

CASE REPORT

INTERPRETING CHARACTERISTICS OF OFFENDERS BASED ON INJURY PATTERNS OF HOMICIDE VICTIMS: TWO CASE REPORTS

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ABSTRACT

Interpreting offender characteristics based on injury patterns in homicide victims is a complex yet valuable concept in forensic investigations. There are several studies in the literature that explore the association between injury pattern and offender characteristics, but findings remain inconsistent and difficult to generalise. This article discusses two cases of homicide, based on the relevant literature available. Overkilling or mutilation was frequently considered a special injury pattern in literature and described as a marker of intense emotional arousal or personal conflict between the victim and the offender. Both homicides demonstrated this pattern. However, interpreting offender characteristics based on the victim's injury pattern should be done critically within a broader psycho-socio-behavioural context.

Keywords: *Homicide; mutilation; overkilling; psychological autopsy*

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and the underlying principles and theories are well established. In contrast, interpreting offender characteristics based on injury patterns observed on the victim remains a complex and challenging concept and is not widely applied². However, its potential value is considerable when supported by reasonable theories and principles³.

Although several studies in the literature have explored the association between injury patterns of homicide victims and offender traits, inconsistencies and small sample sizes limit the generalisability of these findings. In the past, the interpretation of homicide injury patterns has been used to obtain potential clues about serial killers, based on the belief that they employ specific or repetitive patterns during their crimes⁴. But if there are studies that can be applied to interpret offender characteristics based on injury patterns inflicted on homicide victims, it will be an important aspect in medico-legal investigations into homicides. Through this article, we discuss two homicide cases in which the dead person had a characteristic injury pattern and critically

INTRODUCTION

Injury pattern interpretation is one of the most important aspects of forensic investigations. It is widely used in event reconstruction, commenting on circumstances, and determining the cause and manner of death¹. These applications are primarily victim-focused,

analyse them with findings of relevant literature.

CASE PRESENTATION

Case 01:

A 28-year-old male was allegedly assaulted and killed in front of his father by five previously known individuals in relation to a dispute associated with illicit drug trading. Sharp weapons, swords, and manna knives were reportedly used.

External examination revealed fifteen sharp-force injuries comprising slash and chop cuts over the head, trunk, and limbs, with marked predominance in both lower extremities. The lower parts of both legs showed multiple deep cuts with near-total dismemberment, including a cut through the tarsal bones of the left heel (Figure 1), indicating application of considerable force.



Figure 1: Photograph showing multiple slash and chop cuts involving muscles and bones in both lower limbs, causing near-total dismemberment (circled).

Furthermore, a cut injury of the scalp with an underlying cut fracture of the skull (Figure 2), chop injury to the posterior right chest with cut of muscles and vessels, entering the thoracic cavity and causing a right haemothorax and a severe chop injury of the left lower back, opening into the peritoneal cavity with protrusion of small bowel loops, and partial transection of the left kidney were observed during the autopsy. Internal organs were severely pale. Death was attributed to haemorrhagic shock following multiple sharp-force injuries to the head, trunk, and limbs. The manner of death was determined as homicide.



Figure 2: Photograph showing multiple deep slash and chop cuts over the scalp associated with cut fractures of the cranial vault.

Case 02:

A 34-year-old male was allegedly assaulted at his residence by four individuals in front of his wife and two young children, reportedly in retaliation for a previous offence. Sharp weapons, including swords, were used. Scene examination revealed the body lying in a large pool of blood, indicating substantial haemorrhage at the scene of assault.

External examination demonstrated ten deep, sharp-force injuries comprising slash and chop over the head, trunk, and limbs, with a predominance over the back. A severe chop injury of the scalp produced a cut fracture of

the skull with transection of the cerebellum. A deep cut to the neck extended up to the cervical vertebrae, causing a complete transverse cut of the vertebral body. Injuries to the upper limbs showed marked mutilation, including partial traumatic amputation of the right upper limb at the shoulder joint (Figure 3) and disarticulation of the left hand at the distal forearm, in which vital reactions were minimal. (Figure 4). Internal organs were markedly pale. Death was due to haemorrhagic shock following multiple sharp-force injuries to the head, trunk, and limbs. The manner of death was stated as homicide.



Figure 3: Photograph showing multiple slash cuts over the back of the chest with a chop cut in the right shoulder area, causing partial traumatic amputation of the right upper limb at the shoulder joint. (circled)



Figure 4: Photograph showing disarticulation/amputation of the left hand at the distal forearm (circled). Two parts were closely placed for reconstruction.

DISCUSSION

Interpretation of offender characteristics from injury patterns in homicide victims remains difficult because homicide-related violence is influenced by multiple interconnected biological, psychological, social, and situational factors. Here we discussed several studies which attempted to explore associations between injury pattern and offender behaviour, psychological state, and victim–offender relationships.

Overkilling and mutilation are among the most frequently discussed injury patterns when interpreting the behaviour of the offenders. Kopacz et al. described overkilling as the infliction of excessive injuries beyond those required to cause death, often characterised by repetitive or severe violence directed toward the victim⁵. Such injuries are commonly associated with intense emotional arousal, uncontrolled aggression, interpersonal conflict, or expressive violence rather than purely instrumental killing⁶. Tavone et al., in their analysis of 71 overkill homicide cases, similarly

demonstrated associations between excessive violence, close victim–offender relationships, and emotionally driven motives². In both cases presented here in the article, the multiplicity, severity, and destructive nature of the sharp-force injuries were consistent with patterns of overkill described in previous literature.

Mutilation has also been widely discussed in forensic and criminological literature because of its perceived association with psychopathology of the offender and the aim of concealment of identity of the victim or symbolic aggression⁷. Guggenheimer et al., in a nationwide Swedish study on criminal mutilation, identified rage and concealment as the most frequent motives associated with body mutilation⁸. Häkkänen-Nyholm et al. similarly reported that postmortem mutilation was commonly associated with offenders known to the victims and that concealment of identity was a major motive⁹. In contrast, neither of the presented cases demonstrated attempts at facial destruction or concealment of identity despite the presence of severe limb mutilation and near-dismemberment injuries. This suggests that the mutilation observed in these cases was more likely related to excessive retaliatory violence, domination, or symbolic aggression rather than concealment.

Another notable feature in both cases was the presence of previously established relationships between victims and offenders. Several studies have demonstrated that excessive violence is more commonly observed in homicides involving interpersonal connections. Emotional conflict, revenge, humiliation, and prior disputes may contribute to the escalation of violence beyond what is necessary to cause death. Tavone et al. observed that offenders involved in overkill frequently had emotional or personal relationships with victims, while other homicide studies have similarly demonstrated increased injury severity in impulsive homicide compared to instrumental homicide. In the first case here, the homicide reportedly occurred in relation to an illicit drug-related dispute, whereas the second case involved retaliation for a previous offence. The targeted and repetitive nature of the injuries in both cases may therefore reflect emotionally charged violence directed toward specific individuals.

The places where both assaults had taken place are also forensically important. In the first case, the assault occurred in front of the victim's father, while in the second case, the attack was witnessed by the victim's wife and children. Public or family-witnessed violence may function as a form of intimidation, humiliation, punishment, or symbolic domination^{6,10}. Excessive injury production in such circumstances may therefore extend beyond the immediate goal of killing and serve communicative or retaliatory purposes.

The predominance of male offenders in both cases is also consistent with existing homicide literature. Studies on violent crime and sharp-force homicide have repeatedly demonstrated that males constitute the majority of offenders involved in aggressive interpersonal violence and retaliatory killings^{2,6,8,11,12}. Biological, behavioural, and sociocultural factors have all been proposed to contribute to this predominance. Furthermore, previous studies on overkill and mutilation have similarly reported male predominance among offenders. Although gender alone cannot predict behavioural patterns, the findings in the presented cases are consistent with observations and findings of existing literature/studies on violent homicides.

An important distinguishing feature of the presented cases from available literature is the involvement of multiple offenders. Most published studies discussing overkill or mutilation focus predominantly on single offenders, frequently in the background of psychiatric illness, intimate partner homicide, sexual homicide, or serial violent crime. In contrast, both homicides described in this article involved organized group assaults. Collective violence may significantly alter injury patterns because multiple offenders can simultaneously inflict repetitive and severe injuries, resulting in extensive tissue destruction that may resemble pathological mutilation traditionally associated with single offenders. Therefore, the interpretation of mutilation or overkill solely as evidence of offender psychopathology may be misleading when there are multiple offenders.

These presented cases, therefore, highlight the limitations of interpreting offender characteristics exclusively from injury morphology. Although injury patterns may provide useful behavioural clues, they should always be interpreted together with scene findings, victimology, offender–victim relationships, motivation, sociocultural background, witness accounts, and investigative information^{3,13,14}. Petherick, in his article, emphasized that modern offender profiling should adopt an integrated multidisciplinary approach rather than relying on stereotype-based assumptions or isolated behavioural indicators¹³. The findings of the presented cases support this view and demonstrate the importance of contextual interpretation in forensic behavioural analysis.

CONCLUSION

These findings of two cases emphasize that the interpretation of offender characteristics from injury patterns should not be performed in isolation. Meaningful forensic interpretation requires integration of injury morphology with contextual factors, including offender–victim relationships, motive, collective violence, scene findings, and behavioural evidence of offenders. Careful multidisciplinary analysis may improve understanding of complex homicide patterns while reducing the risk of misinterpretation of offender profiling.

Therefore, injury patterns should be analysed critically within a broader socio-behavioural framework. Systematic documentation of injuries, integration of offender-related information, and interdisciplinary collaboration are essential for advancing this field. Such approaches may facilitate more comprehensive and methodologically valid future studies.

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CONFLICTS OF INTEREST

The authors declared no conflicts of interest.

ETHICAL ISSUES

The presented case was conducted for medicolegal purposes, and the findings were used for academic purposes, according to the

institutional guidelines, without divulging the identity of the individual.

SOURCES OF SUPPORT

None

AUTHOR CONTRIBUTIONS

JAPTW: Conception and design of the work; the acquisition, analysis, and interpretation of data for the work; drafting the work and revising it critically for important intellectual content; final approval of the version to be published; and agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

CDK: Analysis of data for the work; drafting the work and revising it critically for important intellectual content; final approval of the version to be published; and agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

PP: Conception and design of the work; revising the work critically for important intellectual content; final approval of the version to be published; and agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

REFERENCES

1. Das NG, Das N, Sil A. Pattern and forensic significance of defense injuries in homicide cases: a cross-sectional study. *Cureus*. 2025;17(3):e79959. <https://doi.org/10.7759/cureus.79959>.
2. Tavone AM, Ceccobelli G, Piizzi G, *et al*. Profiling players involved in overkill: an analysis of 71 cases in Central Italy. *Healthcare*. 2022;10(10):1873. <https://doi.org/10.3390/healthcare10101873>.
3. Pecino-Latorre MDM, Pérez-Fuentes MDC, Patr6-Hernández RM. Homicide profiles based on crime scene and victim characteristics. *International Journal of Environmental Research and Public Health*.

- 2019;16(19):3629.
<https://doi.org/10.3390/ijerph16193629>.
4. Salfati CG, Bateman AL. Serial homicide: an investigation of behavioural consistency. *Journal of Investigative Psychology and Offender Profiling*. 2005;2(2):121-44. <https://doi.org/10.1002/jip.27>.
5. Kopacz P, Juźwik-Kopacz E, Bolechała F, Strona M, Konopka T. Overkilling: a specific type of homicide—constructing the definition: injuries and victim. *Legal Medicine*. 2022;59:102147. <https://doi.org/10.1016/j.legalmed.2022.102147>.
6. Salfati CG. The nature of expressiveness and instrumentality in homicide: implications for offender profiling. *Homicide Studies*. 2000;4(3):265-93. <https://doi.org/10.1177/10887679000004003004>.
7. Zerbo S, Lanzarone A, Procaccianti P, Ventura Spagnolo E, Argo A. Homicide with post mortem dismemberment of the victim with previous amputation of right lower limb: Case report and review of the literature. *Medico-Legal Journal*. 2018 Dec;86(4):213-5. <https://doi.org/10.1177/0025817218775575>.
8. Guggenheimer D, Caman S, Sturup J, Zilg B, Thiblin I. Criminal mutilation in Sweden from 1991 to 2017. *Journal of Forensic Sciences*. 2021;66(5):1788-96. <https://doi.org/10.1111/1556-4029.14736>.
9. Häkkänen-Nyholm H, Weizmann-Henelius G, Salenius S, Lindberg N, Repo-Tiihonen E. Homicides with mutilation of the victim's body. *Journal of Forensic Sciences*. 2009;54(4):933-7. <https://doi.org/10.1111/j.1556-4029.2009.01094.x>.
10. Papachristos AV. Murder by structure: Dominance relations and the social structure of gang homicide. *American Journal of Sociology*. 2009 Jul;115(1):74-128. <https://doi.org/10.1086/597791>.
11. Thomsen AH. *Homicide in Denmark 1992–2016*. Aarhus: Aarhus University; 2020. Available from: https://danner.dk/wp-content/uploads/2024/07/Homicide_in_Denmark_1992_2016_reduced_no_papers.pdf [Accessed 12th May 2026].
12. Belghith M, Khelil MB, Marchand E, Banasr A, Hamdoun M. Homicidal sharp force cases: An 11-year autopsy-based study. *Journal of Forensic and Legal Medicine*. 2022 May 1;88:102347. <https://doi.org/10.1016/j.jflm.2022.102347>.
13. Petherick W. *Reframing criminal profiling: A guide for integrated practice*. London: Routledge; 2022.
14. Turvey BE. *Criminal profiling: An introduction to behavioral evidence analysis*. 5th ed. London: Academic Press; 2022.