

Original Article



**Medico-legal interpretation of Pediatric Maxillofacial causalities with epidemiological analysis: Retrospective 5-Year Study**

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**Abstract:** Pediatric maxillofacial injuries are of special medico-legal implications. they may involve serious esthetic and functional facial problems in addition being a common occurrence in poly-trauma pediatric patients with serious consequences on the society and great burden on the child. **Aim of the study** was interpretation of pediatric maxillofacial injuries from the medico-legal point of view and epidemiological analysis over a 5-year period in Assiut University Hospitals, Egypt. **Methods:** observational descriptive hospital-based study includes 940 patients' medical records and radiographs of pediatric maxillofacial injured cases obtained from Trauma Unit of Assiut University Hospitals in the period of 1st January 2015 to 31st of December 2019. **Results:** The 5-year incidence of pediatric MF injuries was 28.4% of the total MF injuries. The mean age was  $8.4 \pm 4.5$  years, with more incidence in the age group 1 to 6 years, boys represent most of the cases (72.2%). The major cause of injury was falls from height (29.1%) followed by motor-cycle accidents (22%) and motor car accidents (19.1%), the manner of injury was almost always accidental (94.6%). Most pediatric MF injuries were associated with other injuries (81.36%), while only 19.64% were isolated MF injuries. Conservative treatment was indicated in 64.4% of cases while 35.6% of the cases were received surgical treatment. There was statistically significant difference between age, sex and the cause of injury, between manner of injury and its cause, between treatment modality and different age groups of the cases. In addition, there was statistically significant relation between the mean duration of hospital stay from one side and the cause of injury and the treatment modality from the other side **Conclusion:** Falls from height is the main etiologic factor of Pediatric Maxillofacial injuries and younger male children are more involved. Accidental manner is the usual one. Mandibular fractures are the commonest followed by fracture maxilla. Conservative management is the commonest line of treatment especially with younger age.

**Keywords:** medico-legal; pediatric trauma; maxillofacial injuries; permanent infirmity; poly-trauma; Egypt.

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## **I. INTRODUCTION**

Trauma is still the leading cause of morbidity and mortality in the pediatric population despite the advancements in child safety (Angelopoulos, 2014). Maxillofacial trauma is an injury applied to the face, jaws and related structures including trauma of either soft or hard tissues. These types of injuries are common presentation in Casualty Department of hospitals worldwide either as an isolated injury or as a part of multiple injuries to the head, neck, chest, and abdomen (El Shehaby et al., 2020).

Maxillofacial injuries are of special medico-legal implications, as the face often constitutes the first point of contact in various human interactions and is frequently the likely target for blows in assault cases as well as accidents in addition to these injuries may cause serious functional, psychological, physical, significant deformity and cosmetic disabilities and can be life-threatening in severe cases when combined with head fractures (Alvi A et al., 2003).

Although maxillofacial fractures are not as common in children as in adults, approximately 11.3% of overall pediatric emergencies comprise craniofacial injuries. The reduced frequency of pediatric maxillofacial fractures is due to the flexibility of the pediatric skeleton, the large quantities of facial soft tissues, and underdeveloped paranasal sinuses in an addition to the strength of maxilla and mandible due to unerupted teeth (Lim et al., 2016). Also, the protected environment under parental supervision contributes to the reduced frequency than the adults (Yang et al., 2009).

Maxillofacial injuries are increasing in frequency and severity, and this can be contributed to heavy reliance on-road transportation and the increasing socio-

economic activities of the population. The etiology of maxillofacial trauma has changed continuously over the past three decades. It varies by socioeconomic status, and cultural characteristics, from one geographical location to another and among different age groups (Khan et al., 2022).

Incidence of maxillofacial injurers varies widely between different countries according to population density, environmental, cultural, socioeconomic factors, and road traffic situations (Sasaki et al., 2009). However, the causes worldwide are traffic accidents mainly motorcycle accidents, falls, altercations, and sports-related accidents, while physical assaults are rare (Subhashraj et al., 2007).

Proper management of maxillofacial trauma require adequate assessment of airway, breathing, circulation, and mental status along with any immediately life-threatening injuries and to rule out cervical spine fractures and carotid/vertebral injuries as these injuries can be common in facial trauma patients (Kumar et al., 2013).

Photographic documentation of all facial injuries may also provide useful information for medico legal reasons, so maxillofacial surgeon has a unique opportunity to recover the cases from a traumatic event and save them from lifelong cosmetic disfigurement or significant functional impairment (Elsayed & Kasem, 2021).

The aim of the current study was interpretation of pediatric maxillofacial injuries from the medico-legal point of view and epidemiological analysis over a 5-year period in Assiut University Hospitals, Egypt.

## II. MATERIALS & METHODS

### *Study design and setting*

The study was a retrospective observational hospital-based study conducted in the Trauma Unit of Assiut University Hospitals (Tertiary Care Hospital), Egypt. The Trauma Unit of Assiut University Hospitals is considered as the central unit of trauma in Upper Egypt, to which cases from different Upper Egypt governorates (Minya, Assiut, Sohag, Qena, Luxor, Aswan) New Valley and the Red Sea Governorates were referred

### *Study population:*

The study included 940 pediatric maxillofacial injured cases who admitted to the Trauma Unit of Assiut University Hospitals during the period from the 1st of January 2015 to 31st of December 2019. (Ages of the included pediatric cases were from 1 year least up to 16 years greatest)

### *Exclusion criteria:*

- Adult maxillofacial injured cases
- Maxillofacial trauma cases with an open traumatic head injury as they already were transmitted to the Neurosurgery Department.
- Patients discharged on their request before the examination.
- Congenital deformity and disease of the face

### *Registered data:*

- Socio-demographic data of cases: age, gender, and residence
- Medico-legal aspects: cause of injury, manner of injury, type of injury, period of hospital stays, treatment modalities and clinical outcome.
- The fractures were categorized into those of the mandible, maxillae, nasal bone, zygomatic bone, and orbital bone. The classifications of the fractures were based on

conventional radiographic study and computed tomographic examinations

### **Statistical analysis**

Frequency and percent were used for categorical variables while mean  $\pm$  SD for continuous variables. Chi-square test ( $\chi^2$ ) was used for comparing proportions between the different etiological causes of maxillofacial injuries regarding age and gender. Student T test and One-way ANOVA were used to compare mean of age and hospital stay with treatment modality and cause of injury. P value < 0.05 was considered statistically significant (McHugh, 2013).

### **Ethical considerations:**

Ethical approval was obtained from the Ethical Committee of Faculty of Medicine, Assiut University, Egypt. The ethical approval number is 04-2022-300003. It was in accordance with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

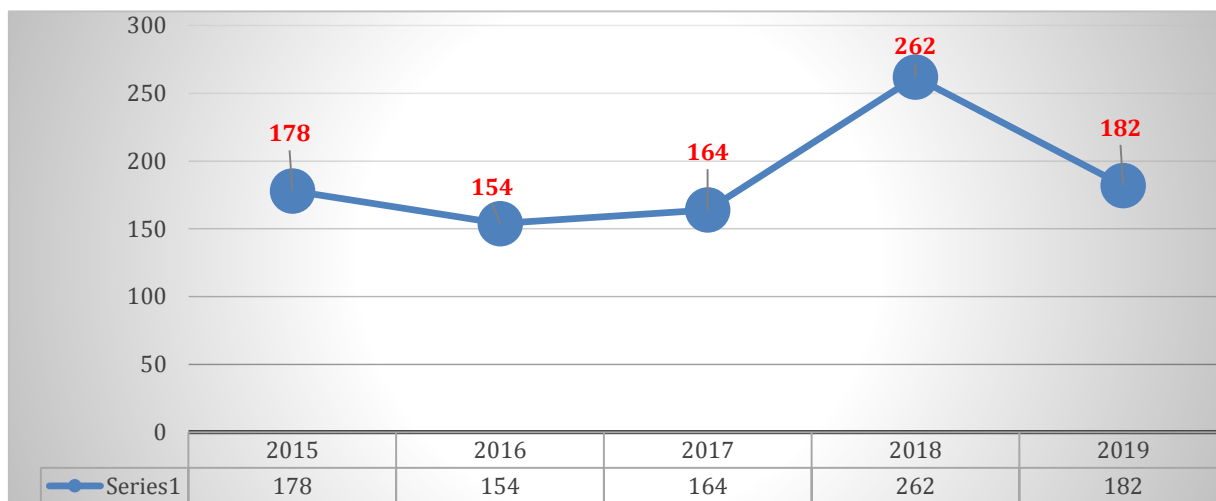
## III. RESULTS

The current study includes 940 pediatric maxillofacial injuries during a 5-year period from 2015 to 2019 at the Trauma Unit of Assiut University Hospitals, Egypt. The incidence of pediatric MF injuries in relation to total MF injuries was 28.4% in 2015, 27.6% in 2016, 27.7% in 2017, then 30.2% in 2018 and 0.5% in 2019. The 5-year incidence was 28.9%. (**Table 1**).

Concerning the incidence of maxillofacial injuries during the period from the year 2015 to 2019, the highest incidence of pediatric MF injuries was in the year 2018 (262 cases) followed by 2019 (182 cases) then 2015 (178 cases), 2017 (164 cases) and the lowest in 2016 (154 cases) (**Figure 1**)

**Table (1): Incidence of Pediatric MF injuries in relation to total MF injuries in the studied period**

Year of occurrence	2015	2016	2017	2018	2019
Total MF injuries	626	558	591	868	596
Pediatric MF injuries	178	154	164	262	182
Percent %	28.4	27.6	27.7	30.2	30.5
5-year incidence			28.9%		



**Figure (1) Pediatric maxillofacial injuries according to years of incidence.**

As regard the socio-demographic characteristics of the studied cases, mean age was 8.4 ±4.5 years, median ± IQR 8±9 and the range of age from 1 year to 16 years. The incidence of pediatric maxillofacial injuries was 35.6% among the age group 1 (up to 5 years) followed by the age group 2 (11 to 16 years) (34.5%) then the age group 3 (6 - 10 years) (29.5%).

Regarding sex, males represent most of the cases (72.2%) while females represent 27.8%, male to female ratio was 2.6:1. About three quarters of the studied cases were from Assiut Governorate (74.5%) followed in frequency by other governorates of Upper Egypt then Cairo Governorate (**Table 2**)

**Table (2) Socio-demographic profile of pediatric maxillofacial injuries in the studied period (2015-2019)**

Character	Frequency	Percentage %
<b>Age</b>		
Mean ± SD	8.4 ± 4.5 yrs.	
-Range	1 – 16	
-Median ± IQR	8 ± 9	
<b>Age groups</b>		
1- 5 years	335	35.6
6 - 10 years	281	29.5
11 -16 years	324	34.5
<b>Sex</b>		
-Male	679	72.2
-Female	261	27.8
<b>Residence</b>		
-Assiut	700	74.5
-Sohag	73	7.8
-Al-Minia	64	6.8
-Qena	31	3.3
-Luxor	26	2.7
-New Valley	24	2.6
-Red sea	11	1.1
-Aswan	7	0.8
-Cairo	4	0.4

Medico legal profile of the studied pediatric MF injuries showed the major cause of injury was fall from height represents nearly one third of overall cases (29.1%) followed by motor-cycle accidents (22%), motor car accidents (19.1%), then fall on the ground (15.4%). The manner of pediatric MF injuries was almost always accidental (94.6%) with some homicidal percent (4.8%) and only suicidal in 0.6% of cases. Regarding the pattern of MF injury, most MF injuries were concomitant with other injuries with a percentage of (81.36%), while 19.64% were isolated MF injuries.

Concerning the type of MF injury, combined injury of soft tissue & MF fracture was the most common type (74.5%) followed by isolated MF fracture then isolated soft tissue injury with a percentage of (14.3% &11.2%) respectively. The mandibular fracture accounts for the highest percentage of MF fracture (59.8%) followed by mid-facial and fronto-orbital fractures with a percentage of (26.4%&11.1%) respectively, while the dento-alveolar fracture was the least one (2.7%) **(Table 3)**

**Table (3) Medico legal profile of pediatric maxillofacial injuries in the studied period (2015-2019)**

Character	Frequency	Percentage
<b>Etiology of injury</b>		
● Motor-cycle accident	207	22
● Motor car accident	180	19.1
● Train accident	4	0.4
● Fall from height	274	29.1
● Fall on the ground	145	15.4
● Floundering with Heavy object	52	5.5
● Animal bite	44	4.7
● Assault from others	34	3.6
<b>Manner of injury</b>		
● Accidental	889	94.6
● Homicidal	45	4.8
● Suicidal	6	0.6
<b>Pattern of MF injury</b>		
● Isolated Maxillofacial injuries	100	19.64
● MF injuries Concomitant with other injuries	840	81.36
<b>Type of MF injury</b>		
● Isolated soft tissue injury	105	11.2
● Isolated MF fracture	135	14.3
● Combined soft tissue injury & MF fracture	700	74.5
<b>MF fractures pattern</b>		
● Mandibular	499	59.8
● Mid-facial fractures	220	26.4
● Fronto-orbital fractures	93	11.1
● Dento-alveolar	23	2.7

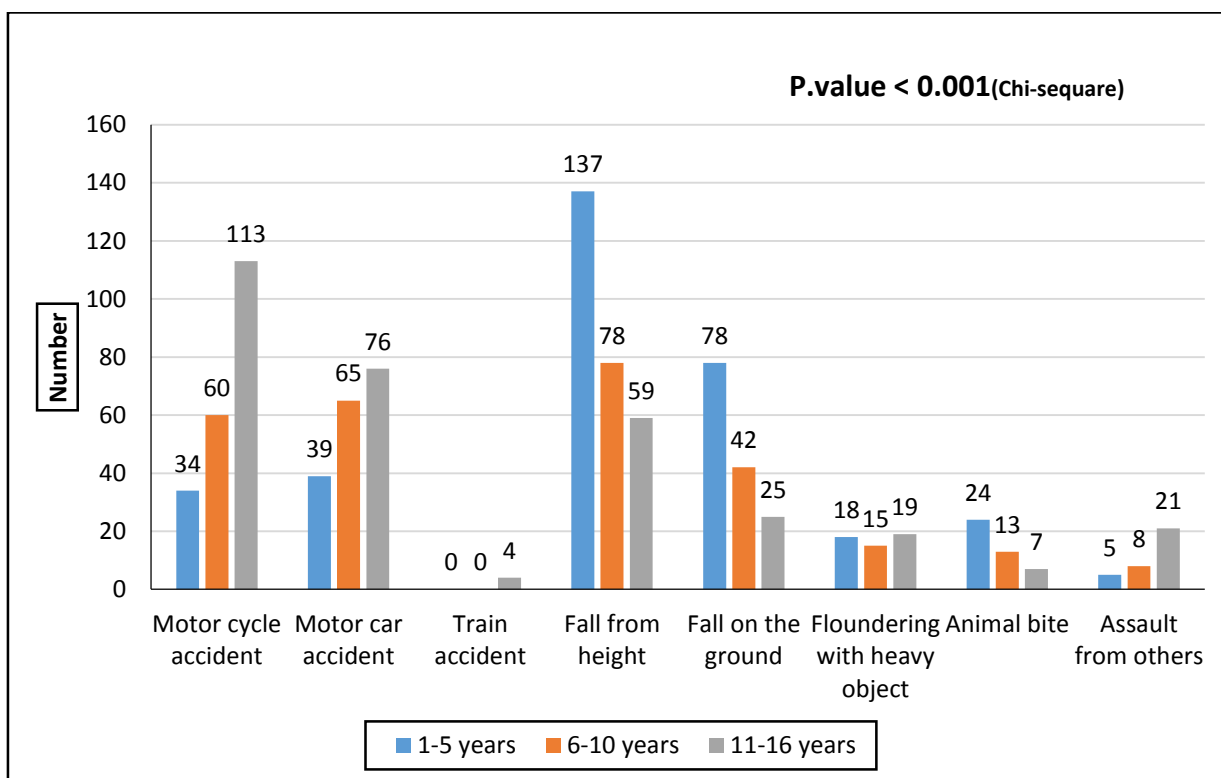
As respect management of MF injuries, the mean duration of hospital stay was  $5.2 \pm 6$  days. Conservative treatment was indicated in 64.4% of cases while surgical treatment was indicated in 35.6% of cases. As Surgical treatment was arch bar in 82.2% and mandibular fixation in 17.3%. Most MF injured cases improved (95.7%) while 4.3% of cases died. **(Table 4).**

There was statistically significant difference between age groups and the causes of injury (P-value < 0.001).

Fall from height, fall on the ground and animal bite were most common among age group 1 (1-5 years), then age group 2 (6-10 years) and the age group 3 (11-16 years). Motorcycle motor car accidents and assault from others were more in age group 3 (11-16 years), then age group 2 (6-10 years) and age group 1 (1-5 years). Floundering with heavy object was most among age group 3 (11-16 years) then age group 1 (1-5 years) and then age group 2 (6-10 years). Train Accident occurred only in) age group 3 (11-16 years) **(Figure 2).**

**Table (4): Clinical outcome of pediatric maxillofacial injuries in the studied period (2015-2019)**

Character	Frequency	Percentage
<b>Hospital stays</b>		
-Mean ± SD	5.2 ± 6	
-Range	0 – 105	
-Median ± IQR	4 ± 4	
Character	Frequency	Percentage %
<b>Treatment modality</b>		
- Conservative	605	64.4
- Surgical	335	35.6
<b>Type of surgical treatment</b>		
- Arch bar		82.2
- Mandibular fixation		17.8
<b>Clinical outcome</b>		
- Improved	900	95.7
- Death	40	4.3

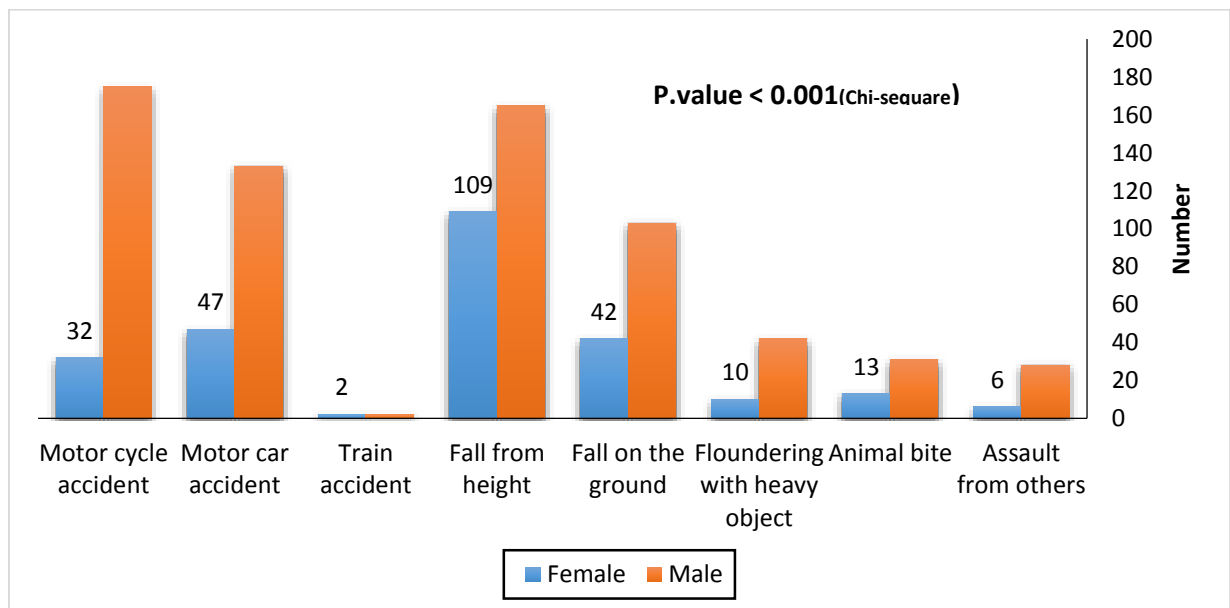


**Figure (2) Relation between etiology of pediatric maxillofacial injuries and age groups in the studied sample**



Males outnumbered females in nearly all different causes of injury and showed statistically significant difference (P-value < 0.001). The highest number of males were in motorcycle accidents (175 cases) followed by fall from height (165 cases), motor car accidents (133 cases), fall on the ground (103 cases), floundering with heavy object (42 cases), animal bite (31 cases) and finally assault from others (28 cases).

In females, the most common cause of MF injuries was fall from height (109 cases) followed by motor car accidents (47 cases), fall on the ground (42 cases), motorcycle accidents (32 cases), animal bite (13 cases), floundering with heavy object (10 cases) and lastly assault from others (6 cases). Train accidents were equal in both sexes (2 cases in each) (**Figure 3**).



**Figure (3) relation between etiology of pediatric maxillofacial injuries and sex of the studied sample**

There was statistically significant difference between manner and cause of injury (P-value < 0.001) with accidental manner represent the highest incidence among all causes of trauma. Motorcycle, motor car accidents and animal bites were only accidental. Fall on the ground was accidental in 130 cases and only homicidal in 15 cases while fall from height was accidental in 267 cases, 3 cases homicidal and only 4 cases suicidal.

Floundering with heavy object was accidental in 42 cases and homicidal in 10 cases. Assault from other was equally caused accidentally and homicidally in 16 cases for each and only 2 cases were suicidal. Train accidents were accidental in 3 cases and homicidal in only one case (**Figure 4**).

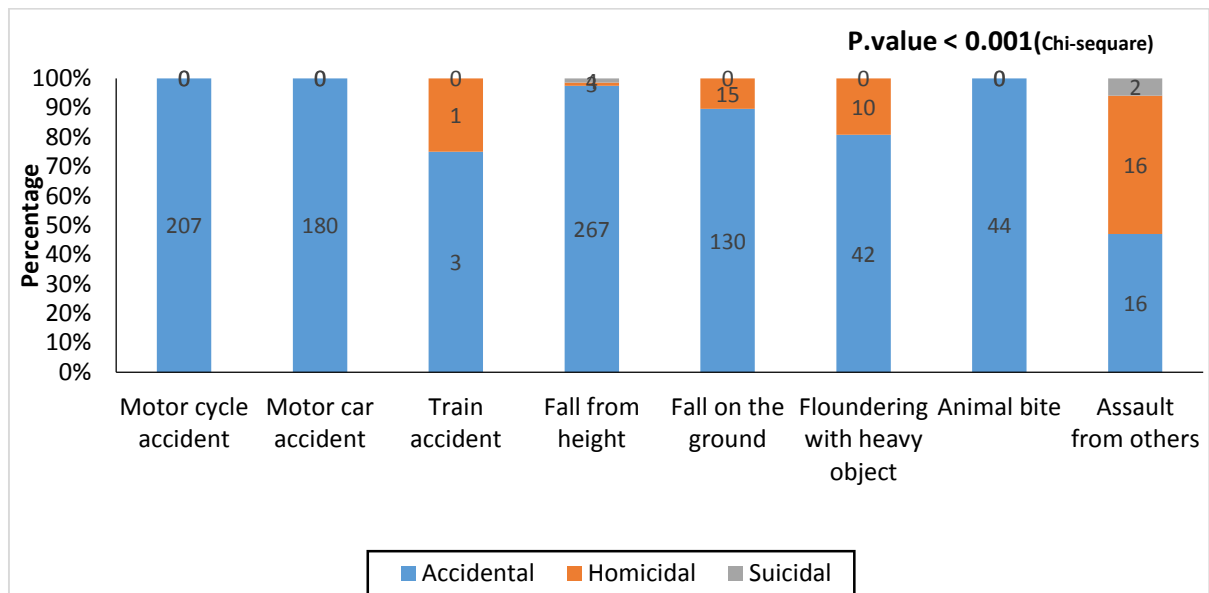


Figure (4) Relation between manner of injury and etiology of maxillofacial injuries in the studied sample

Conservative treatment had the highest indication among all etiologies with no statistically significant difference (P-value = 0.138). The highest indication of conservative treatment was in fall from height (181 cases), followed by motorcycle accident (127 cases), motor car accident (108 cases), fall on the ground (95 cases), floundering with heavy object (37 cases), animal bite (35 cases), assault from others (21 cases) and lastly train accident (3 cases).

On the other hand, surgical treatment was mostly indicated in fall from height (93 cases) followed by motorcycle accident (80 cases), motor car accident (72 cases), fall on the ground (50 cases), floundering with heavy object (15 cases), animal bite (9 cases) and then train accident (1 case). (Figure 5).

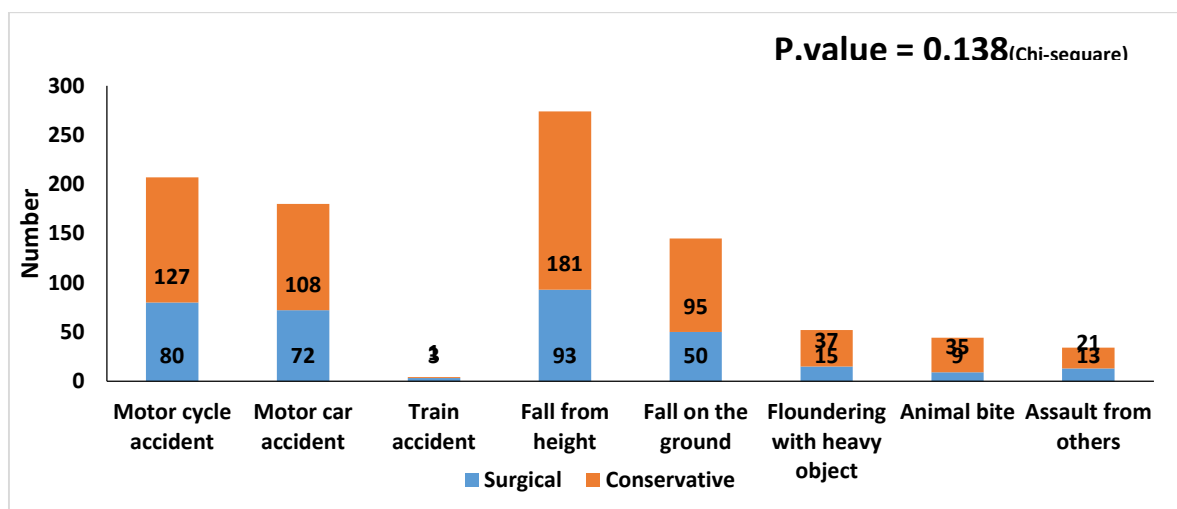


Figure (5) Relation between treatment of maxillofacial injuries and etiology in the studied sample

The mean age in surgical treatment was 9.3 years and 7.9 years in conservative treatment.

Surgical treatment was more indicated by increasing age of the cases (mean age 9.3 years) while conservative treatment was more preferred in the young age group (mean age 7.9 years) (Figure 6).

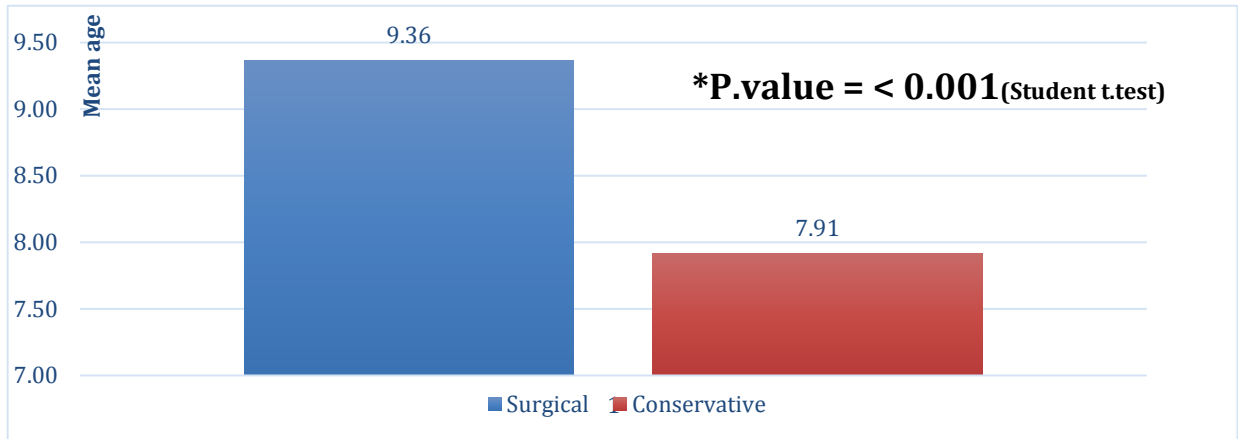


Figure (6) Relation between treatment of maxillofacial injuries and mean age of the studied sample

There was statistically significant difference (P-value < 0.001) between the mean duration of hospital stay and the cause of injury with the longest duration train accident (mean duration of hospital stay 22.75 days).

The mean duration of hospital stay in motor car accidents was 6.81 days, motorcycle accidents 5.42 days, floundering with heavy object 5.38 days, fall from height 4.65 days, assault from others 4.09 days, then fall on the ground 4.06 days and animal bite 3.89 days. (Figure 7).

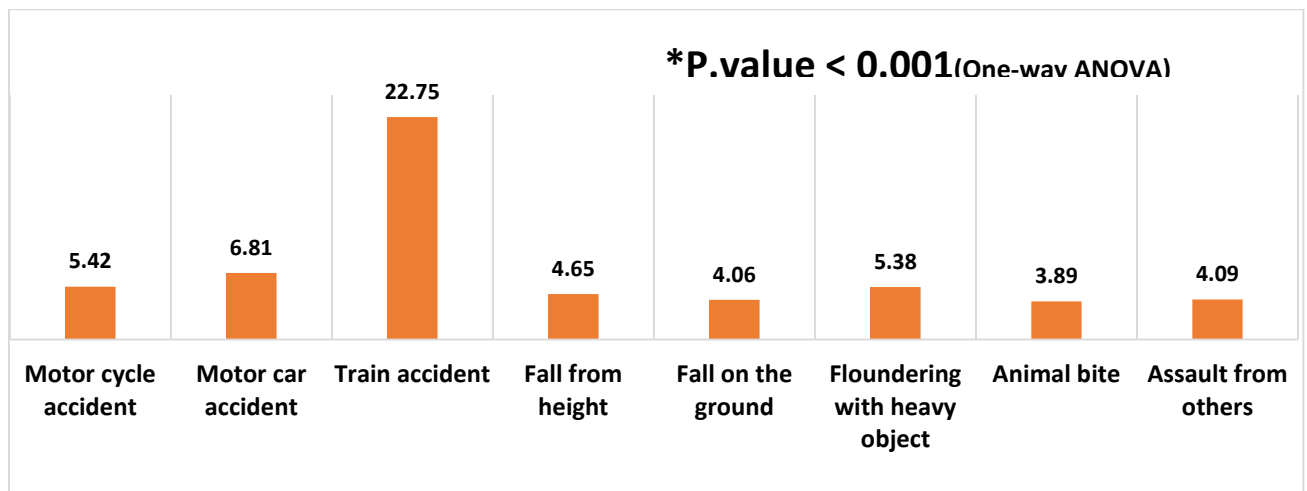
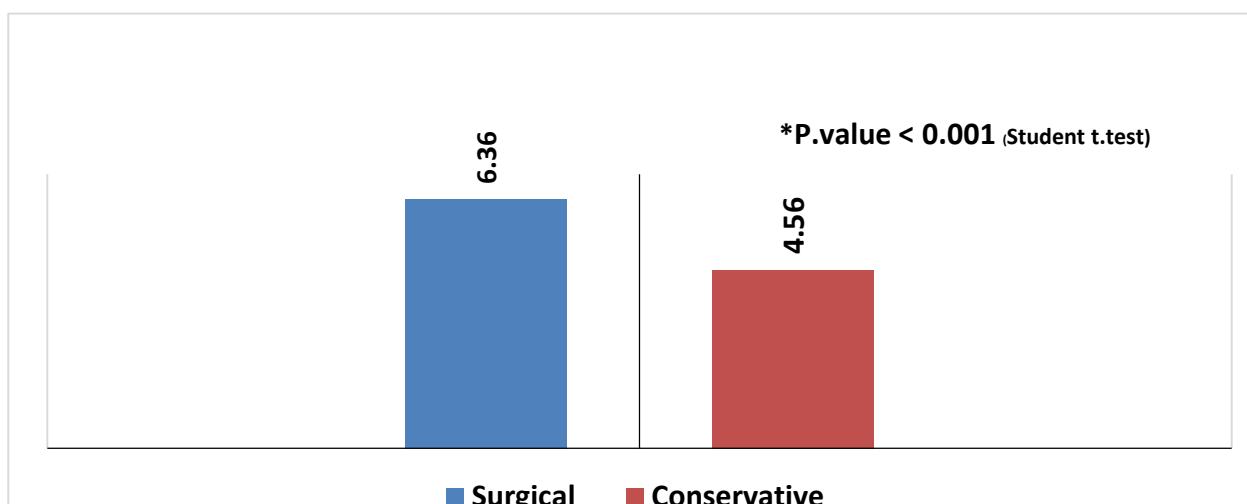


Figure (7) Relation between mean of hospital stay and etiology of maxillofacial fracture in the studied sample

A statistically significant difference (P-value < 0.001) was present between the mean duration of hospital stay and the treatment modality, with long duration of hospital stay in case of surgical treatment than the conservative one.

The mean duration of hospital stay was 6.36 days in surgical treatment and 4.56 days in conservative treatment) (**Figure 8**).



**Figure (8) Relation between mean of hospital stay and type of treatment of maxillofacial injury**

**IV. DISCUSSION**

The face is the most prominent part of the body; maxillo-facial injuries are common finding in poly trauma cases. MF injuries are commonly associated with injuries to vital structures in face like eyes, nose, ear, associated with head injuries in addition to susceptibility for airway obstruction (Haug & Foss, 2000) and (Omran et al., 2019) .

MF injuries not only cause serious injuries to the victim but also impose a serious burden on the society due to morbidity, mortality, facial disfigurement, loss of function, and financial expenses associated with the injuries (Abosadegh et al., 2019). The incidence, etiology, types, and associated injuries vary between different countries and even different areas of the same country due to environmental, socioeconomic, cultural, and lifestyle differences among people (Lee, 2012).

The present study analyzed 940 pediatric MF injured cases that were treated at Maxillo-Facial Surgery Unit, Assiut Hospitals, the analysis revealed; the mean incidence of pediatric MF injuries in the studied period was 28.9% which is more or less consistent with reports by Scariot et al. (2009) from Brazil, Okoje et al. (2010)from Ibadan, Nigeria and Bede et al. (2016), but is higher than the previously reported value of less than 15.0%, in a retrospective analysis, by Zimmermann et al. (2005).

Pediatric maxillofacial injuries were common among the age (1 up to 6 years) which is in accordance with the studies of Collao-González et al. (2014) ; Massenburg et al. (2015); Zhou et al. (2020). But different from the result of Oji (1998), Massenburg et al. (2015); Zhou et al. (2020) ; Al-Tairi & Al-Radom (2021);Prajapati et al. (2021) as male children are more involved in physical activity,

outdoor street time and violence than their female counterparts. This is reflected in the finding of fall from height was significantly the commonest etiologic factor for female and violence was the least etiology of injury for females ( $P < 0.001$ ).

The most etiologic factor of Pediatric MF injuries was falls from height which agreed with the result of Kumaraswamy et al. (2009), Cavalcanti & Melo (2008), Collao-González et al. (2014), and Mukhopadhyay et al. (2020). While the second and third commonest etiologic factors were motorcycle accidents and motor car accidents accounting for 22% and 19.1% respectively.

Many studies all over the world were inconsonant with the present study's result and reported motor vehicle accidents were the commonest as from Poland Scariot et al. (2009) from Brazil, Okoje et al. (2010) from Ibadan, Kapoor & Kalra (2012) from East Delhi and Daniel et al. (2013) from Nigeri.

Violent assault as a cause of injury was low in the current study 3.6% which agrees with the results of Posnick et al. (1993) (3.9%), Daniel et al. (2013) (3.8%) and but is much lower than most reported in studies of Bregagnolo et al. (2013) and Almahdi & Higzi (2016). More frequency of animal-related injuries ( $n=44$ , 4.7%) were observed that is inconsistent with Muñante-Cárdenas et al. (2011) and Khalifa et al. (2017), this is due to increase the human animal conflicts.

Motor-cycle accidents were more responsible etiology than motor vehicle accidents, which agreed with the result of Qing-Bin et al. (2013), this could be due to the increase in the number motorcycles and the operators of these motorcycles are predominantly teenagers who neither have in-depth knowledge of the motorcycles operating nor the traffic rules and road sign.

The etiologies of pediatric maxillofacial trauma are probably related to both environment and time. Studies have demonstrated that children in developing countries are more likely to be involved in traffic accidents because motor vehicle safety measures in such countries are not widely promoted or practiced (Ferreira et al., 2016). The use of car seat restraints for infants and young children may contribute to the lower frequency of RTA-associated pediatric facial trauma (Chrcanovic et al., 2010).

The observed incidence of falls from height and falls on the ground decreased with age and varied significantly between different age groups ( $P < 0.001$ ), while motor car accidents, motorcycle accidents and violent assault increase with age as young children tend to be prone to sustaining injuries through low velocity/energy traumas such as falls because of their curiosity, lack of a good body stability. However, when children begin school and are exposed to outdoor activities, the incidence of high energy/velocity trauma, such as MVA, bicycle accidents, violent assault increase ( $P < 0.001$ ).

Various studies have shown that 10% to 88% of patients with facial trauma present with associated injuries in other parts of the body Holland et al. (2001) and Alcalá-Galiano et al. (2008).

Concomitant bodily injuries were registered in the present study was 81.36% of the patient population. The wide variation in the frequency of associated injuries is largely attributed to variation in the mechanism of trauma (Zimmermann et al., 2005), the associated injuries commonly be craniospinal injuries due to the proximity of the face to the craniospinal axis, orthopedic, Chest and abdomen (Allred et al., 2015) and (Bhutia et al., 2019).

Regarding the manner of pediatric MF injuries, it was almost always accidental (94.6%) with some homicidal percent (4.8%) and only suicidal in 0.6% of cases. In the general medico-legal practice; Injuries are caused by intentional and unintentional causes; intentional injuries occur with purposeful intent and include homicide, suicide, domestic violence, sexual assaults, bias-related violence, and firearms. Unintentional injuries are injuries that occur without purposeful intent (Sasaki et al., 2009).

In the present study, accidental manner of injury was a major manner of pediatric maxillofacial injuries followed by homicidal manner, while suicidal attack represents less than 1% only; this can be explained by the fact that falls (from height & on the ground) and road traffic accidents (motorcycle & motor car) and as a major responsible for accidental manner outnumbered interpersonal violence ( $P < 0.001$ ).

Mandibular fracture was the commonest fracture in the current study, which agreed with Haug & Foss, (2000) Karim et al. (2010); Muñante-Cárdenas et al. (2011); Boffano et al. (2015) but disagree with Alcalá-Galiano et al. (2008), Cavalcanti & Melo (2008); Collao-González et al. (2014) who have shown that nasal bone fractures are the most frequent facial fractures.

Underestimation of nasal fractures in some studies still presents an important bias because in some hospitals, these fractures are seen and treated by otolaryngology divisions This is attributed to the special pediatric anatomic features of the mandible as the highly vascularized mandibular condyle and the thin neck which are poorly resistant to low velocity trauma during falls Thoren et al. (1997).

Such fractures were important not only because of the high incidence of these injuries, but also because of the possible long-term adverse effects as they can affect facial growth and lead to ankylosis of temporomandibular joint (TMJ) and may also lead to the formation of a bifid condyle Thorén et al. (2001); Smartt Jr et al. (2005). The incidence of dento-alveolar fractures was the least one (2.7%) disagreed with results of studies of Kumaraswamy et al. (2009)(42.1%), Cavalcanti & Melo (2008)(25.8%), and Daniel et al. (2013)(12.5%).

As respect management of MF injuries, conservative treatment was indicated in 64.4% of cases while surgical treatment was indicated in 35.6%. Growth and development of the maxillofacial structures should be considered to avoid malunion and subsequent deformities. However, with unstable fractures that cannot be secured with closed reduction techniques, open reduction and internal fixation become necessary after the age of 12 years, when dentition has erupted and root formation has matured enough and at this time treatment becomes similar to that performed in the adult population (Zimmermann et al., 2005).

Many pediatric fractures are non-displaced or greenstick-type fractures, and observation alone is adequate. There is almost no indication to open a fracture because the abundance of developing teeth in the bone makes fixation almost impossible without damaging these structures (Khatri & Kalra, 2011).

Conservative approach (observation or closed reduction) is the best approach to consider first for pediatric mandible fractures, as these fractures heal rapidly, and the children grow normally. Generally, treatment principles of pediatric mandibular fractures differ from treatment of the adult population in that a

conservative approach is advocated in most cases and the management techniques should also be modified to address the child's particular stage of anatomic, physiologic, and psychological development (Alcalá-Galiano et al., 2008). Open reduction and internal fixation become necessary after the age of 12 years, when dentition has erupted and root formation has matured enough and at this time treatment becomes similar to that performed in the adult population (Zimmermann et al., 2005).

Open reduction and osteo-synthesis of the pediatric fracture with titanium plates and screws are thought to have a negative effect on the skeletal growth and unerupted teeth. It involves two-stage surgery because of the need for plate removal after complete healing (Khatri & Kalra, 2011).

The use of absorbable plates and screws is less likely to disturb facial skeletal growth but is still associated with the risk of damaging unerupted teeth even when using mono cortical screws (Imola et al., 2001). Because of these obvious risks, closed reduction is advocated in these cases. The use of absorbable plates and screws have nearly no side-effects on the growing facial skeleton but there is still the risk of damaging unerupted teeth during the drilling process. However, this was not useful in this particular case because all permanent teeth were erupted (Alcalá-Galiano et al., 2008).

#### **V. CONCLUSION**

Fall from height is the main etiologic factor of Pediatric Maxillofacial injuries and younger children are more involved with male predominance. Accidental manner is the usual one. Mandibular fractures are the commonest followed by fracture maxilla. Concerning the type of MF injury, combined injury of soft tissue & MF fracture was the most common type. Conservative management is the commonest line of

treatment especially with younger age with longer duration of hospital stay in case of motor car accidents and violent assault. Fortunately, most MF injured cases improved.

#### **VI. RECOMMENDATION**

Preventive strategies remain the cheapest way to reduce the direct and indirect costs of the trauma sequelae. Improving vehicle safety and stricter laws is equally important. Early availability of backup services like intensive care unit and interventions from the trauma team improves the institution of trauma registry regarding the epidemiology, patterns, treatment modalities, and long-run complications of craniomaxillofacial fractures as well as an analysis of data on a regular basis to understand the trends and assess the impact of interventions for the improvement of care and lowering the morbidity. Conduction of prospective studies with follows up to record the actual end results of such traumas.

#### **VII. List of abbreviations**

MF: Maxillio-Facial  
RTA: Road Traffic Accidents

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## الملخص العربي

### التفسير الطبي الشرعي لإصابات الوجه والفكين لدى الأطفال مع التحليل الوبائي: دراسة مرجعية لمدته 5 سنوات

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خلفية البحث: إصابات الوجه والفكين في الأطفال لها آثار طبية وقانونية خاصة لأنه قد يترتب عليها مشاكل وظيفية و تجميلية خطيرة في الوجه بالإضافة إلى كونها تحدث كجزء من الإصابات المتعددة لدى الأطفال مما يترتب عليها من عبء كبير على الطفل و تداعيات خطيرة على المجتمع الهدف من البحث: تهدف الدراسة إلى تفسير إصابات الوجه والفكين لدى الأطفال من وجهة النظر الطبية الشرعية والتحليل الوبائي على مدى 5 سنوات في مستشفيات أسيوط الجامعة بمصر. طرق البحث: الدراسة وصفية تشمل 940 سجلاً طبياً لحالات إصابات الأطفال في الوجه والفكين تم الحصول عليها من وحدة الإصابات بمستشفيات جامعة أسيوط في الفترة من 1 يناير 2015 إلى 31 ديسمبر 2019. النتائج: بلغت نسبة إصابات الفك و الوجهين عند الأطفال 28.4 % من إجمالي 4.5 سنوات ، مع زيادة الإصابة في الفئة ± إصابات الوجهة الفك الكلية. كان متوسط العمر 8.4 العمرية من 1 إلى 6 سنوات ، ويمثل الأولاد معظم الحالات ( 72.2 %). كان السبب الرئيسي للإصابة هو السقوط من المرتفعات ( 29.1 %). يليه حوادث الدراجات النارية ( 22 %). وحوادث السيارات 19.1 % ( ، وكانت الإصابة عرضية في الغالب ) 94.6 %). ارتبطت معظم إصابات الوجه و الفكين ( عند الأطفال بإصابات أخرى ) 81.36 % . وكان العلاج التحفظي في 64.4 % من الحالات بينما التدخل الجراحي في 35.6 % . وكانت هناك فرق ذو دلالة إحصائية بين العمر والجنس وسبب الإصابة ، بين طريقة الإصابة وسببها ، بين طريقة العلاج والفئات العمرية للحالات. بالإضافة إلى ذلك ، كانت هناك علاقة ذات دلالة إحصائية بين متوسط مدة الإقامة في المستشفى من جانب وسبب الإصابة وطريقة العلاج من الجانب الآخر الخلاصة: السقوط من الارتفاع هو العامل المسبب الرئيسي لإصابات الوجه والفكين لدى الأطفال ، والأطفال الذكور الأصغر سناً هم أكثر عرضة لمثل هذه الإصابات. الإصابات العرضية المعتادة. تعتبر كسور الفك السفلي هي الأكثر شيوعاً تليها كسور الفك العلوي. العلاج التحفظي هو أكثر طرق العلاج شيوعاً خاصة مع الأعمار الأصغر.