The Impact of Stay-at-Home Orders on Volume and Mechanism of Injury in US-based facilities

Arielle Thomas, MD MPH1, Brendan Campbell, MD MPH1, Anne Stey, MD MSc2, Haris Subacius, BA1, Avery Nathens, MD PhD1,4

1American College of Surgeons, Committee on Trauma, 2Department of Surgery, University of Connecticut, 3Department of Surgery, Northwestern University, 4Department of Surgery, Sunnybrook Health Sciences Center

Introduction

• COVID-19 Pandemic had numerous negative effects on the US healthcare system in 2020.
• To mitigate viral spread, the US imposed protective measures such as social distancing, banning unnecessary travel, and instituting stay-at-home orders.
• Objective 1: Assess the change in injury mechanism in 2020 compared to previous years.
• Objective 2: Assess the change in trauma center volume after the implementation of stay-at-home orders compared to previous years.

Methods

Retrospective analysis from January 2018-September 2020

All patients admitted for serious injury, N=877,323 in 504 Centers

Stay-at-home order dates obtained for 43 states (474 centers)

Average Trauma Volume analyzed by harmonic regression modeling

Standardized differences for comparative analysis

Results

Percent changes in 2020 based on expected numbers from 2018-2019

26% increase in pre-existing condition of alcoholism

17% increase in assaults

33% increase in firearm injury

Conclusions

• Volume decreased in the weeks leading up to implementation of the SAH order and increased steadily in the weeks following.
• Overall, there were 9,537 excess admissions for serious injury over the course of 7.25 months than would have been predicted based on 2018-2019 volumes.
• After the SAH orders were issued in 2020, there was an increase in penetrating injury from assaults compared to the same period in the two previous years.

Limitations

• Hospital based study focused on ACS verified Level I and II Trauma Centers which may limit generalizability.

Table 1: Sociodemographic Characteristics presenting after stay-at-home order compared to corresponding time period

<table>
<thead>
<tr>
<th>Age</th>
<th>2018-19 Average (n=160,962)</th>
<th>2020 (n=166,773)</th>
<th>Standardized Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>54.2</td>
<td>52.8</td>
<td>0.06</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Injury characteristics presenting after stay-at-home order compared to corresponding time period

<table>
<thead>
<tr>
<th>Injured</th>
<th>2018-19 Average (n=160,962)</th>
<th>2020 (n=166,773)</th>
<th>Standardized Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assault</td>
<td>141,139 (88.2)</td>
<td>144,070 (86.4)</td>
<td>-0.03</td>
</tr>
</tbody>
</table>

Figure 1: Average TQIP admissions in the weeks before and after stay-at-home order implementation from January 2019-September 2020.