

Novel study compares fracture patterning in fatal, survived intimate partner violence cases

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Intimate partner violence (IPV) is an underreported global human rights issue that affects approximately 25% of women and 10% of men and is

the leading cause of homicides among women worldwide. Multiple interventional studies have been conducted to screen for IPV. However, fractures associated with intimate partner homicide (IPH) have not been studied from a forensic anthropological perspective.

A new study from researchers at Boston University Chobanian & Avedisian School of Medicine has found that cases of IPH presented similarly to IPV cases in that injuries were concentrated in the middle and lower face, but [fractures](#) were notably more frequent in the upper face and cranial vault regions (space that encases and protects the brain together with the base of the skull) in cases of IPH.

Furthermore, the study, which also sought to identify the fracture classifications most frequently associated with IPH and the number of craniofacial fractures, found the overwhelming majority of fractures were either comminuted (broken into more than two pieces) or linear (less serious skull fracture that doesn't splinter, depress or distort the bone) fractures in the bone.

Contrary to expectations, blunt force trauma IPH was not necessarily associated with extensive fracturing, as most individuals (75.8%) presented with five or fewer fractures, with a range from zero to 26 fractures per individual.

"Understanding fracture patterns associated with certain mechanisms of homicide are beneficial in forensic cases by aiding [medical examiners](#) and [law enforcement](#) in directing their investigations and in providing [skeletal evidence](#) for underreported IPH," explained corresponding author Sean Tallman, Ph.D., assistant professor of anatomy & neurobiology at the school.

The researchers reviewed 10 years of blunt force trauma homicide case reports from the New Mexico Office of the Medical Examiner to

identify cases of IPH. They then obtained the postmortem CT scans from these cases. Using DICOM software, they viewed the CT slides individually and as a 3D-rendered model to note the location and number of fractures as well as the fracture classification.

These observations were then compared to published numbers of fracture count and location from studies focusing on survived cases of [intimate partner violence](#) from medical and dental professionals.

According to the researchers, this study may help forensic pathologists and anthropologists to better identify victims of intimate partner violence by understanding the variability of fractures to the head, which is a common target for intimate violence.

"However, our work demonstrates that there is considerable variability in the manifestations of skeletal trauma associated with intimate partner violence. No one type of fracture or constellation of fractures is indicative of IPV as contextual/investigative evidence is also crucial for identifying when intimate partner violence occurred," added Tallman.

These findings [appear](#) in the journal *Forensic Science International*.

More information: Nicole M. Saenz et al, Fracture variation in survivable versus fatal blunt force trauma associated with intimate partner violence, *Forensic Science International* (2024). [DOI: 10.1016/j.forsciint.2024.112000](https://doi.org/10.1016/j.forsciint.2024.112000)

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