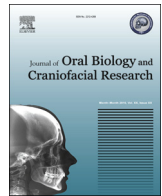




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## Original Article

# The incidence of facial injuries in children in Indian population: A retrospective study

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## ABSTRACT

**Objective:** To determine the incidence and pattern of facial fracture in children of age 0–16 years of age. **Material & methods:** Patients with trauma reporting to department of paediatric and preventive dentistry and department of oral & maxillofacial surgery from January 2011 to December 2011 were selected for the present study. The records of patients treated for maxillofacial injuries were retrospectively retrieved and analyzed for prevalence, pattern, etiology, and management of maxillofacial trauma. The data collected were subjected to statistically analysis. SPSS software version 16.0 was used for the data analysis.

**Results:** Total 5049 patients were screened and fifty one was reported to have facial injury. The incidence of facial trauma was 1.01% for the present study. The age wise distribution of the fracture amongst groups (I, II and III) were found 17.65%, 54.9% and 27.45% respectively. The sex-wise distribution of facial fracture was reported twice in male than females. The mandibular fracture was found the most common fracture (0.59%) followed by dento alveolar (0.30%) and midface (0.12%) fractures. Most of the mandibular fractures were found in the para symphysis region. Compound fractures seem to be commonest in the mandible.

**Conclusion:** The fall was the predominant cause for most of the facial fractures in children followed by road traffic accident. The pattern of facial injury is influenced by the age and the growth of facial skeleton.

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## 1. Introduction

The past few decades has witnessed the increased in frequency of motor accidents and violence. The most common causes of injury for the young people up to the fourth decade of life include motor vehicle accidents, physical aggression and sports trauma.<sup>1,2</sup> Facial trauma in children have a devastating effect both on child as well as on family. Children are more prone to facial fracture because on greater cranial mass to body ratio (8:1). One to fifteen percentage of the total facial fractures occur in children.<sup>3–6</sup> The presence of unerupted tooth, lack of pneumatization of the para nasal sinus, low mineralization of bone, flexible suture lines makes children more vulnerable to green stick fractures when compared to adults.<sup>7</sup> In addition to this, the prominence of buccal fat pad disperse the impact over a wider region, hence more force is required to fracture the bone in child when compared to adults.

The retruded position of face with respect to cranium in children less than 5 years of age shows less incidence of mid face fractures. As the facial growth progress, the downward and

forward growth of the maxilla makes face more prone for midface injuries.

The aim of the present study was to determine the incidence and pattern of facial injuries in children, reporting in outpatient door at a tertiary health center.

## 2. Material and methods

Children with facial trauma attending the out-patient department of Paediatric and preventive dentistry and Oral & Maxillofacial Surgery from January 2011 to December 2011 were selected for the present study. The study design was approved by the institutional ethical committee. Detailed information consisting of age, sex, socio-economic status, chief complaint, history of present illness, past medical history, dental history, duration of injury, etiological factor and associated injuries were recorded. A thorough clinical examination as well as radiological interpretation was done for every patient for establishing the diagnosis.

Child patients were divided into three groups according to dentition:

Group I Deciduous dentition (0–5 years)

Group II Mixed dentition (6–11 years)

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## DISTRIBUTION OF PATIENTS

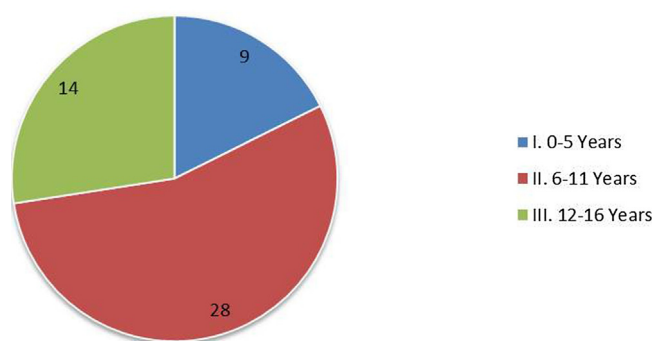


Fig. 1. Age wise distribution of patients in each group.

### Group III Permanent dentition (12–16 years)

Clinical and investigational examination of the patients was done to see the status of intraoral or extra-oral swelling, facial lacerations or abrasions, bleeding, CSF discharge, soft tissue injuries, deformities of face, ophthalmic involvement, open bite/cross bite, midline deviation, mouth opening, occlusion, avulsed/fractured tooth etc. Child patients with suspected mandibular fracture were advised for PA View of mandible, lateral oblique 30° of mandible right and left. Those suspected condylar or sub condylar fractures were advised for transpharyngeal right/left radiograph. Orthopantomograph and occipitomental view of skull 30° of midface, and computerized tomography were advised in cases of complicated injuries/fractures.

On the basis of clinical and radiographic findings management of injury was done by open or closed reduction and immobilization, wiring, mini bone plate fixation, splinting and replantation, elevation and fixation of zygoma etc. These patients were kept on post-operative follow up for one to six months and data collected was subjected to statistical analysis.

## 3. Results

This study comprised of 51 child patients with facial injuries attending outpatient Department of Paediatric and preventive dentistry and Oral & Maxillofacial Surgery, Faculty of Dental Sciences, King George's Medical University, Lucknow.

Amongst 5049 children reported to outpatient department only 51 (Fig. 1) were afflicted by facial trauma, thus the incidence being 1.01%. In the present study each site considered as one fracture, thus making total of 77 fractures in 51 children. Pattern of facial fractures occurred in different age groups are given in Table 1. There was no midface fracture found in this age group I patients. From the Table 2, it is evident that out of 49 mandibular fractures, 41.56% of mandibular fractures occurred in male children and 22.08% in female. Nine fractures of the midface occurred in male children only. There was no midface fracture in female. Total number of fractures in male children was 66.23% whereas in female it was 33.77%. Statistically these values are significant ( $p < 0.05$ ).

Hence number of male children involved in facial fractures is much higher than female children (66.23% vs 33.77%). Number and different sites of mandibular fractures are depicted in Table 3. Maximum number of mandibular fractures occurred in Group II (66%) as compared to Group I (18%). Statistical analysis showed significant number of mandibular fractures in Group II as compared with Group I and Group III ( $p < 0.05$ ). However on comparing Group I with Group III, no statistically significant result could be obtained ( $p > 0.05$ ) (Fig. 2).

Table 1

Type/Pattern of Fracture in Different Age Groups.

Group	Midface		Mandible		Dentoalveolar		Total	
	No.	%	No.	%	No.	%	No.	%
I	–	–	9	11.69	3	3.9	12	15.58
II	3	3.9	33	42.86	6	7.79	42	54.55
III	6	7.79	8	10.39	9	11.69	23	29.87
	9	11.69	50	64.94	18	23.38	77	100

$$\chi^2 = 14.77 \text{ (df = 4); } p = 0.005191.$$

Table 2

Sexwise Distribution of Type/Pattern and Number of Different Fractures.

Site	Male		Female		Total	
	No.	%	No.	%	No.	%
Midface	9	11.69	–	–	9	11.69
Mandible	32	41.56	17	22.08	49	63.64
Dentoalveolar	10	12.98	9	11.69	19	24.67
Total	51	66.23	26	33.77	77	100.00

$$\chi^2 = 6.178931 \text{ (df = 2); } p = 0.045526.$$

Table 3

Site of Mandibular Fracture in Different Age Groups.

Location	Group I		Group II		Group III		Total	
	No.	%	No.	%	No.	%	No.	%
Parasymphysis	3	6	18	36	5	10	26	52
Condyle	3	6	9	18	3	6	15	30
Angle	2	4	3	6	0	0	5	10
Body	1	2	2	4	0	0	3	6
Symphysis	0	0	1	2	0	0	1	2
Total	9	18	33	66	8	16	50	100

Table 4 shows midface fractures occurred in different age groups. There were 11.69% total midface fractures which consisted of 55.5% of zygomatic complex fractures (33.33% in Group III and 22.22% in Group II), 33.33% of orbital blow out fractures in Group III and 11.11% of nasal complex in Group II. Statistical comparisons among the three groups could not be made as no case was recorded in Group I.

Table 5 shows that out of 77 total fractures, dento alveolar fractures contributed 18 fractures i.e. 23.88%, most of dento alveolar fractures were seen in maxilla i.e. 61.1%. However, the differences were statistically not significant ( $p > 0.05$ ).

It is evident from Table 6 that 46% mandibular fractures are of compound type, 38% are of simple type and 16% are of greenstick type ( $p < 0.05$ ).

Etiological factors responsible for facial fracture in children were depicted in Table 7. From the table it is evident that fall (58.4%) was the major etiological factor responsible for fracture of facial skeleton in children followed by RTA (24.68%), sports injuries and hit by object resulted 6.49% and 5.19% respectively. While assault and miscellaneous were responsible for 1.3% and 3.9% of fractures respectively. It is also evident from Table 7 that in group I patients fall was responsible for 15.58% of fractures and it was only etiological factors.

In Group II fall was responsible for 32.47% facial fractures, RTA 11.69%, hit by object 3.9% and 2.6% by sports, assault and miscellaneous 1.3% and 2.6% respectively.

RTA was responsible for maximum fractures in Group III patients (12.99%) followed by fall 10.39%, 3.9% by sports and 1.3% hit by object and 1.3% fractures by miscellaneous.

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