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Epidemiologic features of traumatic fractures in children and adolescents

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Abstract
The goals of medical practitioners and the essence of the public health sector are to foster the wellness of members of the public. In the context of this research, understanding the prevalence of traumatic fractures among children, the causative factors, and the available intervention that would be integral in boosting the chances of prognosis for individuals that suffer from traumatic fractures is essential. In a bid to understand the epidemiology of the condition, a qualitative research approach is adopted. Cases of traumatic fractures are recorded at the KVG Medical College. Since the study focuses on children and the adolescent, persons aged between one and nineteen years only were included in the study. The study demonstrated that the prevalence of traumatic fractures were more prevalent among male children and teenagers than their female counterparts. The propensity of males to suffering from traumatic fracture was attributed to nature of games that boys play as opposed to their female counterparts. Principally, the prevalence of the condition can be reduced if parents demonstrate more care to the nature of activities that children and teenagers indulge in on a daily basis.

Keywords: teenagers, epidemiology, traumatic fractures, qualitative study, and risk factors

Introduction
In recent years, biased ferrite material for microstrip antenna structures has attracted noticeable attention. Ferrite is one of the important magnetic materials which are used as in both types single and polycrystalline. Some novel characteristics Fractures among children and adolescent is a prevalent public health in contemporary society. The frequent occurrences can be attributed to high levels of exposure and activity. (Rennie, Court-Brown, Mok & Beattie, 2007) [11]. In India, trauma is emerging as a major cause of mortality and morbidity among the young population. Notably, fractures are also a prevalent problem in the United States and the global spectrum. However, the frequency of the problem differs across gender strata. To be precise, cases of traumatic fractures were more common among male children and adolescent than their female counterparts (Valerio *et al*., 2010) [14]. Furthermore, since traumatic fractured adversely affect the wellness of the aforementioned vulnerable population, special attention is required to ensure that young people are protected from any reckless activities that might put them in danger of getting injuries. This study strives to extensively examine the epidemiology of traumatic fractures among children and adolescent admitted to the KVG Medical College Hospital.

Literature Review
There are various risk factors associated with traumatic fractures among children and adolescents. Principally, gender is a risk factor (Lyons, Delahunty,Kraus, Heaven, McCabe, Allen & Nash, 1999) [5]. Boys are often engaged in rough activities that put them at a higher risk of getting fractures compared to girls. The second risk factor is poor nutrition (Goulding, 2007) [4]. In the medical context, proper nutrition is essential for the development of the body. According to Rodà *et al*. (2019) [13], the nutritional requirement of children and adolescent is more than that required by adults. Therefore, children need better nutrition to support their rapid growth and strengthening of the bones (Eastell & Lambert, 2002) [1]. Poor nutrition causes the bones to weaken, making them more susceptible to fractures. Proper nutrition is essential to ensure children and adolescents develop strong bones.

Obesity is another risk factor that predisposes a child to bone fractures. The number of children with obesity in developing countries such as India has been rising at an alarming rate (Malik, Willett & Hu, 2013) [6]. Obesity increases the body mass of a person. Consequently, the person is more likely to suffer severe fractures in case of a fall. Furthermore, the diets that have low levels of calcium tend to cause a reduction in bone density (Parfitt, 1983) [9]. Low bone density predisposes a person to traumatic fractures.

Cases of traffic road accidents have been on the rise globally. India has a vast population that relies on public transport. Many young children and adolescents rely on cars and school buses to transport them to schools and other destinations countrywide. Furthermore, some parts of India have poor infrastructure and chaotic public transport systems (Singhal, Newell &Nguyen, 2011) [12]. As a result of these factors, many accidents tend to occur yearly. Thousands of children, adolescents and adults suffer traumatic injuries because of these accidents. The government needs to improve infrastructure to reduce cases of traffic accidents that cause traumatic fractures to many

people (Pucher, Korattyswaropam, Mittal & Ittyerah, 2005) [10]. In this research, various risk factors were considered to determine their impact on the epidemiology of traumatic fractures among children and adolescents.

Materials and Methods

The research was conducted in the KVG Medical College that is located in Kurunjibag, Sullia. People around Sullia engage in several leisure activities that expose their children to accidents. Most of the children and adolescents who sustain fractures are treated in the KVG Medical College Hospital. Being one of the most significant health facilities in the region, the hospital caters to the wellness of a vast patient population.

At the Hospital, all cases of traumatic fractures were recorded in a database. Variables that are recorded include the age, gender, type of fracture, and the mechanisms of injury. Data was collected from patients upon arrival at the hospital. Questionnaires containing the variables were issued to consenting parents who filled and returned them to the researchers. Additional data and information were collected from physicians and emergency service workers. All unwilling participants were excluded from the research, and instead, the central registry at the emergency department was used to capture any data that may have been left out.

The data collected entailed information from children and adolescents between the ages of 0 – 19. Physicians in the hospital confirmed most of the traumatic fractures through radiology. It is the best technique that is used in medicine to confirm the presence and extent of fractures. The extent of the traumatic fractures was recorded as either slight fractures, moderate or severe fractures. Additionally, records about the sight of the fractures were reviewed by checking a random sample of 15% of all recorded fractures in 2019.

Results

After analyzing the data, results indicate that children below 18 years have a 34% risk of getting fractures. The results also indicate that cases of traumatic fractures are on the rise. Since the beginning of the year, 42% of the traumatic cases reported were severe. Based on the site of the fractures, the statistics indicate that 24% affected the distal forearm. Additionally, 13% affected the clavicle, 10% affected the ankle, and 7% affected the forearm shaft. The research also established that severe traumatic fractures of the ribs and the femoral shafts were the list likely to take place. The prevalence of these kinds of fractures was less than 1%.

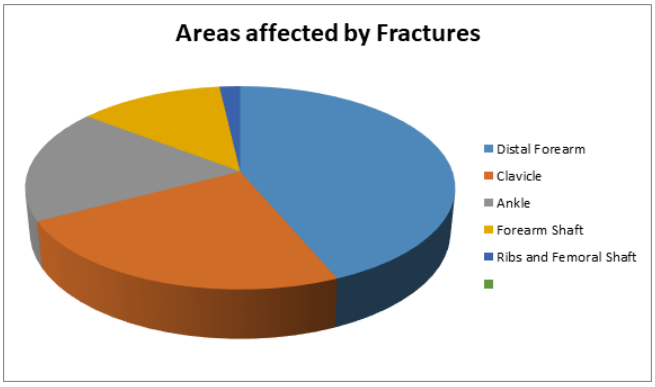

Fig 1: Areas Affected by Fractures.

Different mechanisms of injury also contributed to the prevalence of fractures. Evidently, 25% of the cases occurred due to collisions with other people or objects, 20% were due to falling, and 10% were as a result of traffic accidents. Other causes of the traumatic fractures amounted to 45% of the cases. Adolescents recorded the largest number of cases involving traffic accidents. Most of the cases were associated with riding bicycles, motorcycles, and cars.

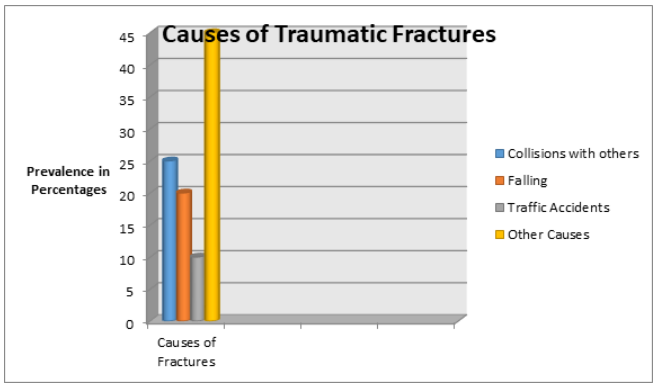

Fig 2: Causes of Fractures

In terms of gender, about 60% of the total number of cases of traumatic injuries involved boys, while 40% of the cases involved girls. Furthermore, the playing of games accounted for 40% of the traumatic injuries. The boys were mostly affected because of playing football, while girls were found to be less affected because of playing light games.

Discussion

The research findings show that the number of young people getting severe traumatic injuries is high. Boys are the most affected because of engaging in games that require much physical activity. Cycling and playing football have been identified as the main causes. Therefore, it is crucial to enhance the training of these young people to help them understand how to avoid inflicting injuries on themselves and others during games(Nixon, Clacher, Pearn & Corcoran, 1987). Parents and teachers need to provide proper guidance that can help alleviate the pain inflicted on young people.

About 25% of the cases occurred due to collisions with people or objects. Young children tend to play a lot. Some of the environments in which they play may have objects such as stones that can cause injury. Therefore, caregivers must exercise caution when their children are playing(Frost, Wortham& Reifel, 2001) [2]. They have to give proper advice to the children whenever the environment poses a risk to the safety of the children. Additionally, the results indicate that adolescents suffer traumatic injuries mainly because of cycling and traffic accidents. Therefore, parents need to desist from allowing children to drive their cars (Masuri, Isa & Tahir, 2012) [7]. Driving requires training and mature minds that can make rational decisions on the roads. Children have not developed that capacity to be allowed to drive on the roads (Goniewicz, Goniewicz, Pawłowski, Fiedor & Lasota, 2017) [3]. Additionally, children and adolescents should be advised on how to keep their safety while cycling.

Conclusion

In conclusion, many children and adolescents suffer from a wide range of traumatic fractures, some of which are preventable. The research indicates some of the major risk factors to the conduction include poor nutrition, accidents, preference for rough activities, and obesity. This research determined that boys are more likely to suffer from traumatic fractures than their female counterparts. Also, the chief causes of traumatic fractures are collisions with other and physical activities. In a bid to mitigate the prevalence of traumatic fractures, children and adolescent must be instructed to wear safety gear before indulging in rough activities and consumption of a balance diet should be emphasized.

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