

FACIAL INJURY SEVERITY SCALE SCORES AMONGST MOTORCYCLISTS: ARE THEY AS SAFE AS THEY SHOULD BE?

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ABSTRACT

The objective of this study was to determine the facial injury severity scale scores amongst motorcyclists and the level of driving safety standards being practiced. This cross sectional analytical study was carried out in inpatients of the Oral & Maxillofacial Surgery Unit of Khyber College of Dentistry, Peshawar. A custom made questionnaire gathered data regarding demographics, training received from a driving school, issuance of motorcycle driving license, duration of motorcycle driving, use of helmet and protective clothing while driving. The severity of their facial injuries were scored according to the facial injury severity scale (FISS). The Pearson chi-square test was applied to determine if a statistical relationship existed between FISS and afore mentioned variables (critical p-value = <0.05). 92.2% of the study patients did not receive training from a driving school. 81.7% of the motorcyclists were not licensed to drive. 84.3% did not use any form of protective clothing. 85.2% did not use a helmet while driving. A mean FISS score of 3.3±2.6 was noted. Age and issuance of a driving license had a statistically significant relationship with FISS (p-value = <0.05 each).

Key Words: Facial Injury Severity Scale, Maxillofacial trauma, Safety standards.

INTRODUCTION

The brunt of a maxillofacial surgeon's training, time and eventual practice revolves around the management of maxillofacial injuries. The title of "orthopedic surgeons of the face" is perhaps well deserved if not harsh at the same time given the scope of various pathologies and vast spectrum of diseases a maxillofacial surgeon can treat. What makes the management of maxillofacial trauma so challenging and rewarding at the same time is the diversity of the trauma; ranging from minor superficial lacerations and dento-alveolar trauma to complex fractures involving the entire facial skeleton

that can cause airway compromise, loss of vision and even death.^{1,2}

An audit of the inpatient records of the Oral and Maxillofacial Surgery Unit of Khyber College of Dentistry, Peshawar conducted in 2009 show that maxillofacial trauma was the leading cause of admission to the unit (36.2%), superseding dental extractions (35.9%).³ Similar statistics have been reported from Nigeria and Bangladesh, highlighting where the bulk of health resources are spent on.^{4,5} The unique characteristic of maxillofacial trauma lies in its etiology which lends itself very favorably towards prevention. Locally, the overwhelming cause is road traffic accidents as reported by several studies conducted in the other cities of the country.^{1,6,7} This has been corroborated by studies conducted elsewhere in the world.^{8,9,10} Pakistan, being a developing country, witnesses more motorcycles on the road as compared to cars due to their affordability and relatively low maintenance. This fact also translates to motorcyclists being predominantly involved in road traffic accidents.¹¹

The objective of this study was to determine the facial injury severity scale scores amongst motorcyclists and the level of driving safety standards being practiced. This study is probably the first of its kind in the region

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of Khyber Pakhtunkhwa will reveal baseline data about the severity of facial injuries amongst motorcyclists as well as their level of driving education, experience and licensing to identify areas where improvements can be made to reduce the burden of such patients on tertiary care hospitals throughout the province.

METHODOLOGY

This cross sectional analytical study was carried out on the inpatients of Oral & Maxillofacial Surgery Unit of Khyber College of Dentistry, Peshawar following approval from the Institutional Ethical Review Committee. This study was carried out over a period of 2 years. Motorcycle drivers irrespective of age and gender were included in the study. A custom made questionnaire gathered data regarding demographics, training received from a driving school, issuance of motorcycle driving license, duration of motorcycle driving, use of helmet and protective clothing while driving. The severity of their facial injuries were scored according to the facial injury severity scale (FISS)¹² whose details are given in Table 1. The FISS score was grouped into mild (FISS score 1-3), moderate (FISS score 4-7) and severe injuries (FISS score 8-15). All the accumulated data was analyzed using SPSS version 20. The Pearson chi-square test was applied to determine if a statistical relationship existed between FISS and afore mentioned variables (critical p-value = <0.05).

RESULTS

A total of 115 patients were included in the study and with complete male preponderance was noted. An age range of 18-56 years was noted with a mean age of 25.2±9.8 years. The most frequently reported age was 18 years.

The motorcyclists experienced the full range of FISS scores (range 1-15) and a mean FISS score of 3.3±2.6 was noted. A modal score of 2 was observed. Majority of the patients sustained mild facial injuries (65.2%) with only a minority suffering from severe facial injuries (8.69%), the details of the distribution are given in Table 2. 40.9% of the patients had been driving for 1-5 years whereas only a small number had been driving for less than a year (20%), the detailed distribution is given in Fig 1.

92.2% of the sample did not receive training from a driving school and 81.7% of the motorcyclists were not licensed to drive. When looking at the safety standards being practiced, we found that 84.3% did not use any form of protective clothing, whereas only 15.6% utilized all or some sort of protective clothing i.e. anti-abrasive gloves, knee pads, or conspicuous colors. Helmet use was extremely low, with 85.2% did not use a helmet while driving.

TABLE I: FACIAL INJURY SEVERITY SCALE AND ITS SCORING CRITERIA

Parameter	Finding	Points
Facial Laceration	≤10cm	0
	>10cm	1
Fracture of orbital roof or rim	Absent	0
	Present	1
Fracture into frontal sinus or bone	Absent	0
	Non displaced	1
	Displaced	5
Dentoalveolar injury of maxilla	Absent	1
	Present	2
Le Fort fracture	None	0
	Unilateral type 1	1
	Bilateral type I	2
	Unilateral type II	2
	Bilateral type II	4
	Unilateral type III	3
	Bilateral type III	6
Naso-orbital ethmoid fracture	None	0
	Present	3
Zygomaticomaxillary complex fracture	Absent	0
	Present	1
Isolated nasal fracture	Absent	0
	Present	1
Dentoalveolar injury of the mandible	Absent	0
	Present	1
Fracture of mandibular body, ramus and/or symphysis	Absent	0
	Present	2x (number)
Fracture of mandibular condyle, subcondyle or coronoid process	Absent	0
	Present	2x (number)

TABLE 2: DISTRIBUTION OF SEVERITY OF MAXILLOFACIAL INJURIES SUSTAINED BY MOTORCYCLISTS

Severity of injury	Frequency (n)	Percentage
Mild	75	65.23
Moderate	30	26.08
Severe	10	8.69
Total	115	100

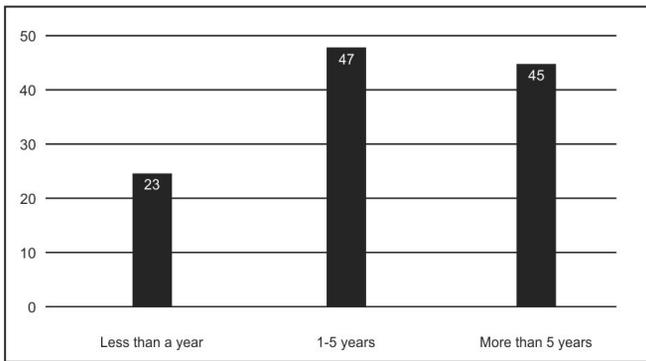


Fig 1: Distribution of the driving experience of motorcyclists with maxillofacial trauma

All the variables were stratified against the FISS score to check for a statistically significant relationship. Among these, age and issuance of a driving license had a statistically significant relationship with FISS (p-value = <0.05 each) whereas driving school training, use of a helmet and protective clothing all reported p-values greater than 0.05.

DISCUSSION

The burden of road traffic accidents (RTA’s) is increasing on a daily basis. Such is the rapid increase that RTA’s will eclipse several human diseases and establish itself as the third leading cause of death by 2020.¹³ It is already the fifth leading cause of death in Pakistan.¹⁴ Such a bold prediction must be heeded with renewed emphasis on prevention and reduction of severity of trauma. This can be accomplished in part with tougher legislation, implementation of existing laws and a new focus on the kind of education we provide to the new drivers we license to roam on the roads.

This study shows that motorcycle riders are predominantly those who belong to the 2nd decade of life (80%). The literature is also replete with data confirming that motorcycle riding is predominantly a young man’s show. A study conducted in Turkey showed that 82.2% of their sample was below 30 years of age which compares favorably with our findings.¹⁵ Another study conducted in Northwestern Tanzania reported a mean age of 29.45± 24.22 years. Their study analyzed all types of road traffic accidents, but the bulk of their sample comprised of motorcyclists (58.8%).¹⁶ This study also noted a complete male preponderance of the motorcyclists. Local studies also highlight a male predilection towards maxillofacial trauma (2.7:1 & 32:1).¹ One study conducted in Saudi Arabia also reported a very high male predilection in sustaining maxillofacial trauma (30.6:1).¹⁷ This can be attributed to the dearth of female drivers overall in our country as well as in Saudi Arabia, whom only recently allowed females to drive.

Throughout the world, new drivers are taught how to drive by driving schools that prepare them for the

driving license test. This trend is not observed as such in our study where 92.2% of the sample did not go to a driving school. This can be explained by the fact that majority of new drivers learn how to drive via their personal drivers or through close relatives who may or may not necessarily be licensed themselves or learned how to drive according to the local laws. Another worrying statistic is the extremely low number of licensed motorcyclists in our sample (18.3%). This statistic is lower than a local study conducted in Karachi where 51.2% of the study population is licensed to drive.¹⁸

Studies have established that young drivers commit more traffic violations so therefore we can say that these unlicensed drivers are apprehended by law enforcement agencies eventually but how they are able to continue driving without a license needs to be explored.¹⁹ The majority of our study sample (60.86%) had been driving for less than 5 years but coupled with the modal age of the sample (18 years) indicates they have been exposed to driving at an age where they lack the physical as well mental coordination of driving safely. Results obtained from a study conducted in Karachi showed a contrast to our data where 54.3% of their 127 patients had driving experience of more than 5 years. The impact of driving experience on FISS score could not be compared as they utilized a different scale which graded whole body injuries, and was not specific to the maxillofacial region.¹⁸

The majority of motorcyclists (85.2%) in this study did not wear a helmet while driving on the roads. Similar statistics were reported from another local study where regular helmet wearing motorcyclists comprised only 19.7% of the sample. A further 37% reported that they occasionally wore helmets.¹⁸ A Turkish study reported a much higher compliance with helmet wearing in their study population (60.9% amongst light and 76.9% amongst heavy motorcyclists). This can be attributed to the high number of licensed drivers in their sample (68.3% amongst light and 90.4% of heavy bike riders). 84.3% of this study population did not use any form of protective clothing, a pattern which is similar to the one observed in the Turkish study where the frequencies of wearing a protective jacket, gloves, shoes and pants were low amongst light motorcyclists (13.8-31.6%). However heavy bike riders showed an increased awareness regarding protective clothing and utilized it more than their aforementioned counterparts (40.4-57.7%).¹⁵

The results of this study would have been different if it were conducted at a unit where oral and maxillofacial surgeons are a part of the emergency response team and patients with high FISS scores would have been more frequently encountered. Secondly while this study was being conducted, the provincial government introduced a dedicated police force called traffic wardens

with a sole mission to maintain and regulate traffic laws throughout the province. In order to assess their impact and efficacy, this study should be repeated a few years down the road to check what sort of an impact they have had on the safety standards being practiced by motorcyclists.

CONCLUSION

Based on the study findings, it can be concluded that

- 1 A large number of motorcyclists (92.2%) are not educated on how to drive according to road safety laws.
- 2 An alarming majority (81.7%) of these motorcyclists are not licensed to drive on the roads.
- 3 There is a dearth of following basic safety standards being practiced by motorcyclists while driving.

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| 1 Fahad Qiam: | Execution and generation of idea for the study. Principal Author. |
| 2 Tariq Ahmad: | Helped in literature search and design of study. |
| 3 Sana Wazir: | Helped in data collection and methodology writing. |
| 4 Sana Mushtaq: | Helped in data collection and result writing. |
| 5 Muslim Khan: | Supervisor of the study and helped in reference citation as well as discussion writing. |