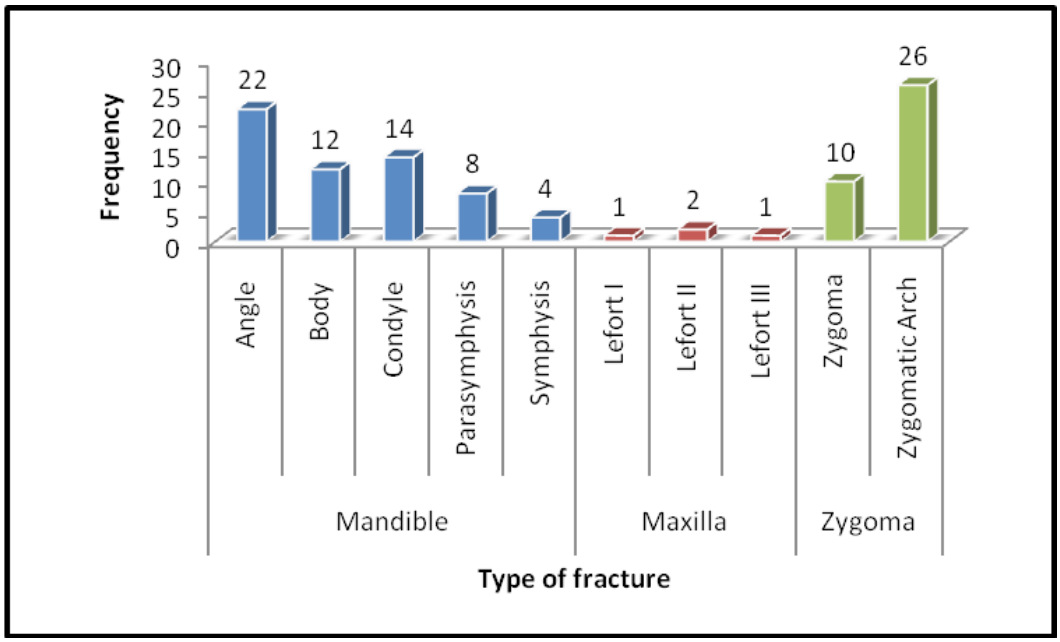

Fig :4 Frequency- type of fracture

Table 2: Association between etiology and the age group

Etiology	Age Group												Total		Chi Square	P Value
	≤20		21-30		31-40		41-50		51-60		>60					
	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Assault	4	44.4	3	9.1	2	8.3	5	20.8	0	0.0	0	0.0	14	14.0	13.036	0.222
RTA	4	44.4	19	57.6	16	66.7	14	58.3	5	62.5	2	100.0	60	60.0		
Self fall	1	11.1	11	33.3	6	25.0	5	20.8	3	37.5	0	0.0	26	26.0		

Table 3: Distribution of fracture in different age groups

Etiology	Age Group												Total		Chi Square	P Value
	≤20		21-30		31-40		41-50		51-60		>60					
	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Angle Mandible	3	33.3	8	24.2	5	20.8	5	20.8	1	12.5	0	0.0	22	22.0	66.707	0.019
Body Mandible	1	11.1	4	12.1	4	16.7	2	8.3	1	12.5	0	0.0	12	12.0		
Condyle Mandible	3	33.3	4	12.1	2	8.3	4	16.7	1	12.5	0	0.0	14	14.0		
Para symphysis Mandible	0	0.0	6	18.2	1	4.2	0	0.0	0	0.0	1	50.0	8	8.0		
Symphysis Mandible	0	0.0	0	0.0	0	0.0	3	12.5	0	0.0	1	50.0	4	4.0		
Lefort I Maxilla	1	11.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	1.0		
Lefort II Maxilla	0	0.0	0	0.0	0	0.0	1	4.2	1	12.5	0	0.0	2	2.0		
Lefort III Maxilla	0	0.0	1	3.0	0	0.0	0	0.0	0	0.0	0	0.0	1	1.0		
Zygoma	1	11.1	2	6.1	2	8.3	5	20.8	0	0.0	0	0.0	10	10.0		
Zygomatic arch	0	0.0	8	24.2	10	41.7	4	16.7	4	50.0	0	0.0	26	26.0		

Table 4: Association between type of fracture and etiology

Type of fracture	Etiology						Total		Chi Square	P Value
	Assault		RTA		Self fall					
	N	%	N	%	N	%	N	%		
Angle Mandible	8	57.1	11	18.3	3	11.5	22	22.0	29.877	0.039
Body Mandible	2	14.3	5	8.3	5	19.2	12	12.0		
Condyle Mandible	0	0.0	12	20.0	2	7.7	14	14.0		
Parasymphysis Mandible	1	7.1	6	10.0	1	3.8	8	8.0		
Symphysis Mandible	0	0.0	3	5.0	1	3.8	4	4.0		
Lefort I Maxilla	0	0.0	0	0.0	1	3.8	1	1.0		
Lefort II Maxilla	0	0.0	2	3.3	0	0.0	2	2.0		
Lefort III Maxilla	0	0.0	1	1.7	0	0.0	1	1.0		
Zygoma	2	14.3	7	11.7	1	3.8	10	10.0		
Zygomatic Arch	1	7.1	13	21.7	12	46.2	26	26.0		

Frequencies of different parameters assessed (table -1) shows males at the age group of 21 to 30 years suffered maxillofacial injuries under the influence of alcohol. RTA was the most common etiology and Mandibular fracture is the commonest type of fracture encountered.

On assessment of age distribution (fig-1)it reveals that the most vulnerable age group is 21 to 30 years followed by 31 to 40 yrs and 41 to 50 years with equal frequency. Males (94%) suffered maxillofacial trauma under the influence of alcohol in a larger proportion compared to females (fig-2). RTA is the most common etiology followed by self fall and then assault (fig-3).

On assessment of type of fracture (fig-4), the most common fracture encountered were fracture Mandible (symphysis,parasymphysis,angle,body,ramus and condyle of the mandible). Mandibular fracture (60%) was followed by fracture zygoma (36%) (zygomatico maxillary complex and the zygomatic arch). In mandibular fracture the common subtype encountered was angle of the mandible followed by mandibular condyle.

On analysis of the association between the parameters such as age and the etiology of trauma under the influence of alcohol (table-2), the most vulnerable age group being 21 to 30 years and they succumbed to RTA was elicited.

Association between the commonest types of fracture in the vulnerable age group of 21 to 30 years (table-3) revealed that this particular age group had fracture Mandible more commonly than fracture Zygoma.

Further, the association between the etiology and the type of fracture (table-4) revealed that most of the RTA resulted in fracture Mandible followed by fracture Zygoma.

Discussion:

Alcohol drinking is a severe socio economic issue in India. Consumption of alcohol small amounts every day, drinking alcohol 6 hrs before driving, binge drinking everyday or occasionally in a week all leads to RTA[6]. RTA is the major etiology of maxillofacial trauma in developing countries like India[7]. Alcohol abuse and its relationship to trauma had reached massive proportions[8].

Alcohol with blood levels 0.04 g/dl can hinder in patients decision making and does not make them to realise the foreseen danger, 0.05g/dl increases the risk by 1.83% and affects treatment and prognosis in RTA management[9,10,11]. In India alcohol breath testing is done randomly on susceptible drivers in police checkpoints. Alcohol breathe testing and alcohol blood testing is done on crash drivers in the hospitals but a clear data on this is lacking. Thailand is the only south East Asian country to enforce special blood alcohol concentration limit [12].

Alcohol interferes with neuro transmission and the function of brain receptors[13]. This decrease in function makes people fearless and less bothered about legal or

health implications [14] .Alcohol consumption reduces cognitive behaviour and reduces a person's problem solving ability in a conflicting situation. Further it causes increase in aggressiveness and increases emotional responses[15-18].Adeyoma et al[19] recorded that 90 % of fatalities in developing countries were because of RTA under alcohol abuse.

Use of restraints such as helmets and seat belts is of paramount importance in preventing maxillofacial trauma. Bekal et al[20] recorded that the incidence of maxillofacial trauma increased due to non utilisation of restraining devices in and around Bengaluru, India. Helmets are not gender specific. In India a common misconception is that full facial helmets are meant for males and semi helmets are meant for females. This renders most of the females vulnerable to facial fractures. Although use of restraints such as helmets and seat belts are mandatory in any part of India, the compliance is less. Bekal et al[20] and Pandey et al[21] recorded maxillo facial fractures in RTA because of not wearing helmets or not wearing seat belts.

In our study males were commonly affected than females which are in concurrence with most of the studies published from India[22,23]. Puducherry city, capital of the union territory is a former French colony and a major tourist attraction. The city attracts lots of tourists and workers from adjoining rural area. The main modes of transportation are two wheelers and hence the recorded maxillofacial trauma was high in males as males are the earning members in developing country like India. We recorded maxillofacial trauma in six females who were pillion riders without use of helmets or wearing semi helmets under the influence of alcohol.

Mandible is the most common fracture encountered in this region (60%). This can be explained by the fact that most of the injuries are due to RTA involving motorised two wheelers without the use of helmets. The next common type of fracture being zygoma and zygomatic arch (36%). The type of fractures recorded were similar to the study recorded by Kapoor et al[24].

Conclusion

The descriptive study, maxillofacial trauma under alcohol abuse clearly reveals the association of the trauma under the influence of alcohol in and around Puducherry. Use of restraining devices, proper maintenance of faulty roads, rehabilitation of drunk and drive crash drivers to prevent repeated injury are mandatory.

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