

## DEMOGRAPHIC DISTRIBUTION OF MAXILLOFACIAL FRACTURES IN AYUB TEACHING HOSPITAL: 7-YEAR REVIEW

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**Background:** This retrospective study was carried out to determine the demographic distribution of Maxillofacial Fractures (MFF) in patients reported to Maxillofacial Surgical Unit, Ayub Teaching Hospital, Abbottabad from 2001 to 2007. **Methods:** All the patients having a history of maxillofacial fractures were included according to age, gender distribution and risk factors. Isolated Nasal fractures, Naso-Orbito-Ethmoidal complex fractures and earthquake victims were excluded from this study. **Results:** This study encompassed a total numbers of 952 patients. Males were 645 (67.8%) and females were 307 (32.2%) with male to female ratio 2.1:1. Most of the fractures occurred during third decade of life. The most common risk factor was Road Traffic Accident (RTA) n= 70 (38.9%). Most of the fractures were occurred during the month of June, July and August. **Conclusion:** RTA is still the most common risk factor of maxillofacial fractures and is more common in male.

**Keywords:** Maxillofacial fractures, Facial fractures and its risk factors, Maxillofacial trauma

### INTRODUCTION

Maxillofacial region (MFR) involves soft and hard tissues forming the face extending from frontal bone superiorly to the mandible inferiorly. The face being the most exposed part of the body is particularly prone to trauma.<sup>1</sup> Trauma to the facial region cause injuries to skeleton components, dentitions as well as soft tissues of the face. Maxillofacial Trauma (MFT) is presented as isolated injuries or a part of polytrauma in emergency department of the hospital.<sup>2</sup>

Risk factors of Maxillofacial Fractures (MFF) vary from country to country depending upon prevailing social, cultural and environmental factors.<sup>3</sup> High incidence due to Road Traffic Accident (RTA) is reported in developed countries.<sup>4</sup> However Inter Personal Violence (IPV) is the prevalent risk factor in western world.<sup>3</sup> The incidence of sports related injuries are relatively small.<sup>5</sup>

Epidemiological studies have shown that most of the fractures occur mostly in age between 21–30 years.<sup>6,7</sup> Most of the patients were males.<sup>6,7</sup>

This study will help us to know about the pattern and identify the risk factors of MFF and may provide evidences for recommendation of possible preventive measures such as seat belt legislation, wearing a protective during sports or while driving are aimed to drop the incidence of facial fractures resulting from different risk factors.

### MATERIAL AND METHODS

This cross-sectional study based on record was carried out in Maxillofacial Surgical Unit, Ayub Teaching Hospital, Abbottabad from 2001 to 2007. Nine hundred and fifty-two consecutive patients with diagnosis of maxillofacial fractures were included in this study. All

patients of any age group and either gender presenting with maxillofacial fractures were included in this study. Diagnosis was based on detailed history and a thorough clinical examination, confirmed by radiographic investigations. The maxillofacial fractures were grouped according to age, gender and its risk factors.

### RESULTS

This study encompassed a total number of 952 patients having MFF reporting to Maxillofacial Surgical Unit, Ayub Teaching Hospital, Abbottabad. Variables examined in this cross-sectional study include age, gender and risk factors.

Most common risk factors of MFF identified in this study was Road Traffic Accident (RTA) which accounted for 370 (38.9%) cases followed by fall accounting for 257 (27%) cases (Table-1).

Most common age group involved in this study (329, 34.56%) was 3<sup>rd</sup> decade of life, followed by 1<sup>st</sup> decade (195, 20.48%) (Table-2).

Number of males in our study was 645 (67.8%) and females were 307 (32.2%) with male to female ratio 2.1:1.

**Table-1: Distribution of Maxillofacial Fractures according to its risk factors (n=952)**

Risk Factors	No. of Patients	Percent
Fall	257	27
RTA	370	38.9
Sports	104	10.9
IPV	102	10.7
Industrial	48	5
Other	57	6
Animal bite	14	1.5
Total	952	100

**Table-2: Distribution of Maxillofacial fractures according to its age (n=952)**

Age in Years	No. of Cases	Percent
0-10	195	20.5
11-20	135	14.2
21-30	329	34.6
31-40	175	18.4
41-50	65	6.8
51-60	35	3.7
61-70	18	1.9
Total:	952	100

## DISCUSSION

The risk factors and incidence of MFF tend to be different. It depends on different geographic region, cultural, socioeconomic status, religion and era.<sup>8,9</sup>

The predominance age group in this study was 21-30 years, which correlates with other studies done in Poland<sup>8</sup>, Nigeria<sup>9</sup>, Middle East<sup>10</sup>. However this study is in contrast to the studies done in Turkey<sup>11</sup>, and Pakistan<sup>12</sup> where the dominant age group having a high incidence were 0-10 years, and 11-20 years respectively. The low incidence 1.89% was observed in the patients above 60 years. Similar finding was observed by other studies done in Pakistan.<sup>12,13</sup> However, contrast report was given by other studies done in Jordan<sup>7</sup>, and Italy<sup>14</sup>. The high incidence in 3<sup>rd</sup> decade of life might be due to the facts that people belonging to this decade are more active, energetic, take active participation in dangerous exercises and sports activities, drive carelessly and mostly involved in violence.

In this study, males were having high incidence of MFF. The male dominant pattern was observed in other studies done in Poland<sup>8</sup>, Middle East<sup>10</sup>, Turkey<sup>11</sup> and Pakistan<sup>12,13</sup>. The reason might be that males are more exposed to various risk factors including RTA's, violence, sports, etc. And most of females are bounded at home because of social and cultural restriction and thus least exposed to various risk factors.

In our study June, July and August were the bad months having high incidence of MFF which is in conformity with some studies<sup>15,16</sup> and in contrast to other studies<sup>8,17</sup>. Most of emergencies happened at rush hour (3-4 pm) and the finding was in agreement with a previous study.<sup>8</sup>

Our area being a hill station and increased trend of tourists coming with excitement to this beautiful valley during these months may be the possible explanation of its high incidence where individuals at rush time are mostly exposed to various risk factors.

In this study RTA was leading risk factor

contributing 370 (38.9%) of all cases. Our finding is consistent with previous studies carried out by Erol B *et al*<sup>11</sup> and Vanbeck Gj *et al*<sup>18</sup>. However, rate of trauma due to RTA has declined and assaults were the most frequent risk factors also reported in a study done in India.<sup>19</sup>

Falls were the second most common risk factors. Similar results were reported by previous studies done in Pakistan<sup>13</sup>, United Arab Emirates<sup>20</sup> and Greece<sup>21</sup> but were different from some other studies.<sup>9,12,19</sup> In this study falls were contributing for 257 (27%) cases. The percentage in descending order were 19.7%, 18.8%, 12% in others studies<sup>7,13,22</sup> respectively. Most of the patients in this category belonged to 1<sup>st</sup> decade of life which correlates to the another study from Pakistan.<sup>12</sup> Most of the children fell from bed, stairs, from parents' hands due to negligence and inadequate safety features in the building designs. The increased popularity of multi speed bicycle and off road vehicles in the hand of untrained or unprotected children may be the other possible explanation.

In this study 102 (10.7%) of the patients were reported due to IPV/assaults. This percentage was closely attributed to previous studies done in Pakistan<sup>12,13</sup>, United Arab Emirates<sup>20</sup> and Greece<sup>21</sup> where the frequencies were 8.84%, 8.1%, 8% and 5.2% respectively; and it was in contrast to another study.<sup>23</sup> In this study assaults were associated with domestic fights, poverty, unemployment and racism. However a contrast finding may be related to a difference in social customs like alcohol intake confirmed by other national study.<sup>13</sup>

In our study, 104 (10.9%) of the patients were sports related and this correlated to other studies from Pakistan<sup>12</sup>, Greece<sup>21</sup> and India<sup>24</sup>, however, it contradicts to some other studies<sup>17,19</sup>. Poverty, changing socioeconomic condition and due to improper government attention to sports may be the possible explanation of its low incidence. Most of the players in this study were injured by cricket bat and hockey stick which is in contrast to the previous studies.<sup>17,25</sup> Males are more energetic, strong and take active participation in dangerous exercises and sports. Because of social, cultural restriction and male dominant society females are bounded to stay at home and are not observed in such injuries.

Industrial trauma was observed in 48 (5%) cases. The percentages in ascending order were 0.6%, 3.5% in other national and international studies.<sup>13,24</sup> Because of geological presentation and red zone consideration of this area, industrial development is not progressing and may contribute to a least presentation of such injuries.

## CONCLUSION & RECOMMENDATION

The present study revealed that the prevalent risk factor was RTA (60.8%) followed by falls (16.7%).

These findings support the view that the risk factors and its association with MFF vary from country to country and also confirmed that that RTA is still the dominant risk factors for MFF.

Following recommendations are advised in the light of this study to reduce MMF secondary to various risk factors:

- Amendments in the traffic rules and legislation about the seat belt usage to reduce the frequency and severity of maxillofacial fractures are required.
- Adequate safety features in building design in order to reduce the incidence of paediatric facial trauma secondary to fall.
- Improvement in education and socioeconomic setup aimed to reduce the incidence of fractures secondary to assaults.
- Proper education facilities and security provided by the government aimed to reduce Fire Arm Injuries.

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