

A DRUNKEN LOCKDOWN LEADS TO INCREASED PENETRATING TRAUMA AND TRAUMA SEVERITY: A RESTROSPECTIVE REVIEW AT AN ACS VERIFIED LEVEL 1 TRAUMA CENTER



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Background

The COVID-19 mandated lockdown created unintended outcomes in traumatic injury patterns and psychosocial behaviors compared to previous years during the same timeframe. The aim of this research is to describe a population of trauma patients during the past five years to determine particular trends in ETOH levels, trauma patterns and trauma severity.

Objective

The aim of this study was to look at the change in trauma trends before, during and after the COVID-19 lockdown period (2017-2021). The mechanism of injury, injury severity and MTP activation of these five groups were compared and analyzed during the lockdown period of these five years. The patient demographics, comorbidities and ETOH levels were also analyzed.

Methods

A retrospective cohort study on prospectively collected trauma registry data of all adult (≥ 18 years) trauma patients admitted to this ACS verified Level I trauma center in South Carolina, inclusive years 2017 to 2021. The data was grouped based upon the COVID-19 lockdown period, which included a time between March 15 to May 22. The five groups were compared based upon ETOH levels, patient demographics, injury patterns, morbidity, mortality, and comorbidities. Continuous variables were compared using the Kruska-Wallis test, whereas categorical variables were compared using Pearson's chi-square test of proportions, as appropriate in R software.

Study Period

Trauma activations during March 15-May 22 (lockdown period)
Years 2017-2021

Variables Compared

ETOH levels
Patient demographics
Injury patterns
Morbidity
Mortality

Results

Increased penetrating injuries, ICU length of stay, ventilator days, MTP activation and full trauma activations

Results

- A total of 3281 adult trauma patients were included in the analysis during the lockdown period across five years.
- The **ETOH mg/dL trend began to significantly climb** during 2020 (Mean = 164 mg/dL) and 2021 (Mean = 169 mg/dL; $p < 0.01$).
- The trauma population during the 2020 group was **mostly full trauma activations ($p < 0.01$)**.
- There was a significant **increase in penetrating injuries** in 2020 compared to 2019 (51 (9%) compared to 27 (4%), $p < 0.01$).
- There was also a significant increase in **activation massive transfusion protocol** for trauma patients from 2019 to 2020 (5 (0.7%) compared to 14 (2%), $p < 0.01$).
- Additionally, the 2020 group typically had a **longer ICU length of stay** (Mean = 1.77 days; $p < 0.01$), **and longer ventilation days** (Mean 0.72; $p = 0.02$).

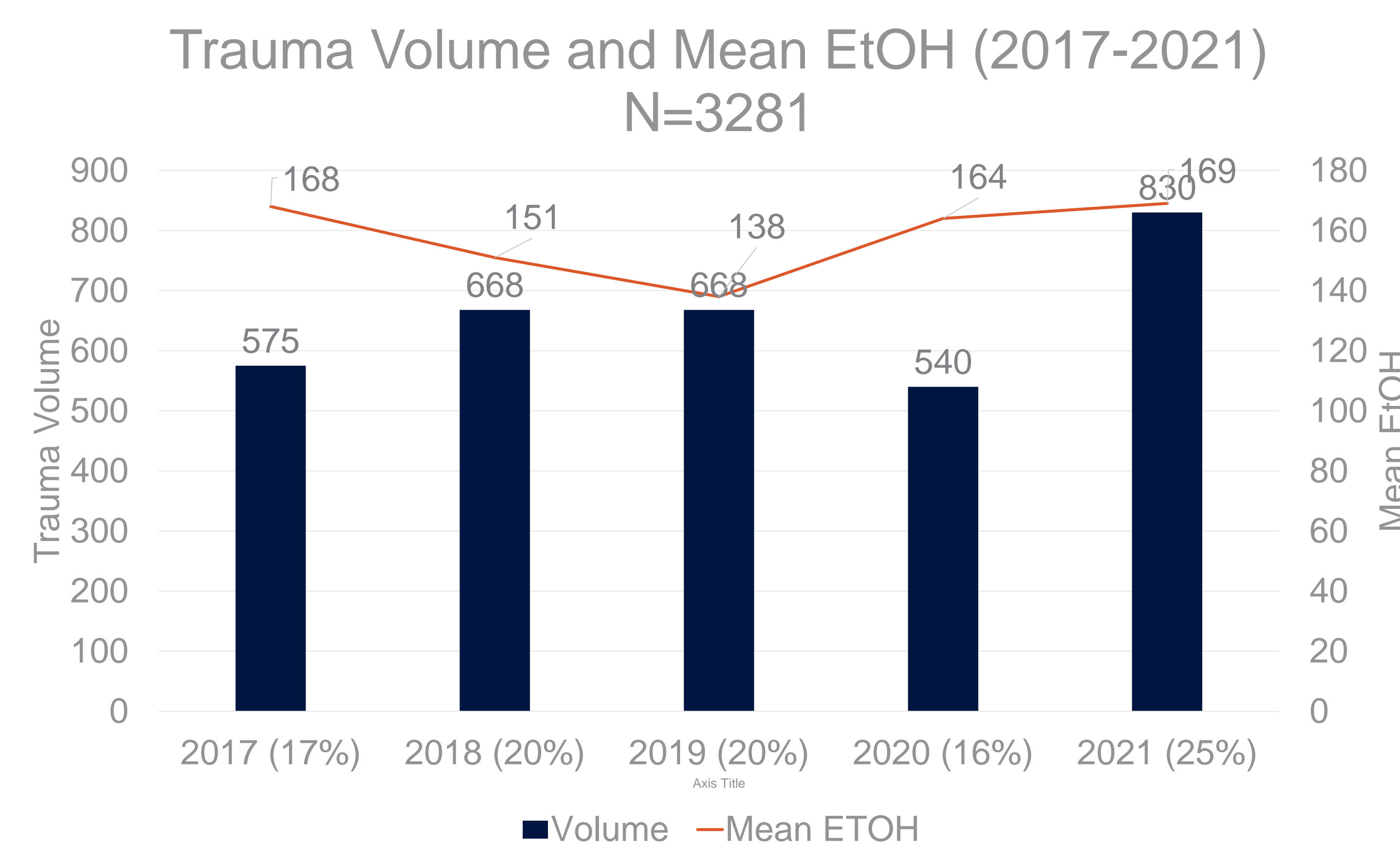
Trauma Activated Adults March 15 to May 22; Injury Patterns vs Years (N=3281)						
	2017 (n=575, 17%)	2018 (n=668, 20%)	2019 (n=668, 20%)	2020 (n=540, 16%)	2021 (n=830, 25%)	P-Value
ISS (X̄,M[SD]IQR)	7.2,5 [7.79]8	6.71,5 [7.08]8.25	6.37,4 [6.97]8	7.2,5 [7.91]9	7.58,5 [9]9	0.24
Trauma Activation						
Full (n=807, 24%)	163, 28%	123, 18%	128, 19%	168, 31%	225, 27%	<0.01
Partial (n=1659, 50%)	245, 42%	357, 53%	370, 55%	255, 47%	432, 52%	<0.01
Consult (n=366, 11%)	98, 17%	98, 14%	64, 9%	46, 8%	60, 7%	<0.01
Mechanism of Injury						
Blunt (n=3024, 92%)	522, 90%	615, 92%	632, 64%	483, 89%	772, 93%	<0.01
Penetrating (n=202, 6%)	36, 6%	35, 5%	27, 4%	51, 9%	53, 6%	<0.01
Burn (n=40, 1%)	16, 2%	11, 1%	7, 1%	3, 0.5%	3, 0.3%	<0.01
MTP Activated						
Yes (n=43, 1%)	0, 0%	8, 1%	5, 0.7%	14, 2%	16, 1%	<0.01
No (n=2489, 75%)	0, 0%	518, 77%	649, 97%	513, 95%	809, 97%	<0.01
ICU Length of Stay (X̄,M[SD]IQR)	1.38,0 [3.99]1	1.52,0 [4.40]2	1.52,0 [4.18]2	1.77,0 [4.08]2	1.34,0 [3.34]1	<0.01
Ventilation Length in Days (X̄,M[SD]IQR)	0.68,0 [3.14]0	0.63,0 [5.66]0	0.53,0 [2.94]0	0.72,0 [3.36]0	0.62,0 [2.91]0	0.02

Conclusion

- Excess alcohol consumption particularly during a pandemic year and beyond may lead to a higher incidence in trauma severity, especially penetrating injuries needing massive transfusions.
- This higher severity of trauma and increased violent trauma observed during the lockdown period is important information to store and utilize for future events.
- Our study observed that the psychosocial impacts of government-mandated lockdowns may lead to increased alcohol consumption, in turn leading to a higher degree of injury severity and morbidity markers in the trauma population in South Carolina.
- Although our institution did not experience any significant increase in mortality during the lockdown period, our data suggests a significantly higher severity of trauma with increased ICU length of stays and ventilator days.
- With continued fluctuations of COVID-19 cases, we recommend utilizing the observations noted in this study to understand changes in trauma patterns during a quarantine period and to help hospitals better prepare if such an event were to recur in the future. This may include increasing trauma staff such as trauma nurses, ICU staff, trauma surgeons or surgical residents available for traumas if a similar quarantine were to be required again.

References

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