



Original Research Article

## Upholstered Bed Injuries among the Paediatric Population. Are We Concerned? An Institutional Experience.

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### ABSTRACT

**Introduction:** Fall from height is often regarded as the cause of injury. Children are more prone to injuries as they indulge in the untrained sports activities. While playing they may harm themselves if unattended. A new mode of injury pattern among the paediatric age group is being increasingly seen i.e., the fall from upholstered beds. The aim of this study is to look for the pattern of orthopaedic injuries sustained after such falls and advocate some preventive measures.

**Material and methods:** study was conducted at the tertiary level orthopaedic hospital from June 2013 to June 2014 .All patients in the paediatric age group who had history of fall from the upholstered bed were included.

**Results:** 27 patients, 19 males and 8 females in the age group of (1year 9 months -8years) satisfying the inclusion criteria were seen during this period. 22 upper limb injuries and 5 lower limb injuries were noted. 4 patients also had nasal trauma or minor forehead trauma. Among upper limb injuries 13 supracondylar fractures (milch type 1-3), 5 clavicular fractures and 2 both bone forearm fractures (green stick injuries), 1 quadrate fracture and 3 distal epiphyseal injuries were seen. Among lower limb 2 had hair line fracture of tibial shaft and 3 had distal tibial epiphyseal injury.

**Conclusion:** Fall from Upholstered beds is increasing in the developing world. More parents get these beds for the comfortable sleep. Children are usually kept un attended and they indulge in sporting activities (like propping) over these beds .This leads to fall and various injury patterns. Properly designed beds for the paediatric age group should be manufactured and an awareness programme among the masses should be designed to prevent such injuries. More studies should be conducted to know the actual number of such cases as more often they get un notified.

**Key words:** bed injuries. Paediatric trauma. Upholstered beds

### INTRODUCTION

Fall from height is often regarded as the cause of injury. Some regard road traffic accident as the leading cause of injury [1] while some say fall from height [2] is the leading cause of paediatric trauma .No study

however has described the causes of fall and the injuries sustained after these falls.

Paediatric fractures are also important as they affect child adjustment and family functioning. Stancin et al. [3] noted functional limitations and family

stress 6 months after serious paediatric fractures that required hospitalization. Lower extremity fractures and fractures that required prolonged immobilization had a more negative impact on the child and the family unit than other fractures.

Children are more prone to injuries as they indulge in the untrained sports activities. While playing they may harm themselves if unattended. A new mode of injury pattern among the paediatric age group is being increasingly seen i.e., the fall from upholstered bed. The aim of this study is to look for the pattern of orthopaedic injuries sustained after such falls.

## MATERIALS AND METHODS

Study was conducted at the tertiary level orthopaedic hospital from June 2013 to December 2013. All patients in the paediatric age group who had history of fall from the bed were included. Patients were initially evaluated at the emergency department and the affected limb was stabilised. Neurovascular status was checked. Associated injuries were ruled out. Proper X-rays were advised and final diagnosis made. Depending upon the fracture pattern, treatment was advised. Treatment included conservative management for clavicle fractures, undisplaced supracondylar fractures, undisplaced epiphyseal injuries of distal radius and distal tibia, hairline fracture of tibial shaft. While as displaced supracondylar fractures and displaced epiphyseal injuries of distal radius were treated with closed reduction and percutaneous pinning. Quadrate and both bone forearm fractures were reduced by closed methods.

## RESULTS

27 patients, 19 males and 8 females (Table 1) in the age group of (1year 9 months -8years) satisfying the inclusion

criteria were seen during this period (Table 2). n=22 upper limb injuries and n=5 lower limb injuries were noted. n= 4 patients also had nasal trauma or minor forehead trauma. Among upper limb injuries n=13 supracondylar fractures (milch type 1-3), n=5 clavicular fractures and n=2 both bone forearm fractures, n=1 quadrate fracture and n= 3 distal epiphyseal injuries were seen. Among lower limb n= 2 had hair line fracture of tibial shaft and n=3 had distal tibial epiphyseal injury. (Table 3)

Table 1 .DISTRIBUTION OF PATIENTS AS PER GENDER

	Number	Percentage
Male	19	70.4
Female	8	29.6
Total	27	100

Table 2. AGE DISTRIBUTION

Age in years	Number	Percentage
0-2	1	3.7
2-3	5	18.5
3-4	9	33.4
4-5	4	15
5-6	6	22
6-7	1	3.7
7-8	1	3.7
TOTAL	27	100

TABLE 3: PATTERN OF FRACTURES

	Number	Percentage
UPPER LIMB	22	88.8
Supra condylar fractures	13	48.1
Clavicle*	5*	18.5
Both bone forearm	2	7.4
Quadrate fracture Radius	1	3.7
Distal epiphyseal injuries of Radius *	3*	11.1
LOWER LIMB	5	
Tibial shaft	2	7.4
Distal tibial epiphysis	3	11.1
OTHERS* **	5**	
TOTAL	100	

\* These patients had more than one injury

\*\* nasal trauma or minor forehead injuries.

## DISCUSSION

Paediatric injuries amount for the 10% of all traumas. [4] Some regard road traffic accident as the leading cause of injury in the paediatric age group while some say fall from height is the leading cause of paediatric trauma. Pattern of injuries in different age groups has been mentioned in literature by Bayreuther J et al (2009).

Do et al <sup>[1]</sup> in his study concluded that Burn injuries were the leading cause of trauma in children aged less than 1 year, while burn injuries and blunt trauma occurred equally in 1-5 year old children. Children older than 6 years were more often implicated in blunt trauma, predominantly road traffic accidents and fall accidents.

P Jaikumar et al 2012 stressed to rule out non-accidental injury in children <sup>[5]</sup> Non-accidental injury (NAI) in children includes orthopaedic trauma throughout the skeleton. No study however has described the causes of fall and the injuries sustained after these falls. The following study was taken to see the fracture pattern following fall from upholstered beds which is increasingly been seen in this part of world.

These injuries occur when the children are kept unattended .They keep propping over the bed and while doing so, they lose the balance and fall over the nearby floor. The intensity of trauma depends on the height of fall (height of the bed from the ground plus the height above the bed, as the child goes up due to upward thrust of the springs embedded into the Dunlop which depends on weight of the child). Associated injuries occur depending on the floor pattern or the nearby objects present.

Head trauma is seen mostly in infants <sup>[6]</sup> possibly due to more head-body ratio. In our study we had only five patients who had minor fore head injuries in which two had nasal bleeding. We presume that the patients with severe head injuries, thoracic or abdominal injuries did not report to our department and might have been taken to the other centres which cater surgical/neurosurgical emergencies.

Of the 27 patients received at our orthopaedic emergency unit with such injuries, 22 had upper limb and 5 had lower limb injuries .The details are given in Table 3

The findings are consistent with Agaja et al (2009) <sup>[7]</sup> who found that males were involved more than females, upper limb injuries were more common in paediatric age group then the lower limb and supra condylar fractures were the most common among upper limb fractures.

Giuliana Valerio et al(2010) in his study has also shown the similar results. <sup>[8]</sup> He also noted that fractures due to low energy trauma occurs in 70.2 % of paediatric cases and home was the main location of fracture in 41.6% of cases . In other studies home is regarded as the location of trauma in 37% of cases. <sup>[9]</sup> However these studies have not mentioned the cause of trauma at home. Rennie et al., <sup>[10]</sup> in his study also found fall as the cause of injury in 57% cases with male predominance. Jones et al 2004 also found upper limb as the most common limb involved in paediatric group. <sup>[11]</sup>

Studies show that in paediatric age group, boys have more chances of fracture than girls. Brinker et al <sup>[12]</sup>

Galano GJ et al (2005) in his study found femoral fractures as the most common injured bone <sup>[13]</sup> but this can be argued as in his study road traffic accidents were the most common mode of trauma while as in our study only fall from bed is being studied, which is supposedly less traumatic .

Irrespective to the mode of trauma, the paediatric fractures are different than the adult fracture and should be treated with utmost care. Two factors which make them different are the potential of remodelling and vulnerable epiphysis. Karaharju et al. noted that compensatory physal growth plays an important role in remodeling diaphyseal fractures in animals. <sup>[14]</sup> Although varus or valgus angulation may correct spontaneously to some extent after fractures of long bones in children, an excessive amount of angulation cannot be expected to correct and causes significant angular deformity. Such a deformity not only is

cosmetically distasteful, but also may affect function of the joints above and below it. For this reason, every effort should be made to correct varus or valgus angulation at the time of fracture. The extremities tolerate valgus angulation of the long bones more readily than varus angulation, especially the lower extremities. In the humerus and to some extent in the femur, a mechanism at the shoulder and hip joints (ball-and-socket joints) seems to compensate to some degree for malrotation.

#### **Preventive measures:**

1. Since the children are supposedly having a sound sleep, if they do move they can harm their selves. Pillows arranged on the sides can prevent such injuries.
2. Safety rails if possible should be raised during sleep.
3. Children should not be kept unattended while they are with other siblings as that's the time when they start propping around over the bed.
4. Parents should consider having younger children over the floor until they are older
5. Information campaign among the masses regarding this mode of injury and need to seek early medical attention in these situations.
6. Companies selling these items should warn parents and advise them about the safety measures to prevent paediatric injuries.

#### **Limitations of study:**

Not all patients who had fall from bed seek orthopaedic consultation and either ignore the injury or go to other specialities .So we might be missing a good number of cases.

Further, the patients who had only soft tissue injuries or minor complaints pertaining to

the musculoskeletal system might not have been included in the study.

#### **CONCLUSION**

Fall from Upholstered beds is increasing in the developing world. More parents get these beds for the comfortable sleep. Children are usually kept unattended and they indulge in sporting activities (like propping) over these beds .This leads to fall and various injury patterns. Properly designed beds for the paediatric age group should be manufactured and an awareness programme among the masses should be designed to prevent such injuries. More studies should be conducted to know the actual number of such cases as more often they get unnoticed.

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