

Study of paediatric fractures at tertiary care hospital

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Abstract

Background: Pediatric fracture is a major adverse event in life, significant cause of mortality, long term disability and causes significant emotional and financial burden on families. The types of fractures seen in paediatric age group are related to age, sex, type of trauma, socioeconomic and environment factors while outcome is based on initial management and definitive treatment. The detailed analysis of pediatric trauma can give us a possible insight into prevention and intervention to decrease the disability resulting from the same⁴. This clinical study aims to evaluate present scenario in paediatric fractures. **Material and Methods:** This hospital based observational, prospective, cross sectional study was in children up to 14 years of age came to casualty or orthopaedic out-patient departments of our hospital. **Results:** During study period total of 320, with 211 boys (65.94%) and 109 girls (34.06%), male to female ratio of 1.94:1. 11-14 years age group was most common (61.87%). The bones of radius and ulna were most common site of the fractures (45.31%) Majority of children were treated with cast of plaster of Paris with or without closed reduction (46.56%). **Conclusion:** Paediatric fractures in developing countries contribute a significant morbidity to the community and along with additional burden to health resources. Knowledge and awareness are important factors in preventing fractures in children.

Keywords: Fracture, paediatric, management of paediatric fractures.

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INTRODUCTION

Pediatric fracture is a major adverse event in life, significant cause of mortality, long term disability and causes significant emotional and financial burden on families. Pediatric injuries are the major cause of mortality and disability worldwide and accounts for a significant burden on countries with limited resources¹. The types of fractures seen in paediatric age group are related to age, sex, type of trauma, socioeconomic and environment factors while outcome is based on initial

management and definitive treatment. Different studies estimated the lifetime risk of a fracture during childhood between 27-64%, paediatric fractures are more common in boys than girls^{2,3}. In India exact estimation is not available, due to different reasons, as wide area, difference in urban and rural area, underreporting, many parents take treatment from quacks due to non-availability of money or experts in area, etc. Information on various aspects of paediatric fractures is needed for planning of effective preventive measures. There are few studies from developing countries regarding the prevalence and potential risk factors of pediatric fractures. The detailed analysis of pediatric trauma can give us a possible insight into prevention and intervention to decrease the disability resulting from the same⁴. This clinical study aims to evaluate present scenario in paediatric fractures.

MATERIAL AND METHODS

This hospital based observational, prospective, cross sectional study was conducted in department of orthopaedics at Rajarshree Chhatrapati Shahu Maharaj

Govt. Medical College and Chhatrapati Pramila Rajee Hospital, Kolhapur from January 2018 to December 2018. Institutional ethical committee approval taken before commencement of study.

- **Inclusion criteria** - children up to 14 years of age came to casualty or orthopaedic out-patient departments of our hospital.
- **Exclusion criteria** - presence of known factors that affect bone and mineral metabolism as some

pathologies or receiving treatment known to affect bone and mineral metabolism.

Data collected after written informed consent from parents or guardian. Data collected in prescribed Performa designed for this study. Data contains details of trauma, demographic details, clinical findings, investigations as X-ray, CT scan, laboratory workup, treatment received, any complications and follow up for 6 months. All data was arranged in Microsoft excel sheet and analysed with appropriate tools.

RESULTS AND DISCUSSION

Table 1:

Characteristics		Frequency	Percentage (%)
1. Gender	Boys	211	65.94
	Girls	109	34.06
2. Age	0-5 years	20	6.25
	6-10 years	102	31.88
	11-14 years	198	61.87
3. Residence	Rural	131	40.94
	Urban	189	59.06
4. Socioeconomic status*	Class 1	38	11.87
	Class 2	47	14.69
	Class 3	49	15.31
	Class 4	71	22.19
	Class 5	109	34.04

As children are engaged in various outdoor games, plays, road travelling they are always exposed to risk of trauma. Fractures are common and comprises of about 10-25% of all paediatric injuries and cause significant morbidity^{5,6}. Effects of paediatric trauma can be seen at various aspects in terms of loss of school activity, morbidity, financial burden and sometimes lifelong disability. During study period total of 320 children were diagnosed with fracture, either in casualty or in orthopaedic OPD of our hospital. There were 211 boys (65.94%) and 109 girls (34.06%), male to female ratio of 1.94:1. When fracture distribution was compared agewise, 11-14 years age group was most common (61.87%), followed by 6-10 years age group (31.88%) and 0-5 years age group (6.25%). Overall boys were predominant with the ratio of 1.94:1 to girls and common occurrence in school going children is similar with other studies reporting similar findings^{7,8}. This predominance is mainly due to more social activity and risk taking behaviour among boys with increasing age. Difference in incidence of paediatric fractures in urban and rural area was noted, common in urban area (59.06%) compared to rural area (40.94 %). Difference might be due to increase incidence of road traffic accidents in urban area and under-reporting in rural area. More frequency of paediatric fracture noted in lower socioeconomic class, might be due to low awareness of fracture prevention practices.

Table 2:

Bone Fractured	Number	Percentage (%)
Radius and Ulna	145	45.31
Humerus	90	28.12
Tibia and Fibula	28	8.75
Femur	19	5.94
Clavicle	23	7.20
Others	15	4.68
Total	320	100

The bones of radius and ulna were most common site of the fractures (45.31%) which was consistent with other studies^{9,10}. Other fracture sites were humerus, tibia and fibula, clavicle, femur, others in frequency of 28.12%, 8.75%, 7.20%, 5.94%, 4.68% respectively. Fracture incidence in other bones was more variable because of type of classification and upper age limit of children.

Table 3: Type of Intervention

Treatment Method	Number	Percentage (%)
Cast only	88	27.5
Closed Reduction and cast	61	19.06
K-Wires	50	15.62
Plate and Screws	38	11.87
Skeletal Traction	22	6.87
Elastic Nails	18	5.62
Hip Spica	18	5.62
Cannulated Screws	14	4.37
External Fixator	11	3.44
	320	100

Majority of children were treated with cast of plaster of Paris with or without closed reduction (46.56%). Rest required various procedures as K-Wires, plate and screws, skeletal traction, elastic nails, hip spica, cannulated screws, external fixator under appropriate anesthesia. Early stabilization followed by aggressive treatment had very positive results, with very minimal complications. Unfortunately mortality was noted in 6 patients, all were having road traffic accident, multiple injuries, succumbed due to hemorrhage mainly.

CONCLUSION

Paediatric fractures in developing countries contribute a significant morbidity to the community and along with additional burden to health resources. Knowledge and awareness are important factors in preventing fractures in children and needs some serious efforts at nationwide level. Such campaigns definitely reduce paediatric trauma and its future effects on our young generation.

REFERENCES

1. WHO/UNICEF. Child and Adolescent Injury Prevention: A Global Call to Action. Geneva, Switzerland: WHO; 2005.
2. Jones IE, Williams SM, Dow N, *et al.* How Many Children Remain Fracture-free During Growth? A Longitudinal Study of Children and Adolescents

3. Participating in the Dunedin Multidisciplinary Health and Development Study. *Osteoporos Int* 2002; 13(12): 990-5.
3. Donaldson LJ, Reckless IP, Mindell JS, *et al.* The Epidemiology of Fractures in England. *J Epidemiol Community Health* 2008; 62(2): 174-80.
4. Hatamabadi HR, Mahfoozpour S, Alimohammadi H, Younesian S. Evaluation of factors influencing knowledge and attitudes of mothers with preschool children regarding their adoption of preventive measures for home injuries referred to academic emergency centres, Tehran, Iran. *Int J Inj Contr Saf Promot* 2014;21:252-9.
5. Asim A Mohamed NFR, Rukmanikathan S. Pattern of distal radius fracture in Malaysian children. *Med J Malaysia*. 2012;67(5):483-6.
6. Ramaesh, R, Clement N. D, Rennie L. Social deprivation as a risk factor for fractures in childhood. *Bone Joint J*. 2015;97-B:240-5.
7. Moon RJ, Harvey NC, Curtis EM *et al.* Ethnic and geographic variations in the epidemiology of childhood fractures in the United Kingdom. *Bone*. 2016;85:9-14.
8. Tandon MS, Modi N. Paediatric trauma epidemiology in an urban scenario in India. *J Orthopaedic Surg*. 2007;15(1):41-5.
9. Deakin DE, Crosby JM, Moran CG, Chell. Childhood fractures requiring inpatient Management. *Injury* 2007; 38: 1241-46.
10. Rennie L, Court-Brown CM, Mok JY, Beattie TF. The epidemiology of fractures in children. *Injury* 2007; 38: 913-22.

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