Global Trends and Changes in Alcohol-Fuelled Facial Fractures: A Review Article

Dr. Roshan Cherian Paramesh

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Abstract

cultural settings. However, excessive intake can impair personal judgement and can result in injury to self or others. Maxillofacial injury as a result of alcohol overindulgence is not only of medical concern but is also an alarming social issue. Throughout the world, over the past 2 to 3 decades there has been an increase in incidence of facial fractures due to alcohol -induced Interpersonal violence (IPV) and a decrease in the proportion o f fractures resulting from drunk driving. Constant epidemiological assessments are imperative to identify aetiology, new trends and governing factors to strategize preventive steps and administer effective treatment for these injuries.

Index terms— alcohol, m axillofacial trauma, fracture, injury, inter personal violence (IPV), assault, road traffic accidents (RTA), au

1 I. Introduction

alf of all alcohol-related deaths globally are the result of an injury. (1) Injuries can be categorised into Unintentional Injuries including Road Traffic Accidents (RTA); and Intentional which is caused by deliberate acts of Inter Personal Violence (IPV). The face being the most revealing and exposed part of the body, it is also the most unprotected. (2) This accounts for the high incidence of maxillofacial injuries following a trauma.

RTA today is the leading cause of death for those aged between 15-29 globally. (3) Males are at higher risk due to an active social life, their indulgence in sports like boxing, football, motor racing. Nowadays an increasing proportion of women are also reported to suffer from maxillofacial trauma. This can be attributed to their evolving social life and their increasing participation in all sports activities. (4) RTA is one of the main etiologic factors in maxillofacial injuries. (5)(6)(7)(8)(9)(10) This is especially true in developing countries where road conditions and traffic orchestration such as traffic lights at crossroads are inadequate. This problem is further amplified by factors such as public's poor road safety awareness and non-compliance to the use of safety devices like helmets and seatbelts. (11) Driving Under Influence (DUI) further increases the likelihood of Road Traffic Accidents (RTA) due to diminished reflexes, over speeding and disregard for safety measures. (4) In developed countries, Interpersonal Violence has replaced Road Traffic Accidents as chief causative factor in alcohol induced trauma. (12)(13)(14) This escalation of violence in today's society and the resultant increase in alcohol-related IPV seems to be a result of several social factors and economic strain like poverty, unemployment and low personal income. (2) Alcohol-induced IPV primarily results in trauma to the face. It has also been suggested that the chief motive of the attacker in injuring the face is to cause a blow to the victim's confidence and self-esteem. (2) All over the world, alcohol related IPV has widespread ramifications. It affects the physical, social and psychological health of the victims, damages their relationship with friends and family and increases level of fear and uneasiness within the community. The burden of alcohol related violence on health services and the government is also immense.

The aim of this study is to evaluate the changing trend in alcohol induced trauma, its significance in maxillofacial surgery and improvisation in its management. Periodic review of such data can further heighten public awareness of the ill-effects of alcohol abuse and also help develop effective strategies to put a check on its progression.

2 II. Discussion

Various studies show that interpersonal violence, falls and Road Traffic Accidents are the most common causes of maxillofacial fractures in adults. (15) Buffano et al., in 2015 conducted a multicentre prospective study in collaboration with several Maxillofacial centres throughout Europe. They found that IPV is the most common cause of maxillofacial trauma (39%) with incidence values ranging from 15.4% to 60.8% at various centres across Europe. They also concluded that alcohol plays a crucial role in IPV-related facial fractures. (2) Alcohol intoxication is a major contributing factor in Interpersonal violence, as it is a central nervous system depressant. This results in decreased inhibition, poor judgement, lack of reasoning and ultimately renders the person aggressive. On the other hand, consumption of alcohol increases the susceptibility of the person to become a victim of interpersonal violence by decreasing motor reflexes and coordination, reducing the ability to think rationally and thus decreasing one's physical ability to defend oneself or escape. (2,4,16) Shapiro et al., in 2000 found that patients who sustain facial fractures as a result of IPV are twice likely to be intoxicated as compared to RTA patients. The increasing trend of alcohol related IPV is inversely proportional to RTA caused by alcohol consumption. This can be a result of better road conditions, improvised safety measures like incorporation of airbags for driver and passenger side seats, and installation of stricter legislation prohibiting drunk driving, mandatory use of seat belts and strictly enforced speed limits. (2,15,17,18) Laverick et al., in 2008 reported the highest published correlation (72%) between alcohol use and interpersonal violence. (12) In spite of this rising trend in alcohol related IPV, many IPV related facial fractures are going unreported due to its association with unlawful activities like alcohol or drug use, acts of violence and possession of firearms. Data on alcohol abuse is very often inaccurate and extremely difficult to obtain as the patient is not necessarily the intoxicated one.

Lee at al., in 2008 conducted a retrospective study of alcohol-related maxillofacial trauma. They documented 'alcohol abuse' when the patient was reported to have consumed 2 units of alcohol within an hour of the incident. It was inferred that the quantity of alcohol consumption is more predictive in injury than the frequency of alcohol intake. A distinct change in the aetiology of alcohol induced trauma was noted between the 2 halves of the study period. Alcohol related IPV was found to be on the rise in the latter half as compared to alcohol-induced RTA in the former half. It was noted that isolated zygoma fracture was the common pattern of fracture seen after IPV. This could be attributed to the prominent position of the cheek within the facial skeleton and the tendency of the attacker to target prominent and accessible areas. (19,20) Shapiro et al., in 2000 found a clear association between alcohol use and compliance with use of protective headgear. (21) It was found that non-helmeted motorcyclists with facial fractures were 40 times more likely to be intoxicated as compared to helmeted motorcyclists. This large variance in their study could be due to the smaller sample size for helmeted motorcyclists. This evidence is also supported by another study by Nelson et al., in 1992 who reported that non-helmet users are 4 times more likely to be intoxicated at the time of injury. These studies show the vital role that alcohol plays in compliance with the use of protective headgears. (22) As compared to IPV caused facial fractures, the severity of facial trauma is much more in RTA related facial fractures. (7) IPV most frequently result in isolated facial fractures. The most common mechanism of facial fracture is by the direct contact of the fist of the attacker to the victim's face. This results in fracture of prominent facial parts, most frequently the zygoma. The presence of the mandibular 3 rd molars, curvature of trajectories in the angle region and thinner cross-sectional area relative to the adjacent segments also renders the angle region susceptible to fractures. (2) Victims of alcohol induced physical aggression usually present with isolated maxillofacial fractures thus making maxillofacial surgeons the primary health care providers to attend to such patients. (2,23) Hence, the knowledge of aetiology and pattern of IPV related maxillofacial fractures is crucial for diagnosis, treatment and prevention of the same. This knowledge can contribute towards creation of effective policies, evaluation of current health care services and development of preventive programs to reduce and eventually eliminate alcohol induced trauma.

3 III. Prevention Strategies

The Alcohol Use Disorders Identification Test (AUDIT) is a sensitive test which can be used to identify persons with hazardous patterns of alcohol overindulgence. (12) The AUDIT was developed by WHO as a screening tool to assess excessive drinking and alcohol dependence. It focuses on the patient's recent alcohol consumption and provides a foundation for intervention to help overindulgent drinkers reduce or stop alcohol use and hence, avoid the sequence of alcohol related injury. The use of AUDIT and its effectiveness has been demonstrated and proven within the speciality of maxillofacial surgery. It is a brief questionnaire with 10 questions, each question having a set of gradated response. A brief intervention is offered by the maxillofacial surgeon based on the score obtained. Score less than 8 did not require intervention. A patient who scored between 8 and 15 was offered simple advice on the hazards of drinking and its effects. A patient scoring between 16 to 20 was provided brief counselling and continuously monitored over a period of time. A score of beyond 20 required referrals to specialist for diagnostic evaluation and treatment. The treatment of alcohol-related trauma and violence begins with the health care providers. Steps should be taken at the time of its presentation at health centres to curb its progression. (24) Most alcohol related assaults take place in and around drinking establishments like pubs and nightclubs. (13,25) With an objective to decrease alcoholfuelled violence the Government of Newcastle, a city in Australia; introduced the "Sydney Lockout Laws" in 2014. The law required 1.30 am lockouts and 3 am last drinks; wherein the bars in the city would not permit any new customers after 1.30am and would not serve drinks past 3 am. Hoffman et al., in 2017 found that the rate of maxillofacial assaults decreased drastically at the rate of 21% every year

after the introduction of this legislation. **??**26) Provision of easily accessible late-night transport, improved street lighting and installation of CCTV cameras near drinking venues can further safeguard against violence breaking out near such establishments. All national governments should take appropriate steps like increasing taxation on alcohol, strict enforcement of minimum legal age for purchase of alcohol and levying heavy fines for alcohol related disorderly conduct in public places to further reduce the occurrence of alcohol-fuelled Interpersonal Violence.

Instilling values at an early age can help children grow into responsible adults. The British Association of Oral and Maxillofacial Surgeons in 1998 conducted an educational program aptly called "Save your Face" targeting 13 to 14-year-old high school students. 200 Maxillofacial Surgeons visited schools to educate the targeted age group on the ill effects of alcohol overindulgence and resulting maxillofacial injuries. (13) Continued education of the society on the importance of preventive strategies is the cheapest and the only long-term solution to reduce economic, physical, psychological and social burden of alcohol induced trauma.

4 IV. Conclusion

Trauma and Violence are amongst the arresting social issues in the world today. As well as causing millions of fatalities throughout the world annually, nonfatal injuries leave hundreds of millions incapacitated physically and psychologically. The association of maxillofacial trauma and alcohol consumption is undisputable. Some countries around the world have recognised that, alcohol-related trauma and violence are preventable public health issues and have advocated preventive strategies to decrease morbidity caused by it. Unfortunately, in many countries, especially developing countries, the gravity of the situation has not been understood. Steps must be taken now to alter this situation; and the international community, national governing bodies, health institutions and society in general must work conjointly to create a global environment that is safe from the risk of alcohol related trauma.

.1 Conflict of Interest

The authors have no conflict of interest to disclose

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