EFFECTS OF SEAT BELTS USE ON THE SEVERITY OF MAXILLOFACIAL INJURIES IN KHYBER PAKHTUNKHAWA SAMPLE

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ABSTRACT

The aim of the study was to know the effects of the seat belts on the severity and pattern of facial injuries in road traffic accidents. Sixty patients with road traffic accidents in four wheel vehicles were investigated for mild-moderate and severe facial injuries with and without seat belt usage during driving. This study was carried out in the Department of Oral and Maxillofacial Surgery, Khyber College of Dentistry, Peshawar. These patients with maxillofacial injuries and associated fractures were studied for age, gender distribution, severity of facial injuries and their association to restrained or unrestrained with seat. Among 60 patients only 12 were wearing seat belts when accidents occurred. Male were dominant and most RTA occurred in patient in 20s.

The mean age of the patient in the present study was 21.9 years SD±3.5. The age range was 6 – 50 years. The most commonly involved age group was the 3rd decade (32.25%) followed by 1st decade (25%) and 4th decade (18.25%).

Key Words: *Seat belt, road traffic accidents, facial injuries*

INTRODUCTION

Traffic accidents are among the main etiologic factors of maxillofacial injuries and accounts for 42% of all the skeletal and soft tissues injuries of the face.[1,2,3] The incidence of maxillofacial trauma arising in the front seat occupants dropped from 20.9% in the 2 years before the legislation to 5.9% in the 2 years after the legislation. [4] For the restrained driver, impact against the steering wheel is the most prevalent cause of injury and 57% of drivers, got no more serious than the facial injury.[5] The high rates of involvement of the condyle and parasymphysis in RTA-related maxillofacial trauma can be explained by the mechanism, while speeding and not wearing a seat belt, anterior–posterior-directed injury to the chin/parasymphysis region, with the forces transmitted directly to condyles, causing parasymphyseal and condylar fracture. The incidence of condyle fracture found here (31.08%).[6] Analysis of a study indicates that the odds of a belt restrained driver sustaining a fatal injury was 137% (95% CI=95%, 189%) higher when the passenger behind the driver was unbelted in comparison to a belted case.[7]

The peak age of the patients was between 18 to 25 years. The prevalent number of accidents resulting in injuries took places in spring, especially between noon and 4 pm.[8] Cut-crush injury is a transverse or an oblique laceration of the face, accompanied by a crush of the nearby structures such as orbits, nose, and maxillofacial bones, and is usually caused by striking the face against a semi-sharp margin such as a dashboard.[9]

Motor vehicle accidents tend to be the primary cause of most midface fractures and lacerations due to the face hitting the dashboard, windshield and steering wheel or the back of the front seat for passengers in the rear. Seatbelts have been shown do drastically reduce the incidence and severity of these injuries. In the United States seatbelt laws have been enacted in several states thus markedly impacting on the reduction of such trauma.[10] Risk of injury to a certain level of severity for belted car occupants show 66 % to 92% of involved persons sustain no injury. About 20% to 25 % of the involved sustain mild-moderate injury (except for abdomen, dorso lumbar column and pelvis and the most severe injuries being rare, often less than 10 %.[11]

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The aim of the study was to assess the effects of seat belts on the incidence, severity, pattern of injuries, age and gender of patient and to see the type of vehicle and status of the passenger. These injuries are not only responsible for the mortality and morbidity of large part of population but may also produce disability of the oral functions and disfigurement that may lead to severe psychosocial problems. The treatment needs a lot of money and heavy costs further deteriorates the socioeconomic conditions of the families.

METHODOLOGY

This study was carried out in the Department of the Oral and Maxillofacial Surgery, Khyber College of Dentistry, Peshawar. Sixty patients with maxillofacial injuries and associated fractures were studied. They were studied for age, gender distribution, severity of facial injuries whether they were wearing the seat belts or not when accidents occured. All patients suffered from maxillofacial injuries were included whose causative factor was road traffic accident (RTA). Only driving seat and front seat occupants were included in the study. Patients who suffered from maxillofacial injuries due to other than road traffic accidents were excluded. Patients who used bicycles motorbike animal carts were also excluded.

DATA ANALYSIS

The data were collected of the facially injured patients and with associated injuries through specially designed history sheet. The data collected were analyzed through SPSS version 16. Seatbelts use and facial injuries were cross tabulated and association between the two depended variables was calculated. Results were shown with figures and tables.

RESULTS

Results are shown in Table 1 – 4 and in Fig 1.

TABLE 1: AGE DISTRIBUTION AMONG FACIALLY INJURED PATIENTS

Age Group	N	%	Mea Age	Age Range
>0-10	15	25%	21.9	6-50
11-20	7	11.6%	years	year
21-30	23	38.33%		
30-40	8	13.33%		
41-50	7	11.66%		

TABLE 2: FREQUENCY OF SEAT BELTS USED (SBU) AND SEAT BELT NOT USED (SBNU)

SBU/SBNU	n	%
SBU	12	20.0
SBNU	48	80.0
Total	60	100.0

TABLE 3: DISTRIBUTION OF SEVERITY OF MAXILLOFACIAL INJURIES

Severity of injuries	n	%
Moderate	30	50.0
Sever	30	50.0
Total	60	100.0

TABLE 4: DISTRIBUTION OF FACIAL INJURIES AMONG THE FRONT SEAT PASSENGERS

Seat Occupants	Total injured	Moderate Injuries	Severe Injuries
Driving Seat	34 (56.66%)	11 (32%)	23 (68%)
Front Seat	26 (43.33%)	11 (42.30%)	15 (57.70%)
Total	60	22	38

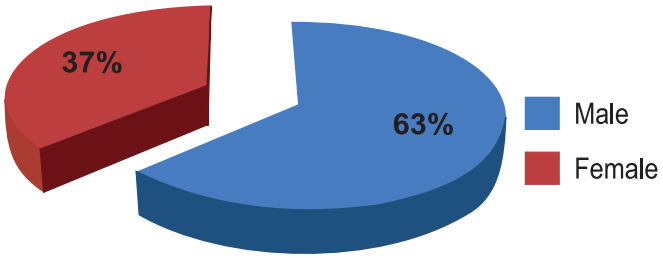

Fig 1: Gender distribution among maxillofacial injuries

DISCUSSION

In a study done by Mohammad Hussein Ansari men of 21-30 year of age sustained the most facial fractures[12]. The study of C. Michael Hill et al shows that majority of patients seen were in their third decade, the mean age being just over 25 years. These results coincides with the present study.[13] A. Olubayo Fasola et al study coincides with the present study i.e. male predominate females in maxillofacial trauma.[14] The study of C. Michael Hill[1] et al Statistical analysis shows variations from previously published papers, the male to female ratio being under 2.6:1.[12] In a study done by C.S. Perkins et al shows that since the introduction of Seat belt legislation on February 1, 1983 in the United Kingdom, the compliance with seat belt usage rose to

90-95% for all front seat occupants after the legislation. The incidence of maxillofacial trauma cases arising in the front seat occupant group of patients dropped from 20.9% (78 patients) in the 2 years before the legislation to 5.9% (18 patients) in the 2 year after the legislation. [4] In a study done by Donald F. Huelke et al restraints, lap belts, and lap shoulder belts reduce the frequency of facial injuries at all levels of severity and also of the other body regions.[15] In contrast the study done by Abbas AK et al Seatbelt syndrome is a seatbelt sign associated with lumbar spine fracture and bowel perforation caused by hyperflexion of the spine around the lap strap in sudden deceleration leading to crushing of intra-abdominal contents between the spine and the seatbelt. Fixed portions of the bowel such as proximal jejunum and distal ileum are more susceptible to injury than mobile portions.[16] In a study performed by Santos SE 31.51% of drivers were wearing seatbelts during the accidents that does not coincides with the current study where only 20% used seatbelts.[17] Similarly Maryam A. Abu Al Saud also concluded that the seat belt had a noticeable but not significant effect on the incidence of maxillofacial injuries resulting from road traffic accidents (RTAs). However, it had a significant effect on the severity of these injuries.[18] which support current study. In a moving semi truck collision, the odds for an injury were increased by 2.25 times for both semi truck drivers and sleeper berth passengers who did not use occupant safety restraints compared to who used occupant safety restraints at the time of the collision.[19]

CONCLUSION

From the present study and meta – analysis of other studies regarding seat belts usage, it is concluded that Seat belt usage positively affects the severity of facial injuries i.e. with its use, the facial injuries remain moderate. It also reduces morbidity and decreases the chances of the other body parts fractures. Although seat belts usage legislating has not considerably reduced the ratio of road traffic accidents but has reduced the severity of facial injuries.

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