

# HIGH SOCIAL VULNERABILITY AFFECTS SURVIVAL OF PEDIATRIC PATIENTS WITH ABUSIVE HEAD TRAUMA: COMPARISON DURING COVID-19

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**Background:** Abusive Head Trauma (AHT) is a syndrome of life-threatening intracranial injuries. The COVID-19 pandemic imposed new stresses upon already vulnerable populations, but the relationships between social vulnerability, COVID-19, and AHT are not known. We hypothesized that patient and social factors predicted survival after AHT and investigated whether these factors and outcomes were modified during COVID-19.

**Materials/Methods:** A database of all admissions with a diagnosis of AHT from 2018-2021 was queried. Social vulnerability index (SVI) was calculated based on published methods ([atsdr.cdc.gov](https://atsdr.cdc.gov)). Univariate and multivariate analyses were performed.

**Results:** One hundred and three cases of AHT were reviewed. Median age at presentation was 4 months (IQR 2-10) in the overall cohort, males outnumbered females overall (76 males, 27 females). 18 patients died (17.5%), higher than previously reported rates.[1] Nonsurvivors had higher mean SVI scores (.867 vs .719,  $p=0.004$ ). 71% had high SVI compared to 39% of survivors. There was no difference in fatality rate before (19%) or during (15%) COVID-19. All nonsurvivors were intubated on admission, compared to 36% of survivors ( $p<0.001$ ) and all nonsurvivors were comatose compared to 29% of survivors ( $p<0.001$ ); 61% of nonsurvivors had cardiac arrest on admission compared to 3% of survivors ( $p<0.001$ ). Nonsurvivors were more likely to have bilateral hypoxic ischemic injury (HII, 89% vs 29%,  $p<0.001$ ).

**Conclusions:** Mortality from AHT in our series was higher than previously reported. More than one out of six children in our series did not survive. Although nonsurvivors were more likely to live in highly vulnerable social settings, COVID-19 did not change survival rate. Nonsurvivors are more likely to present in coma requiring intubation and in cardiac arrest. We identify a strong association between completed bilateral HII on admission and fatality in AHT. The high mortality of AHT supports a public health effort towards treatment and prevention focusing on socially vulnerable communities.

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