Effect of temperature fluctuations on plastic surgery trauma volumes at a level-1 trauma center

Background: This study investigates the relationship of temperature fluctuations and the number of plastic surgery maxillofacial and hand traumas at a level-1 trauma center. We hypothesize that as temperatures increase, 1) the number of hand and maxillofacial consults will increase, 2) the majority of consults will occur on the weekends, 3) young adult males will be the most prevalent demographic, and 4) interpersonal violence will be most temperature dependent.

Methods: Age, gender, mechanism of injury, consult date, treatment date, and disposition data were gathered from 3195 electronic medical records for hand and maxillofacial consults at a university level-1 trauma center from July 2008 to July 2013. Corresponding monthly maximum temperatures were collected.

Results: There is a strongly positive correlation between the overall number of consults with temperature (Pearson's correlation coefficient, R = 0.58, p-value < 0.001), and strong evidence for a higher proportion of trauma cases occurring on the weekend (Chi-square test, p-value = 0.003). 73.1% of the trauma consults were males with 34% being young adult males (18-40 years). The data does not provide enough evidence to show that aggressive behavior is more temperature dependent.

Conclusion: There is a statistically significant strong correlation between the number of maxillofacial and hand trauma consults to the plastic surgery service and mean maximum temperature. The proportion of trauma cases is higher on the weekends with young adult males making up the largest group. There is insufficient data to determine what injury mechanisms is most temperature dependent.

Keywords: temperature fluctuations; trauma related to weather; trauma prevalence with climate correlations; hand and maxillofacial consultations

Level of Evidence: Level I Systematic Review and Meta-Analysis.

Notes: