

The Evaluation and Treatment of Non-Fatal Strangulation in the Health Care Setting

International Association of Forensic Nurses

Problem Statement

Non-fatal strangulation is a serious health concern with the potential for lifelong consequences. Defined as external pressure to the neck that occludes the airway and/or blood vessels (Midttun, 2021), strangulation impedes oxygenation and can result in acute and long-term injuries (Le Blanc-Lowvry, 2013), psychological terror (Thomas et al., 2013), brain trauma (Campbell et al., 2018), and even death (Petrosky et al., 2017). The World Health Organization (2021) estimates that almost one third (28%) of all women experience physical and/or sexual violence by an intimate partner in their lifetime. Research has shown that 40-80% of individuals experiencing intimate partner violence (IPV) and/or sexual violence experience co-occurring strangulation as part of the abuse (McQuown et al., 2016; Messing et al., 2018; Patch et al., 2018; Zilkens et al., 2016; Shields, 2010), and while anyone can be a victim of strangulation, Pritchard and colleagues (2016) found that strangulation is a highly gendered form of IPV, with victims more likely to be female and offenders more likely to be male. Strangulation is one indicator of violence escalation that poses an increased risk of serious morbidity and mortality in cases of IPV (Mcquown et al., 2016; Turkel, 2007; Strack & Gwinn, 2011). A recent study showed that sexual assault victims who reported anal penetration or weapon use during a sexual assault were more likely to report non-fatal strangulation, and those who reported non-fatal strangulation were more likely to have non-genital injury (McKee et al., 2022). Given the global number of women affected by IPV coupled with their increased risk of experiencing strangulation and death, strangulation should be viewed as a serious public health threat.

Following strangulation, patients may present with potentially lethal conditions such as fractured trachea, carotid aneurysm or cerebral artery infarct (Saternus, 2022; LeBlanc-Lowvry, 2016), with no observable external evidence of injury (Patch et al, 2021; Midttun, 2021), even in fatal cases. This differs from the typical blunt cerebrovascular injury (BCVI) patients who more commonly present with severe head injury, severe facial injuries and fractures of the skull and cervical spine (Brommeland et al., 2018). Patients who have experienced strangulation may suffer anoxic brain injury, or they may have serious internal injuries resulting in permanent impairment or death days or weeks after the strangulation event (White et al., 2021), including neurological impairment, traumatic brain injury (TBI) and post-traumatic stress disorder (PTSD) (Geisenberger et al., 2019; Vella et al., 2017). Anyone presenting with a potential strangulation injury should have a thorough medical evaluation (Patch et al, 2021) utilizing an organized assessment and documentation approach to improve detection and management of life-threatening consequences (Stellpflug et al., 2022a).

Until the early 2000's, strangulation research focused on homicide victims and autopsy findings. Nonfatal strangulation, particularly in relation to domestic and sexual violence, is a relatively new area of inquiry (McClane, Strack, & Hawley, 2001). Even with emerging research in this area, not all patient populations have been addressed. There is a paucity in

research regarding strangulation injuries within underserved populations including elderly patients, populations of color, and lesbian, gay, transgender, bisexual and queer (LGBTQ). Rates of strangulation could be higher and injuries differing in severity within these populations. Additionally, there is little empirical data on nonfatal strangulation in the pregnant patient population and the corresponding fetal impact(s). Likewise, there has been no direct correlation proven between nonfatal strangulation and miscarriage, although literature has noted that some women have experienced a miscarriage or fetal demise after a nonfatal strangulation event (Messing et al., 2018; Douglas & Fitzgerald, 2014).

Similarly, research with children is limited, even though children can be presumed at greater risk of life-threatening injuries if strangled, due to the variation in anatomy and physiology compared to adults. Children have a relative lack of ossification of the laryngeal cartilages and hyoid bone and a higher risk of airway compromise due to small size (Stellpflug et al., 2022b; Hackett & Kisko, 2013). It is thought that in pediatric strangulation the primary mode of injury may be venous congestion resulting in cerebral edema and unconsciousness, followed by airway obstruction (Kline-Fath et al., 2021; Sep & Thies, 2007). Mild soft-tissue edema of the neck along with subcutaneous air consistent with air leak as well as bilateral lung opacities, pneumomediastinum and pneumothoraces have been noted in children who have been strangled (Kline-Fath et al., 2021). Cognitive and developmental differences may make it difficult for a child to effectively describe the strangulation event. (Baldwin-Johnson & Wiese, 2015). Strangulation should be on the list of differential diagnoses in children who present with suspicion or disclosure of sexual or physical abuse (Prosser et al., 2018).

Because the clinical presentation can vary to include a patient without visible injury, and because the patient may not mention the strangulation component of their assault, asking about strangulation directly is an important aspect of clinical care (Pierce-Weeks & Lechner, 2015). Many first responders, from emergency medical services (EMS) personnel to Emergency Department (ED) providers, lack specialized training to identify the signs and symptoms of strangulation. This lack of education has led to the minimization of strangulation as a serious, life-threatening risk to the short- and long-term health of the patient who has experienced it.

Position

The International Association of Forensic Nurses (IAFN) believes that global systems should be in place to support universal screening for strangulation in patients of all ages who are receiving medical forensic care due to experiencing physical and/or sexual violence. First responders, including EMS and ED providers, must be trained in screening, assessment, documentation, intervention, and follow-up services for patients experiencing non-fatal strangulation. Additionally, we recognize the importance of a collaborative, trauma-informed approach to patients who have experienced strangulation that includes skilled healthcare clinicians, sexual assault and intimate partner violence advocates, child and adult protection and law enforcement. Evidence-based education, funding and support should be provided to ensure that universal access to comprehensive medical forensic evaluation and treatment is available for every patient who has experienced strangulation. Recognizing these issues, we recommend that:

1. *Where possible, forensic nurses are utilized in collaboration with other clinicians to address the health care needs of the patient who has experienced or is suspected of having*

- experienced strangulation.*
2. *Health care clinicians delivering emergency care receive training specific to the screening, medical and radiologic assessment, documentation, medical intervention, and follow-up care.*
 3. *Health care clinicians caring for patients with known or suspected sexual assault, intimate partner violence, elder abuse and child maltreatment should routinely screen for strangulation and understand the laws for reporting.*
 4. *Health care agencies should ensure consistent access to trained clinicians within the agency, and should develop and maintain collaborative relationships with outside agencies (i.e., Law enforcement and advocacy).*
 5. *Health care agencies delivering emergency services should adopt evidence-based, multi-disciplinary policies and procedures that are current and well understood by staff in order to facilitate the screening, assessment, documentation and intervention process, including guidelines for medical/radiological evaluation if indicated, danger assessment, and safety planning.*
 6. *Health care clinicians that assess and treat patients who have been strangled should include a detailed strangulation-specific assessment as a standard component of the medical-forensic examination.*
 7. *Health care clinicians should assess patients on an individual basis, considering the event history, the strangulation-specific assessment results (objective and subjective), and the physical assessment to determine whether further medical/radiological evaluation is needed.*
 8. *Health care clinicians incorporate the use of community-based victim advocates when available into safety planning for the patient.*
 9. *Additional research is crucial to determine evidence-based best practices in the assessment, identification, documentation and intervention in cases of strangulation.*
 10. *Forensic nurses who possess specialized education and experience in evaluating and treating strangulation-related injuries are well-positioned to address these issues in the courtroom should they be called upon to testify.*

Rationale

Research has solidified our knowledge of the relationship between strangulation and lethality in both adults and children (Sorenson et al., 2014; Walsten & Erikson 2020; White et al., 2021). The interrelationship between strangulation, intimate partner violence, and sexual assault has been firmly established (Sorenson et al., 2014; White et al., 2021) with nonfatal strangulation a significant predictor of future violence (Campbell et al., 2018; Mcquown et al., 2016) and a substantial risk factor for homicide or attempted homicide (Walsten & Erikson, 2020). Despite this, controversies remain over when and under what circumstances diagnostic imaging methods should be employed following non-fatal strangulation (Stellpflug et al., 2022; Patch et al., 2022). Care for the patient who has experienced strangulation is no different than care for other patient populations; it should be based in scientific evidence (Matusz et al., 2019). The published literature has been consistently absent evidence-based approaches to the identification and medical management of strangulation in organizational documents and peer reviewed journals, making it challenging to standardize intervention protocols and care (Matusz, et al., 2019; Zuberi, et al., 2019; Pritchard et al., 2015). However, recent studies

have begun to specifically examine non-fatal strangulation in an effort to determine how common major, life-threatening injury is, including the use of advanced imaging to diagnose (Stellpflug et al., 2022). As the evidence continues to evolve, morbidity and mortality associated with strangulation demands that continued efforts be made to create a strong evidence base in order to standardize the approach to the medical forensic evaluation of a patient who has been strangled. The utilization of standardized strangulation specific assessment tools that include detailed documentation can contribute to healthcare's ability to inform the research and develop evidence-based care interventions

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