

## Children's fracture: an experience from a zonal hospital in Nepal

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### Abstract

A retrospective study of all paediatric fractures presenting to Bharatpur hospital in two years was undertaken. The aim of this study is to find out incidence of fractures in children attending Bharatpur Hospital, their risk factors, problem magnitude and problem areas, preventability, disease burden socio-economically, so that it will be helpful in formulations of plans and policies at national or regional level to prevent or to decrease the injury incidences among children in populations in Nepal. Details are collected from children with fractures attending Bharatpur hospital in emergency, outdoor and indoors including their variables, geographical distribution, injury mechanism and pattern, time of seeking treatment and places etc. the study period is from January 2008 to December 2009. 1216 children were treated ranging in age from 0 to 14 year. 35% of cases were from chitwan district. Incidence of fracture increases with age. Left sided limbs had more fractures as they assume the role of protection. 67% of children's fractures occurred in males. The majority of fractures in children involve the upper limb i.e. 80%. Supracondylar fractures of humerus predominate all incidences. Mode of injury in majority of the cases was fall.

**Key words:** Children, fractures, humerus

### Introduction

Fractures in children are very common injuries. Especially in developing countries, the population of the children is high so major bulk of fracture patients belong to this age. The incidence of children fractures is variable. It can vary with the child's age, the season of the year, cultural and environmental climates, and the hour of the day, to name just a few factors. As a culture changes from a primarily rural to an urban setting, the injury patterns may change as well. It is important to develop a general picture of how, when, and why fractures occur in children

The goals for studying children's fractures have changed over the last 60 years. Originally, the goal was to identify the most common bones fractured and how they heal. The goal of today's studies is to gather data in an attempt to decrease the incidence of fractures by establishing preventive programs. Chen and Shen, in their 1993 study from Hong Kong, also set out to define the problems of children's fractures by separating the incidences into age groups.<sup>1</sup> They tried to gather epidemiologic data on which to build preventive programs. Landin's 1983 report on 8682 fractures established a trend in reviewing the incidence of children's fractures. He reviewed and examined the

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factors affecting the incidence of children's fractures. This study remains a landmark on the subject<sup>2</sup>. In Nepal, children constitute 60% of the total population according to the updated national survey 2005. It is quite important to know how, when and why fractures occur in children. To gather data is an attempt to decrease the incidence of fractures by establishing preventive programs<sup>3</sup>. It is hoped that by targeting problem areas, programs can be designed to decrease the risk factors and to guideline the management.

### Materials and methods

All children attending Bharatpur hospital with fractures in age ranging from zero to fourteen years are included. It is retrospective study analyzing all records from emergency, OPD and indoor services. Number of children enrolled are 1216. Duration of study was two years starting from January 2008 to December 2009. Details are collected about geographic distribution, injury mechanism, pattern, time of seeking treatment and places etc. Data is collected in excel spread sheet and analysed.

### Results

1216 children were treated. 80.4 percent of the fractures are of upper limb. Supracondylar fracture of humerus predominates all incidences.

Mode of injury in majority of the cases was fall. The peak of fractures in children happened in bhadra and mangsir of the Nepalese year

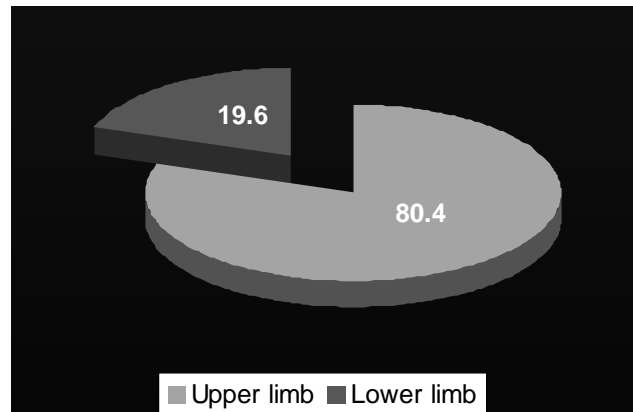


Fig 1: Incidence of the limb fractures  
Going by parts of upper limb, forearm bones are most commonly fractured which comes to be 40.4%. Next is the humerus where most common is the supracondylar fracture. The rest 4% is the physcal injuries.

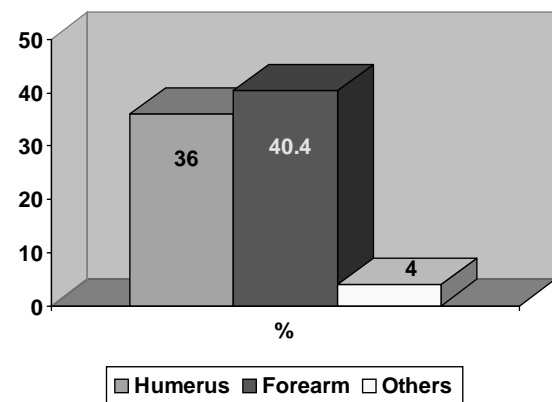


Fig 2: Incidence of upper limb fractures

They start injuring their limbs in school going age i.e. after five years. The incidence was only 8% in 0-4 years of age. 67% of incidence was in boys while 33% girls got it. It matches with the findings in other studies as boys are more outgoing. 60% children were from chitawan district, 19.9% from nawalparasi. Others are

from gorkha, makwanpur, dhading, tanahu and lamjung. Side dominance was left by 54% as left assumes the role of protection in right handed people.

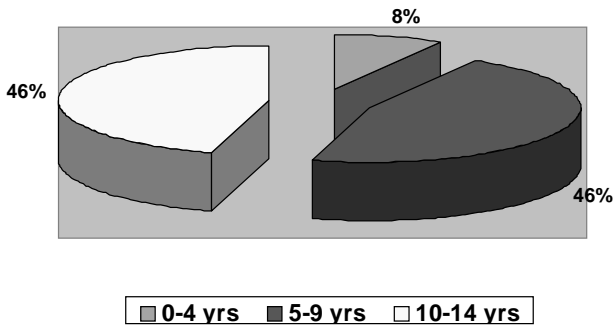


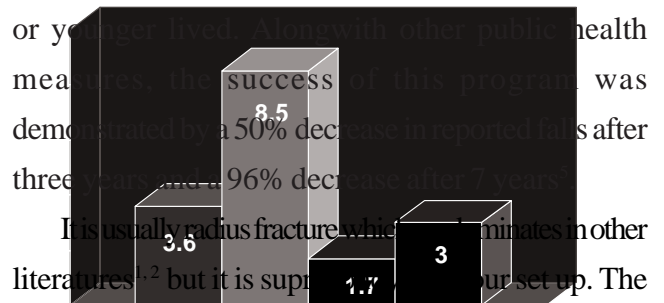
Fig 3: Incidence of fractures by age

**Fig 4: Incidence of lower limb fractures**

Tibia is the most commonly fractured bone in lower limb. Femur shaft is the second commonest. Around 15 children have lower tibia physeal injury. Multiple fractures were 3.1%  
 Open fractures recorded were 0.49%. Physeal fractures came out to be 6%. The children operated were only 7%. Hand fractures were recorded 6%.

**Discussion**

Several safety programs have been started by national organizations in US based on the studies carried out on the children fractures. The foremost is the American Academy of Pediatrics, which has committees of accident and poisoning prevention. This group has produced guidelines for athletes, playgrounds and skateboards. The American Academy of Orthopaedic Surgeons has produced a program designed to decrease the incidence of playground injuries. These programs offer background data and guidelines for various activities. In the United States, one effective program is the New York Health Department's "kids can't fly" campaign, developed in response to the large number of injures and deaths from children falling out of apartment house windows in the 1970s.<sup>4</sup> The city required landlords to provide window guards in apartments where children 10 years or younger lived.



It is usually radius fracture which predominates in other literatures<sup>1,2</sup> but it is supracondylar fracture in our set up. The mode of injury in most of literatures was motor vehicle accidents while it is fall in our hospital. The incidence of open fractures is also less; 0.49% versus 4.6% in study of cheng and shen<sup>1</sup>. Multiple fractures were around comparable to the same study i.e. 3.1% vs 3.6%. Physeal fractures came out to be only 6% as comparison to 20 to 30% in other literatures. Hand fractures were recorded less common, 6%, **in comparison to western literatures<sup>2,3,5</sup> where it is around 20%.**

As children constitute 60% of the total population of Nepal, the burden of children's fracture can be

assumed to be quite high. So it is important to target problem areas on the basis of these types of studies. Along other features, as the mode of injury in majority of children was fall, the importance of fall prevention programmes in home and surroundings is to be highlighted.

### **Recommendation**

A project is to be carried out for an epidemiological study based on a large population so that other factors would be found out to lay out preventive measures for minimizing incidences and minimize the impact of children's fractures.

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