



COVID Quarantine and School Closures Impact on Pediatric Orthopaedic Fracture Care

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BACKGROUND

- Children ages 10 – 14 have the highest incidence of fractures and boys are 2-3 times more likely to suffer a fracture than girls. ¹
- Many studies have reported a seasonal variation in the incidence of pediatric fractures, with a higher numbers of fractures occurring during school holidays. ^{4,6}
- In Oregon, schools were closed to prevent the spread of COVID-19 on March 13th, 2020 for the remainder of the academic year. Parks and playgrounds were closed and all organized sports were cancelled.

OBJECTIVES

- The purpose of this study is to determine how sports and school closures changed the incidence, demographics, and treatment of pediatric fractures.

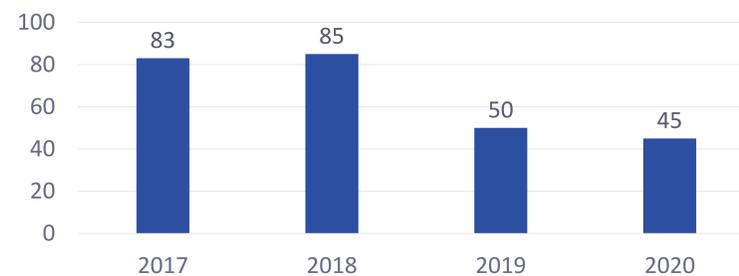
METHODS

- A retrospective chart review was performed from a single level II trauma center.
- Patients aged 0-17 year old who sustained a fracture during the three month period of March 13th to June 13th in 2017-2020 were included.
- The patients' demographics, mechanism of injury, fracture type, and treatment were recorded and compared by calendar year.

RESULTS

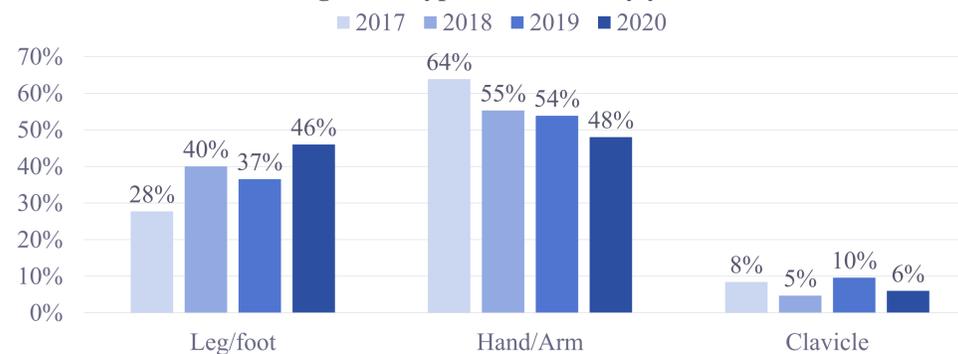
- The total number of pediatric patients sustaining fractures in this three-month period decreased from an average of 73 patients per year in 2017-2019 to a total of 45 in 2020. However, there were only 5 fewer patients in 2020 compared to 2019.
- There was always a slightly higher proportion of males than females each year (range 52-60% male). Age fluctuated across years, but a majority of fracture patients were <15 years old. The percent of patients requiring surgery did not change in 2020 compared to other years (18% in 2020 vs average of 18%).

Figure 1. Number of pediatric orthopaedic fractures by year



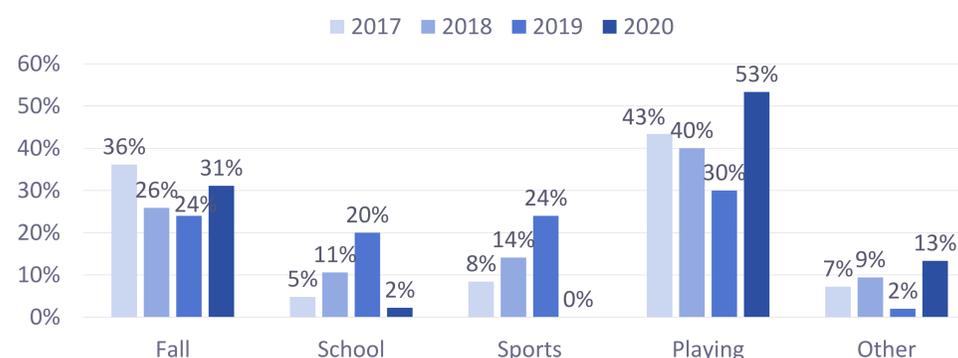
- 2020 had the highest proportion of leg/foot injuries and the lowest proportion of arm/hand injuries compared to 2017-2018. However, there has been a gradual trend in this direction and there is no evidence of a dramatic shift in 2020 compared to other years.

Figure 2. Type of fracture by year



- About half of injuries in 2020 were related to playing (playground, scooter, bike, skateboard, ATV, rollerblades, or trampoline), which is more than any other year. In 2020, there were no sports injuries and only one school injury, which is very different compared to 2017-2019.

Figure 3. Cause of fracture by year



CONCLUSIONS

- There has been a downward trend in pediatric patients presenting with fractures over the past 4 years. However, there was no difference from 2019 to 2020 with respect to quantity of fractures and the percentage of patients requiring surgery.
- In 2020, there were more fractures sustained at home and almost no injuries during team sports or in school.
- Although the number of pediatric fractures was substantially higher in 2017/2018 compared to 2019/2020, there is no evidence that school closures and quarantine in 2020 dramatically changed the number of pediatric fractures.

FUTURE IMPLICATIONS

- Exploring this unique time will give us better insight on how to prevent fractures in the household setting and how school and sports closures affect pediatric fracture care.

REFERENCES

1. Naranje SM, Erali RA, Warner WC, Sawyer JR, Kelly DM. Epidemiology of Pediatric Fractures Presenting to Emergency Departments in the United States. *J Pediatr Orthop*. 2016;36(4):45-48.
2. Miller TR, Romano EO, Spicer RS, Miller TR, Spicer RS. The Cost of Childhood Unintentional Injuries and of Prevention the Value. *2014;10(1):137-163*.
3. Swenson DM, Yard EE, Collins CL, Fields SK, Comstock RD. Epidemiology of US High School Sports-Related Fractures, 2005 – 2009. *Clin J Sport Med*. 2010;20(4):2005-2009.
4. Barr L V. Paediatric supracondylar humeral fractures : epidemiology , mechanisms and incidence during school holidays. *J Child Orthop*. 2014;167-170. doi:10.1007/s11832-014-0577-0
5. Holt JB, Glass NA, Shah AS. Understanding the Epidemiology of Pediatric Supracondylar Humeral Fractures in the United States : Identifying Opportunities for Intervention. *J Pediatr Orthop*. 2018;00(00):1-7. doi:10.1097/BPO.0000000000001154
6. Segal D. Trends in the seasonal variation of paediatric fractures. *J Child Orthop*. 2018. doi:10.1302/1863-2548.12.180114