Changes in injury presentations during the COVID-19 pandemic in the USA: results from the National Electronic Injury Surveillance System

Lifestyle changes during the COVID-19 pandemic have been shown to be associated with a change in trauma patterns with regard to motor vehicle collisions, assaults and suicide attempts.\(^1\)\(^-\)\(^3\) We investigated changes in ED visits in the USA for injuries related to consumer products before and during the COVID-19 pandemic.

The National Electronic Injury Surveillance System database collects information on non-violent/non-motor vehicle-related trauma from approximately 100 EDs across the USA, allowing national estimates of injuries. We obtained 2019 and 2020 data and used the key events to divide the pandemic into three intervals: first interval starting 20 January 2020, when Centers for Disease Control and Prevention confirmed the first COVID-19 case in the USA until 12 March 2020; second interval starting 13 March 2020, when a national state of emergency was declared and lockdowns began until 19 April 2020; third interval starting 20 April 2020, when Texas became the first state to start a phased reopening of economy until the end of 2020. We applied t-test and Pearson’s \( \chi^2 \) test to determine the differences between the pandemic and similar time frames during 2019. Two-sided \( \alpha \) values <0.05 were considered significant. We obtained institutional review board exempt status.

There was no significant decrease for non-violent, non-motor vehicle trauma presentations between 2019 and the period between the first case and lockdown (20 January to 12 March 2020) \((33,815 \text{ vs } 33,296, \Delta=-1.53\%, \ p=0.27)\) (figure 1). However, compared with 2019, there was a significant drop in average daily ED visits both during the lockdown period of 13 March to 19 April 2020 \((36,658 \text{ vs } 20,685, \Delta=-43.6\%, \ p<0.001)\) and as lockdowns lifted between 20 April and 31 December 2020 \((37,939 \text{ vs } 30,356, \Delta=-20\%, \ p<0.001)\). The mean age \((46.6 \text{ vs } 51.5 \text{ years}, \ p<0.001)\) and percentage of patients who were men \((52.2\% \text{ vs } 54\%, \ p=0.02)\) increased from the control period to the lockdown period (table 1). There was a significant decrease in these trauma presentations in all age groups, with the largest decrease in school-age children (figure 1).

The injured body part, type, location and disposition of injuries during the lockdown period were significantly different from the control period \((p<0.001; \text{ table } 1)\). Notably, lacerations and fractures increased proportionally while other injury types declined or stayed the same. During the lockdown, proportionally more patients were hospitalised and died in ED compared with the control period in 2019 (table 1). Injuries associated with saws, lawn mowers, all-terrain vehicles, house repair/construction materials and power drills increased while injuries associated with stairs/steps, sports and floors/flooring material decreased (online supplemental table 1).

![Figure 1](https://example.com/figure1.png)

**Figure 1** Daily emergency visits for trauma in 2019 and 2020 defined by the age groups.

Similar to previous studies of ED visits, we observed a prominent decline in mean daily ED visits for trauma related to consumer products during the lockdown.\(^2\)\(^-\)\(^4\)\(^-\)\(^5\) This trend is likely due to a combination of less public interaction (eg, sports) and reluctance to seek ED care during a pandemic. The decrease in public and sports-related trauma presentations and simultaneous proportional increase in domestic injuries reflect the shift of activities undertaken during lockdown. Interestingly, despite more time spent at home, there was a drop in the number of ED visits for trauma sustained at home (eg, beds/bedframes) which could be explained by the fact that patients refrain from going to hospitals due to a fear of COVID-19. Indeed, injuries sustained during the pandemic were significantly more severe as resulting in higher rates of admission and death.

In conclusion, we found that the COVID-19 lockdown period has been associated with a change in trauma presentations.
The contributing factors could be investigated further to prevent such injuries during reopening and return to post-COVID normalcy.

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REFERENCES
### Supplementary Table 1

Consumer products with most changes in the number of traumas during the lockdown period compared to the control period in 2019.

<table>
<thead>
<tr>
<th>Consumer products, change in ED visits (n, Δ%)</th>
<th>Highest decrease in the number of ED visits during control (2019) vs lockdown period (2020)</th>
<th>Highest increase in the number of ED visits during control (2019) vs lockdown period (2020)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Stairs/steps: -49,316 (107,328 vs 58,012, -45.9%)</td>
<td>1. Saws: +1,112 (745 vs 1,857, +149.3%)</td>
</tr>
<tr>
<td></td>
<td>2. Basketball: -39,984 (48,412 vs 8,428, -82.6%)</td>
<td>2. Lawn mowers: +977 (2,432 vs 3,409, +40.2%)</td>
</tr>
<tr>
<td></td>
<td>3. Floors/flooring material: -36,292 (136,927 vs 100,635, -26.5%)</td>
<td>3. All-terrain vehicles: +737 (2,206 vs 2,944, +33.4%)</td>
</tr>
<tr>
<td></td>
<td>4. Beds/bedframes: -24,928 (78,011 vs 53,083, -32%)</td>
<td>4. House repair/construction materials: +695 (1,358 vs 2,053, +51.1%)</td>
</tr>
<tr>
<td></td>
<td>5. Soccer: -23,091 (25,181 vs 2,090, -91.7%)</td>
<td>5. Power drills: +657 (230 vs 887, +285.7%)</td>
</tr>
<tr>
<td></td>
<td>6. Chairs: -15,454 (35,026 vs 19,572, -44.1%)</td>
<td>6. In-line skating: +637 (827 vs 1,465, +77%)</td>
</tr>
<tr>
<td></td>
<td>7. Baseball: -15,174 (17,062 vs 1,889, -88.9%)</td>
<td>7. Portable power saw: +612 (764 vs 1,377, +80.1%)</td>
</tr>
<tr>
<td></td>
<td>8. Exercise [activity or apparel, without equipment]: -14,418 (32,726 vs 18,309, -44.1%)</td>
<td>8. General purpose household cleaners: +607 (945 vs 1,552, +64.3%)</td>
</tr>
<tr>
<td></td>
<td>9. Ceilings/walls: -13,440 (30,696 vs 17,257, -43.8%)</td>
<td>9. Water slides [backyard/home]: +467 (5 vs 472, +9,680.9%)</td>
</tr>
<tr>
<td></td>
<td>10. Football: -12,668 (15,093 vs 2,425, -83.9%)</td>
<td>10. Riding power lawn mowers: +456 (793 vs 1,250, +57.5%)</td>
</tr>
</tbody>
</table>

ED, emergency department

The consumer products are reported based on the categories provided by NEISS.