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Epidemiological Determinants Of Children's Orthopedic Care In Tertiary Care Center

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Abstract:

Introduction: Trauma is emerging as an epidemic and a leading cause of morbidity and mortality in children. More than two billion children worldwide do not have access to safe and affordable surgical and orthopedic healthcare. This study was conducted with the objective of identify the prevalence of cumulative orthopedic disorders and factors for deferral treatment

Materials and Methods: A retrospective record based study was conducted to at tertiary care hospital situated at rural area of previous 02 years. After thorough discussion with consultants opinion factors were determined. All the epidemiological determinants were analyzed.

Results: Total of 1600 children presented cumulative orthopedic disorders were analyzed. 75% presented with trauma. Delayed presentation among the trauma cases was 20%. Remaining had neuromuscular (10%), infectious (6%), metabolic (3%), congenital (3%), and miscellaneous (3%) disorders. The reason for deferred presentation was primarily poor transport infrastructure, followed by low-Socio Economic families, health insurance coverage and received primary traditional remedies.

Conclusion: The high incidence of pediatric trauma on roads and falls indicates the need for more supervision during playing and identification of specific risk factors for these injuries in our setting. Injuries in pediatric age group by and large is a preventable condition. Distance traveled to reach the hospital from a distant location with poor transport infrastructure was one of the primary epidemiological determinants.

Keywords: epidemiological determinants, trauma, musculoskeletal injuries, prevalence.

Introduction:

Accidents, falls (including falling from heights), sports-related injuries, assaults, burns, and drownings are the most reported causes of traumatic mortality among children[1]. The Global initiative for children's surgery has given recommendations to strengthen the delivery of surgical and orthopedic care to low-middle-income countries areas,[2] Trauma is emerging as an epidemic and a leading cause of morbidity and mortality in children. Children <15 years of age comprise about 32.8% or about 1/3rd of the total Indian population.[3] There are many factors behind higher risk of accidents among children, including their diminished risk assessment, slow reaction times, and failure to

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identify danger in time.[4] The epidemiology of trauma-related accidents in the pediatric population vary from country to country based on factors including the socioeconomic status, geographic location, and population-related characteristics of the specific region.[5] The rural population mainly because of poor transport infrastructural facilities were more prone for high risk of trauma and a host of orthopedic conditions.[6-7] Poor orthopedic surgeon to patient ratio, the prevalence of indigenous treatment, poverty, training for children's orthopedic care are in rural areas will contribute to determinants.[8] This study was conducted with the objective of identify the prevalence of cumulative orthopedic disorders and factors for deferral treatment.

MATERIALS AND METHODS: A retrospective record-based study was carried out to analyze the epidemiological determinants of children with musculoskeletal orthopedic disorders. Patients aged 0 to 18 years old were included in the study. Patients with incomplete medical records, missing data, or whose parents refused to give their child's data were excluded. The parents of eligible patients were called to obtain their permission to participate in the study. To minimize errors, data were obtained from individuals who consented to use a pre-structured questionnaire. Personal information, such as age, gender, and nationality; medical history, the type of orthopedic trauma, such as fractures, dislocations, or soft tissue injuries; the causes of the trauma, such as falls, traffic accidents, and the severity of the trauma were all included in the questionnaire. and conducted group discussion among healthcare providers. Family's Socioeconomic scale (SES), health insurance coverage, initial treatment history, and distance from and transport facility to the hospital were noted.

RESULTS:

Total of 1600 children presented cumulative musculoskeletal orthopedic disorders were analyzed. Among them 550 were girls 1050 were boys. (Table 1). Mean age was 8.24 years (range: 0–18 years), 75% of children presented with trauma. Lower limb injuries (60%) were more in compared to upper limb which was followed by other injuries.(Pelvis and thorax). All children who presented with native splinting, massage, deformity secondary to malunions, infections, or more than 1 month after the incident was categorized as delayed presentation. Delayed presentation among the trauma cases was 24%. (Table 2) Remaining had neuromuscular (10%), infectious (6%), metabolic (5%), congenital (1%), and miscellaneous (3%) disorders. (Table3). Social economic families were categorized as high, middle and low. 70% of case were from low Social economic family's background. And only 10% were had health insurance coverage. 45% were reported poor transport infrastructure. (Table 4)

Table 1: Distribution according gender.

Boys	1050 (65.6%)
Girls	550 (34.4%)
Total	1600

Table 2: Distribution according fracture.

Trauma cases	1200 (75%)
Closed Injuries	1020
Open Injuries	180
Delayed Presentation	288

Table 3: Distribution according musculoskeletal disorders (except fracture).

Neuromuscular disorders	160 (10%)
Musculoskeletal infections	96 (6%)
Metabolic disorders	80 (5%)
Congenital disorders	16 (1%)

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Miscellaneous	48 (3%)

Table 4: Distribution according Epidemiological Determinants.

Low Social economic families	1120 (70%)
health insurance covered	160 (10%)
Poor transport infrastructure	720 (45%)
Traditional Remedies	512 (32%)

Discussion: Understanding the injuries among children is important in reducing morbidity and mortality through targeted prevention efforts. In the present study, we found that most of the injured children were boys. Kulshrestha et al.[9] and Verma et al[10] reported that boys experienced higher rates of musculoskeletal injuries compared with girls Regarding the injury pattern, most children had blunt orthopedic injuries with closed fractures mainly due to a fall from height (due to their young age) and injury during playing (as most of them were boys who may be outdoors for a long time) Sharma et al[11]. Reported that falls were the most common cause of pediatric injuries, followed by road traffic accidents. Similarly, Hyder et al[12]. Stated that more than one-third of all injuries were due to falls in children < 5 years old. In our study we found Upper limb injuries were most common followed by lower limb and pelvic injuries.in contrast to In Iran, Ghaffari[13] et al. found that the vast majority of the fractures were in the upper limbs, with less than one-fifth observed in the lower limbs. Bhide *et al*.[14] estimated the number of congenital anomalies at 185 for every 10,000 births of which a whopping 25% to 35% were musculoskeletal anomalies. More than 30% of India's villages still do not infrastructural good roads most of them non travelable during heavy rainy seasons[15-16] National Rural Health Mission and Rashtriya Bal Swasthya Karyakram initiatives have focussed on screening and prevention of disabilities but have not been able to ensure treatment for musculoskeletal disorders in children[2]. Night-time transfer to hospital is restricted to privately owned vehicles or very minimal or zero transportation.

Conclusion:

Orthopedic healthcare initiatives are needed to overcome challenges in providing quality orthopedic care to children in rural areas. There is a need of international attention to injuries in terms of both policies and resource investments in public health. The high incidence of pediatric trauma on roads and falls indicates the need for more supervision during playing and identification of specific risk factors for these injuries

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