

## **Seasonal Trends in Operative Pediatric Supracondylar and Femur Fractures at a Pediatric Level 1 Trauma Center**

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**Background:** Supracondylar humerus and femoral shaft fractures are two common injuries managed by pediatric trauma centers. While anecdotally we see an increase in many injuries with warmer weather, no studies in the United States have evaluated this subjective trend. The purpose of this study was to describe the seasonal variation in the incidence of operative pediatric supracondylar humerus and femur fractures, and the relative burden of these injuries on hospital census.

**Methods:** We performed an IRB-approved, retrospective review of 1626 supracondylar humerus and 607 femur fractures treated operatively between 2012 and 2018 at a single level 1 pediatric trauma center. Dates of injury were identified as weekday versus weekend, and temperature and precipitation data was obtained through the National Weather Service.

**Results:** Together, supracondylar humerus and femur fractures account for between 6% and 25% of orthopedic admissions. For every 10 degree (F) increase in temperature, there was a 10% increased likelihood of femur fracture and a 25% increased likelihood of supracondylar humerus fracture ( $p=0.03$  and  $p<0.0001$  respectively). Femur fractures were less likely to occur on weekdays compared to weekends (OR 0.65,  $p=0.0001$ ) and less likely to occur on days with precipitation (OR 0.39,  $p=0.03$ ), while supracondylar humerus fractures demonstrated no significant weekly or precipitation-related trends.

**Conclusions:** As often anecdotally reported, supracondylar humerus fracture volumes mirror temperature variations annually. Femur fractures appear to have more complex trends, with higher volumes on weekends regardless of season. Geographic variation in temperature, precipitation and proximity to seasonal activities such as snow skiing may contribute to injury volumes.

**Level of Evidence:** Retrospective case series, Level IV