The darker the skin, the greater the disparity?: Why a reliance on visible injuries fosters health, legal, and racial disparities in domestic violence complaints involving strangulation

Patrick Q. Brady, PhD*
Department of Criminology & Criminal Justice
The University of Northern Colorado
970.351.3049
patrick.brady@unco.edu

Kelsey McKay, J.D.
Respond Against Violence
Kelsey@respondagainstviolence.org

David Scott, PhD
Department of Social Sciences
The University of Texas at Tyler
903.566.7414
dscott@uttyler.edu

Sara B. Zedaker, PhD
School of Arts & Sciences
University of Houston-Victoria
3007 N. Ben Wilson
Victoria, TX 77904
361.570.4249
zedakers@uhv.edu

Please address all correspondence to Patrick Q. Brady, Department of Criminology and Criminal Justice, The University of Northern Colorado, 501 20th Street, Greeley, CO 80639; Patrick.brady@unco.edu; (p): 970.351.3049.

Abstract

The reliance on external injuries for justice is misguided given that assault injuries may be less visible among victims of color due to increased melanin in the skin. To date, however, less is known whether racial/ethnic disparities extend to officers' identification of signs of nonfatal strangulation (NFS). The current study estimates the extent of NFS indicators identified by officers who completed a standardized strangulation assessment in 133 family violence complaints. Breathing difficulties were the most common symptoms identified by officers (98%), followed by external signs (89%), and symptoms of impeded blood circulation (87%). Compared to cases involving White/Asian survivors, officers were less likely to identify external injuries on Black survivors' neck, chin, and chest/shoulders. While racial/ethnic differences did not emerge for symptoms of disrupted airflow, Hispanic survivors were twice as likely to report losing control of bodily functions. Implications for policy are discussed.

Keywords: Nonfatal strangulation; Evidence-based prosecution; Intimate partner violence; Race/ethnicity; Injury documentation

Strangulation is among the most lethal, yet under-identified forms of intimate partner violence (IPV; Glass et al., 2008; Pritchard et al., 2018; Reckdenwald et al., 2019; Spencer & Stith, 2020). Perpetrated primarily by men against female intimate partners (Nemeth et al., 2012; Strack et al., 2001; Thomas et al., 2014), strangulation involves asphyxiation whereby perpetrators use their hand(s), forearms, ligatures, or liquids in a manner that inhibits victims' ability to breathe and/or disrupts the flow of oxygenated blood in and out of the brain (Pritchard et al., 2017). The inability to breathe is a painful and traumatizing experience (Turkel, 2010), and the disruption of cerebral blood flow has been linked to a host of negative physical (arterial dissection, perforated trachea, miscarriage), neuropsychological (loss of consciousness, memory loss, seizures, strokes, post-traumatic stress disorder), and behavioral outcomes (fear, compliance; Bichard et al., 2021; De Boos, 2019; Funk & Schuppel, 2003; Monahan et al., 2019; Shields et al., 2010; Smith et al., 2001; Stapczynski, 2010; Vella et al., 2017; Wilbur et al., 2001; Zilkens et al., 2016). The consequences persist among those who survive, as nonfatal strangulation (NSF) is a powerful tactic abusers use to demonstrate consequences of noncompliance (Brady et al., 2021; Thomas et al., 2014), which can extend to cooperating with the criminal justice system.

For decades, minimal external injuries and ambiguous strangulation symptoms led officers, medical personnel, and prosecutors to under-evaluate complaints and overlook essential evidence. Even when suspects were arrested for NFS, prosecutors' ability to pursue felony charges was limited to existing felony assault statutes that often-required aggravating circumstances, such as evidence of serious bodily harm, the use of a deadly weapon, and/or intent to kill (see Laughon et al., 2009). Due to increased training and awareness, 49 U.S. states to date have adopted a variety of civil and criminal legal reforms criminalizing strangulation and suffocation (Laughon et al., 2009; Pritchard et al., 2017).[1] Some states have enacted stand-alone strangulation statutes, while others have amended existing domestic violence (DV) or felony

[1] As of May 2022, Ohio is the only U.S. state without a specific strangulation law.

assault statutes to include clear legislative language describing the unique definitions, intent, and penalties for NFS (Laughon et al., 2009; Pritchard et al., 2017).

Despite the wave of legislative reform, strangulation statutes are comprised of unique elements related to asphyxiation with few mandating training for first responders (Pritchard et al., 2017). While statutes vary state-to-state, arrests and convictions for NFS generally require evidence that perpetrators impeded the victims' blood circulation or normal breathing (Laughon et al., 2009; Pritchard et al., 2017). Without specialized training, however, limited information exists to aid officers and prosecutors on *how* to corroborate evidence of these unique elements. Often times, investigations are limited to officers asking whether victims could breathe, followed by a cursory look at the victim's neck. Alas, a growing body of literature on the physiology of asphyxiation suggests that evidence of impeded airflow and/or blood flow is likely to be overlooked when corroboration is limited to visual inspections of external injuries on survivors' face, neck, or head (see Bichard et al. 2021; Monahan et al., 2019; Shields et al., 2010; Stapczynski, 2010).

This issue is exacerbated for survivors of color whose injuries may be less visible due to the increased melanin produced in the skin (Deutsch et al., 2017; Schlessinger et al., 2020). Studies of forensic medical exams have found that sexual assault nurse examiners were less likely to identify, document, and treat genital-anal injuries among women with darker versus lighter skin tones (Sommers et al., 2006; 2008). To date, however, no empirical evidence exists to determine whether similar issues exist in cases of NFS. This is problematic considering how women of color are disproportionally impacted by IPV and intimate partner femicide relative to their White counterparts (Petrosky et al., 2017; Stockman et al., 2015). Across nine years of non-fatal IPV data from the National Crime Victimization Survey (2003-2012), women of color reported rates of IPV that were 20% higher than white women (Truman & Morgan, 2014). Similarly, estimates from the National Intimate Partner and Sexual Violence show that Black women experienced higher rates of contact sexual violence, stalking, and IPV from an intimate partner in the past year (9.4%) compared to Hispanic (8.6%) and White women (5.7%; Smith et

al., 2017). Given that survivors of NFS are seven-times more likely to be murdered by the same abusive partner (Glass et al., 2008; Spencer & Stith, 2018), there exists a dire need for more scientific research to evaluate evidence collection techniques that can help corroborate signs and symptoms of asphyxiation.

The current study uses data from 133 NFS cases that were investigated using a standardized strangulation assessment. The supplement serves as a guide for officers to document 61 research-based signs and 28 symptoms of NFS/S that survivors may present with. The data offer important insight into the nature and extent of NFS indicators that can be used to corroborate the unique asphyxiation elements in strangulation statues. Additionally, the standardized form provides an opportunity to confirm whether the signs and symptoms detected within hours of the assault vary according to the race/ethnicity of the survivor. To explain how first responders can use the supplement to corroborate whether a survivor's airflow and/or blood circulation were disrupted, we begin by describing the physiology of asphyxiation and outline the empirical support behind the signs and symptoms listed on the assessment.

The Anatomy and Physiology of Asphyxiation

Injuries and/or death from suffocation/strangulation (S/S) occur via asphyxiation, which is a process where cells within tissues and organs die due to oxygen deprivation (Sauvageau & Boghossian, 2010). The brain is particularly sensitive to oxygen deprivation and because the brain cannot store energy like other parts of the body, it requires an uninterrupted saturation of oxygenated blood and other nutrients to function (Sauvageau & Boghossian, 2010). Depriving neurons of oxygen suppresses the energy necessary to perform vital tasks like communication between neurons, breathing, and regulating bodily functions (Sauvageau & Boghossian, 2010). When the brain is deprived of oxygen, loss of consciousness can occur within 10 to 15 seconds (Sauvageau et al., 2011), along with irreparable brain damage and/or death within minutes (Di Paolo et al., 2009; Faugno et al., 2013; Kiani & Simes, 2000). Even minimal oxygen deprivation (hypoxia) can cause mild traumatic brain injuries (TBI) that can mature minutes to days after the assault (Murray et al., 2016). Recognizing the signs and symptoms of these underlying

consequences, however, warrants a basic understanding of the anatomy and physiology of the respiratory and cardiovascular systems.

Obstructing airflow. The respiratory system regulates our ability to breath by delivering oxygen into the body (Marieb & Hoehn, 2018). There are four primary ways perpetrators can impede airflow, such as blocking the victim's nose or mouth (e.g., suffocation), obstructing the trachea via external pressure around the neck (e.g., strangulation), compressing the abdomen/torso inhibiting oxygen inhalation and exhalation of carbon dioxide (e.g., postural asphyxiation); and/or using liquids to impair respiration (e.g., aquatic assault-submersion/waterboarding). All of which are potentially lethal given that cell survival is contingent on receiving oxygen.

Impeding blood circulation. If victims are unable to breathe, their circulation system cannot deliver sufficient oxygen to the tissues and organs that need it most for survival. Strangulation disrupts blood circulation via two major blood vessels in the neck called the carotid arteries and jugular veins. Most commonly used to check one's pulse, the carotid arteries are the major blood vessels that supply oxygenated blood from the heart to the neurons in the brain (Marieb & Hoehn, 2018). When oxygen replenishes brain cells, carbon dioxide and the deoxygenated blood are drained from the brain into the heart via the jugular veins. Once in the heart, deoxygenated blood circulates back to the lungs to absorb more oxygen in exchange for the carbon dioxide, which is subsequently removed from the body during exhalation. While external pressure on the carotid arteries inhibits oxygen delivery to the brain, obstructing the jugular veins prevents deoxygenated blood from leaving the brain. If both jugular veins are consistently constricted for a prolonged period of time, deoxygenated blood begins to pool in the brain and the pressure from the congestion can rupture capillaries causing bleeding in the brain and eyes (e.g., petechiae, subconjunctival hemorrhage; Green, 2013).

It is also necessary to understand the vulnerability of the neck and how injuries and/or asphyxiation can occur with a relatively minimal amount of external pressure (Green, 2013; Pendleton, 2014). Cadaver and hanging studies have estimated that venous occlusion, carotid

compression, and structural damage to the neck can all occur with less pressure than an average adult handshake (adult males average grip strength of 92 pounds of pressure in their dominant hand and 88 pounds in their nondominant hand; Bohannon et al., 2019; Brouardel, 1897; Khokhlov, 2001). Even minimal force can weaken or rupture vessels causing seizures, strokes, cardiac arrest, petechia, as well as the progression of bleeding or swelling in the brain over time (Stapczynski, 2010). Considering that most victims of NFS/S are strangled manually with two hands during rage-fueled arguments (Brady et al., 2021; Joshi et al. 2012), the high risk of morbidity and mortality from NFS/S is not surprising when victims experience an average of 200 pounds of force around their neck.

Corroborating Legal Elements of Strangulation

In the absence of visible injuries, first responders must be able to identify and articulate non-traditional evidence related to the signs and symptoms of strangulation. In recent years, retrospective studies of police reports, medical records, and interviews with survivors have identified a host of signs and symptoms indicative of impaired respiration and oxygen deprivation (see Bichard et al. 2021; Monahan et al., 2019; Shields et al., 2010). The following section outlines common symptoms first responders may encounter within the context of the reality of how perpetrators employ S/S.

The signs and symptoms from asphyxiation depend on the modality used (Pritchard et al., 2018). Perpetrators most commonly strangle victims manually with one or two hands (Brady et al., 2021; Reckdenwald et al., 2019). This is important, as manual strangulation is more likely to result in structural damage to the neck (e.g., injuries to windpipe, hyoid bone, voice box) compared to modalities involving carotid compression (e.g., ligature/chokeholds; Iserson, 1984; Stapczynski, 2010). As a result, NFS survivors are most likely to present with breathing difficulties/changes during and/or after the assault (e.g., shallow/rapid breathing, coughing), as well as injuries to the neck (e.g., tenderness, pain, swelling; Pritchard et al., 2018; Reckdenwald et al., 2019). Changes in victims' voice or their ability to swallow are also compelling symptoms of disrupted airflow (Bichard et al., 2021; De Boos, 2019; Funk & Schuppel, 2003; Monahan et

al., 2019; Shields et al., 2010; Smith et al., 2001; Stapczynski, 2010; Vella, 2013; Wilbur et al., 2001; Zilkens et al., 2016). Survivors with internal injuries to the neck may feel like they have a sore throat, have trouble speaking, respond with a hoarse/raspy voice, and/or have to whisper (De Boos, 2019; Funk & Schuppel, 2003; Shields et al., 2010; Smith et al., 2001; Strack et al., 2001; Vella, 2013; Wilbur et al., 2001). All of which suggest that perpetrators applied enough pressure to strain the windpipe and/or impede survivors' ability to breathe.

There is some evidence to suggest that signs and symptoms of impeded blood circulation may be more indicative of non-manual modalities, such as ligature or chokehold strangulation (Funk & Schuppel, 2003; Iserson, 1984; Pritchard et al., 2018; Stapczynski, 2010). Consistent pressure on the carotid arteries disrupts the flow of oxygen to the brain, which, compared to airway compression, can lead to unconsciousness within seconds, other serious injuries such as a stroke and/or death within minutes, and prevent the brain's ability to regulate bodily functions (Funk & Schuppel, 2003; Stapczynski, 2010). Survivors whose blood circulation was impeded often present with physiological symptoms, such as feeling dizzy, disoriented, nausea, memory loss, slurred speech, and/or changes/loss in hearing or vision (Bichard et al., 2021; Funk & Schuppel, 2003; Joshi et al., 2012; Ralston et al., 2019; Shields et al., 2010; Smith et al., 2001; Wilbur et al., 2001; Zilkens et al., 2016).

In sum, the need for specialized training among first responders is apparent due to the growing body of literature showing how key indicators of NFS go beyond visible injuries. There is some evidence to suggest that these characteristics are distinct and not as commonly identified in DV complaints that do not involve S/S (Pritchard et al., 2018). Pritchard and colleagues (2018) compared symptoms identified by officers in 356 actual/potential strangulation cases to 1,347 DV complaints where NFS was not suspected. Compared to non-strangulation cases, officers articulated significantly more breathing changes in actual/potential NFS cases, as well as physiological symptoms, petechiae, and injuries on victims' torso and neck. Additionally, voice changes, petechiae, and/or swallowing issues were only documented in police reports where NFS was explicitly identified. While characteristics of NFS/S may be distinct from non-NFS DV

cases, less is known whether estimates of indicators vary depending on the race/ethnicity of survivors.

The Role of Skin Tone in Injury Identification

Emerging research suggests that using the severity of external injuries as a litmus test for serious interventions perpetuates health and legal disparities for survivors of color (Deutsch et al., 2017; Holbrook & Jackson, 2013; Sommers et al., 2008). Differences in skin pigmentation result from the amount of melanin produced in the innermost layer of the skin (Schlessinger et al., 2020). People with darker skin tones produce more melanin, which can cloud the visibility of soft tissue damage like bruising or abrasions (Deutsch et al., 2017). Prior studies evaluating medical examinations among women following consensual (Sommers et al., 2008) and nonconsensual intercourse (Sommers et al., 2006) have found that forensic nurses were significantly less likely to identify and document genital-anal injuries on women with darker skin tones. Nevertheless, some evidence suggests the use of an alternative light source (ALS) can dramatically improve the visibility of soft-tissue damage, particularly among women with darker skin tones. For example, among a sample of 172 predominantly Black survivors of NFS who received a visual evaluation by a forensic nurse, 93% did not have visible injuries. When the 93% were subsequently examined with an ALS, however, intradermal injuries were apparent among 98% of the group (Holdbrook & Jackson, 2013). Albeit promising, survivors and victim service providers have described how officers tend to only take photographs of injuries when they are visible (Deutsch et al., 2017). Given that ALS may not be available in all jurisdictions, a reliance on visible injuries disadvantages survivors of color from treatment and justice simply as a result of their skin color.

Current Study

While evidence suggests that survivors do not always present with visible injuries (Strack et al., 2001), emerging research has identified a number of neuropsychological and behavioral indicators justice decision-makers can use to corroborate legal elements of NFS statutes (see Bichard et al. 2021; Brady et al., 2021; Monahan et al., 2019; Shields et al., 2010). The current

study contributes to the literature by providing estimates of NFS signs and symptoms from 133 family violence complaints that were documented using a standardized strangulation assessment. Because most assessments were completed within hours of the assault, the findings benefit legal and medical professionals by identifying the most common locations of external signs on survivors' body, as well as the most prevalent symptoms of NFS encountered by first responders from on-scene observations. Additionally, the diverse sample provides an opportunity to determine whether racial/ethnic disparities exist in officers' identification of signs and/or symptoms, as well as for which specific indicators and locations of injuries.

Data and Methods

In 2009, Texas added an enhancement to their family violence (FV) assault statute to include strangulation/suffocation as a 3rd degree felony and a 2nd degree felony for those with prior convictions for FV (Texas Penal Code [TCP] §22.01). Under the new law, strangulation/suffocation occurs when a suspect "…commits an offense by intentionally, knowingly, or recklessly impeding the normal breathing or circulation of the blood of the person by applying pressure to the person's throat or neck or by blocking the person's nose or mouth" (TCP §22.01(a)(1)(b)(2)). Due to similar investigative issues identified in other jurisdictions (Pritchard et al., 2019; Reckdenwald et al., 2019; Strack et al., 2001), the legislative change prompted the Travis County District Attorney's Office (TCDAO) to create a specialized position in 2010 for prosecutors to exclusively handle strangulation cases. Within this role, prosecutors also cross-trained with the Austin Police Department (APD) to enhance officers' capacity to identify and document signs and symptoms of NFS/S.

In 2013, the APD updated their standard operating procedures requiring officers to complete the supplement when presented with a family violence complaint involving S/S. Originally created by the Training Institute on Strangulation Prevention (2013), the two-page supplement was adapted by the TCDAO to include a number of items prosecutors found to be helpful in combating defenses and case attrition since the legislative update. The supplement contained questions about how the survivor was strangled (e.g., modality, length/frequency of

strangulation), open-ended questions for survivors to describe their interpretation of the suspects' intent, as well as a checklist of signs and symptoms that aid officers in corroborating disrupted air/blood circulation.

Data for the current study stem from a larger outcome evaluation of 300 FV strangulation cases (*see* blinded for peer-review). After requesting 300 cases (150 pre-/150 post-supplement) for review, cases were drawn systematically from a sampling frame of all NFS/S family violence complaints that were referred to the TCDAO between 2010 to 2015 and were disposed at the time of data collection. According to TCDAO, a sampling interval of seven was determined by dividing the total population of cases (N = 2,303) by the desired sample size (n = 300). After sorting the sampling frame chronologically from January 2010 through December 2015, TCDAO staff selected every 7th case until a sample of 300 was met. Due to time and logistical constraints, only 254 out the 300 cases were coded by the research team.[2] The current study analyzes the subset of cases that were investigated with the supplement (n = 133). Within this sample, most cases received formal charges with nearly 1 in 5 being dismissed (23.1%; n = 30).

Signs. Signs include visible marks/injuries that officers could objectively see and/or hear during their interactions with survivors. All items on the supplement were coded '1' if officers documented its presence by marking the box next the sign/symptom, and '0' if the box was blank.[3] The supplement outlines 61 possible signs of strangulation/suffocation across nine areas of the body. The current study estimated the nature and extent of signs identified by officers using 10 dichotomous and 10 continuous measures. The extent of signs identified for each body part represents the count of boxes checked on the supplement, which was created by summing underlying attributes into an additive index. The current study employed 10 continuous measures

[2] Researchers did not live in Travis County and because case files could not leave the DA's office, data were collected in one-week periods over the course of six months. Due to limited resources and the time required to adequately code case files, the final sample resulted in 254 out of the 300.

[3] One limitation with retrospectively coding casefiles was the inability to verify whether an unmarked item on the supplement indicated the sign/symptom was not observed/reported or because it was overlooked by officers. Consistent with other methodologies using official casefiles (Bendlin & Sheridan, 2019), unmarked items were coded as 'not observed/reported'.

representing the number of signs identified on victims' *head* (0 to 6 possible signs), *face* (0-6 signs), *eyes/eyelids* (0-4 signs), *ears* (0-5 signs), *nose* (0-4 signs), *mouth/palate* (0-8 items), *chin* (0-6 items); *chest/shoulders* (0-10 items), *neck* (0-10 items), *or any visible signs* (0-61 items). To measure the overall prevalence of signs identified for each body part, 10 additional dummy variables were created by dichotomizing the 10 continuous measures (0 = no signs identified; 1 = one or more signs identified).

Symptoms. Symptoms are defined as victims' subjective feelings and/or experiences reported to first responders. Items on the supplement were categorized according to whether they represented symptoms of disrupted blood circulation or airflow. In accordance with symptoms identified in the literature (Bichard et al., 2020; Jacob et al., 2020; Monahan et al., 2019; Patch et al., 2019; Stapczynski, 2010), nine items were used to measure disrupted blood circulation, including whether victims' reported *losing consciousness* (0 = no; 1 yes); *experiencing changes/loss of hearing* (0 = no; 1 = yes); *vision* (0 = no; 1 = yes); feeling like/actually *losing control of bodily functions* (0 = no; 1 = yes); petechiae (0 = no; 1 = yes); *dizziness* (0 = no; 1 = yes); *headache* (0 = no; 1 = yes); *feeling faint* (0 = no; 1 = yes); *disorientation* (0 = no; 1 = yes). All eight items were summed to create an additional measure of the total number of *symptoms of disrupted blood circulation* identified by officers (continuous). The additive index was also dichotomized to obtain estimates of the *nature of identified symptoms of disrupted blood circulation* (0 = no symptoms identified; 1 = one or more symptoms identified).

A total of 19 items from the supplement were used to measure the nature and extent of symptoms of impeded airflow. Research suggests that symptoms of disrupted airflow can include changes in the victim's voice (e.g., whispering, raspy/hoarse voice; Pritchard et al., 2018; Zilkens et al., 2016), challenges swallowing (neck tenderness/pain; trouble/painful to swallow; De Boos, 2019; Funk & Schuppel, 2003; Shields et al., 2010; Smith et al., 2001) and several other indicators that occurred during and/or after the assault (e.g., shallow/rapid breathing, physical pain; coughing; nausea/vomiting; Bichard et al., 2020; De Boos, 2019; Ralston et al, 2019; Shields et al., 2010). As a result, the 19 items were transformed into four dichotomous and

four continuous measures indicative of disrupted breathing, including *voice changes* (0 = no symptoms; 1 = one or more symptoms identified), *challenges swallowing* (0 = no symptoms; 1 = one or more), *other physical indicators* (0 = no symptoms; 1 = one or more), and the *collective nature and extent* (0 = no symptoms identified; 1 = one or more of the 19 symptoms identified).

Control variables. The nature and extent of signs and symptoms is contingent on a number of factors related to the assault, including how the victim was strangled (*modality* 1 = one hand only; 2 = two hands only; 3 = forearm/chokehold and/knee; 4 = multiple modalities [e.g., one hand, two hands, and/or forearm]; 5 = ligature), and whether officers have received *specialized training* on strangulation and the supplement (0 = no; 1 = yes). While prior studies have found race to have a direct effect on the prevalence and frequencies of injuries identified by forensic nurses, skin tone mediates this relationship and provides a better explanation for discrepancies in injury identification (Sommers et al., 2008). Due to a lack of access to photos of survivors and sophisticated measures of skin tone (Hussain et al., 2013; Sommers et al., 2019), the current study uses race/ethnicity as a proxy for skin tone (1 = Black; 2 = Hispanic; 3 = White/Asian survivors). The amount of melanin produced in the skin exists on a continuum that overlaps across races and ethnicity (Sommers et al., 2008). Thus, it is important to note that we recognize the inherent limitations of using race/ethnicity as a proxy for skin color and findings should be interpreted with caution.

Analytic strategy

Univariate statistics were estimated to examine the distribution of the data, followed by a series of chi-square analyses to identify significant relationships between race and injury identification. Multivariate regression models were also estimated to assess whether the number of signs or symptoms of NFS varied according to the race/ethnicity of the victim. The outcome variables of interest represent counts of the total number of possible signs and symptoms per location on the body, as documented by officers using the supplement. Given that injuries and symptoms are likely to vary according to the modality of the attack (Pritchard et al., 2018), coupled with the reality that NFS/S victims do not always present with visible injuries (Strack et

al., 2001), documented signs and/or symptoms are distributed as counts of rare events. In other words, since the number of identified signs and/or symptoms are lower than the alternative (i.e., 0 = indicator not present), distributions are no longer normal and violate assumptions of linear regression modeling (Osgood, 2000). In such cases, Poisson or negative binomial regression are appropriate for count data, particularly skewed distributions that are overdispersed (e.g., greater variance than expected; Paternoster & Brame, 1997; Piza, 2012).

Poisson regression models were estimated for each of the nine areas of the body on the supplement, as well as for the total number of identified signs and symptoms of disrupted blood and air flow. Out of the 12 exploratory Poisson regression models, only three remained significant after the inclusion of the independent variables and controls.[4] Goodness-of-fit tests revealed that the distribution of the total number of visible signs were distributed as negative binomial processes, while symptoms of disrupted blood flow and total number of signs identified on victims' chin followed a Poisson distribution.[5] To examine the unique effects of race on injury identification, incident rate ratios (IRRs) were calculated to estimate the percentage change in the outcome per one-unit increase in the independent variable (Piza, 2012). Values larger than one reflect positive effects on the number of signs/symptoms identified, while IRRs lower than one are indicative of a negative effect (Piza, 2012).

Results

Table 1 presents the descriptive statistics for the sample. The majority of cases involved male defendants and female victims (97%) in their early thirties (M_{victim}= 34.2, SD = 10.3; $M_{defendant}$= 33.3, SD =11.4). Victims and defendants were predominantly Hispanic (41.4%$_{victim}$ v. 38.3%$_{defendant}$), followed by Black (30.1%$_{victim}$ v. 36.8%$_{defendant}$), and Non-Hispanic White/Asian

[4] Non-significant models are not shown due to space constraints and can be obtained from the corresponding author. Among the non-significant models, eight explored the role of race in the number of signs identified on victims' face, chin, head, chest/shoulders, mouth/palate, ears, nose, and eyes, while the final model examined the number of symptoms for disrupted breathing.

[5] Significant tests suggest that the observed distributions differ from a Poisson distribution for the total number of signs (X^2 = 430.48, p = .000). Conversely, non-significance tests substantiate null hypotheses that the distributions do *not* differ from a Poisson distribution for the total number of signs on victims' neck (X^2 = 140.69, p = .13) and symptoms of disrupted blood flow (X^2 = 131.79, p = .28).

(28.6%$_{victim}$ v. 24.8%$_{defendant}$). Nearly all defendants were current intimate partners (97.7%) who had previously strangled the victim prior to the incident in question (85%). In addition to other forms of co-occurring violence in the same incident (91%), manual strangulation with one (41.9%) or two hands (34.1%) was the most common modality used. Nearly 40% of survivors indicated they were strangled multiple times in the same incident while more than a third of victims refused and/or did not seek medical attention (35.9%). Among the 64% of survivors who did received medical attention, most received basic first aid on scene (39%) while one in four were transported to a hospital via emergency medical services.

Insert Table 1 About Here

Prevalence of Signs and Symptoms of NFS/S

Officers employing the supplement in NFS/S complaints identified at least one visible sign in 89% of cases, one or more symptoms of disrupted breathing in 98%, as well as symptoms of disrupted blood circulation in 87%.[6] Officers most commonly identified visible signs on survivors' neck (80%), face (47%), chin (41%), head (28%), and chest/shoulder area (25%). Breathing difficulties (96%) and challenges swallowing during and/or after the assault (72%) were the two most common symptoms of disrupted airflow reported and documented in officers' reports/supplement. Although less prevalent than visible signs or breathing difficulties, the most prevalent symptoms of impeded blood circulation included reports of feeling faint (49%), dizzy (44%), disoriented (34%), having a headache (43%), and experiencing changes/loss of vision (33%) or control of bodily functions (30%).

The role of race/ethnicity. Bivariate analyses identified three areas of the body where officers' identification of visible injuries varied by the race/ethnicity of the survivor (see Table 2). With the exception of the chin, officers were significantly more likely to identify visible signs on White survivors' neck (92%$_{White/Asian}$ v. 82%$_{Hispanic}$ v. 65%$_{Black}$; p = .01) and torso area (40%

[6] It is important to clarify that estimates are based on officers' documentation on the supplement. Due to the nature of the data, we cannot definitively conclude that observed/reported injuries were the result of the NFS assault per say. Injuries could have also stemmed from other violence used during the assault.

$_{White/Asian}$ v. 20%$_{Black}$ v. 18%$_{Hispanic}$; p = .04). Compared to cases involving Hispanic survivors, officers were significantly less likely to identify signs of NFS/S on White and Black survivor's chins (53%$_{Hispanic}$ v. 42% $_{White/Asian}$ v. 23%$_{Black}$; p = .01). Racial differences were less prevalent when examining symptoms of disrupted blood circulation. Compared to cases involving White and/or Black survivors, officers encountered significantly more Hispanic survivors reporting a loss of bodily functions (42%$_{Hispanic}$ v. 25%$_{Black}$ v. 18% $_{White/Asian}$; p = .04). Racial differences did not emerge for symptoms of disrupted airflow.

****Insert Table 2 About Here****

Table 3 presents results from the three significant count models predicting the number of signs and symptoms of NFS/S identified by officers within hours of the assault. After controlling for officer training, modality, and co-occurring violence in the same incident, results revealed that skin tone may play a role in the under-identification of visible signs of NFS/S. Race had a significant negative effect on the number of visible injuries identified by officers overall (Model 1), as well as specifically on victims' neck (Model 2). When the victim was Black, the expected number of visible signs on victims' neck (IRR = .52) and overall (IRR = .51) was approximately half the number of signs when the victim was White. Race, however, did not significantly influence the number of symptoms identified that were indicative of disrupted blood circulation.

****Insert Table 3 About Here****

Modality. How the victim was strangled was found to play a significant role in the number of injuries and symptoms identified by responding officers. When suspects strangled victims with two hands, the expected number of overall signs of NFS increased by 86% compared to cases where victims were strangled via chokeholds/forearm/knee only. In fact, relative to victims who were strangled manually via chokeholds/knees only, the expected number of identified signs on victims' neck was nearly 100% greater when strangled with multiple modalities (IRR = 1.99), and twice as much when strangled with one (IRR = 2.05) or two hands only (IRR = 2.45). Conversely, the expected number of identified symptoms of disrupted blood flow decreased by 36% and 31% in cases where victims were strangled with one or two hands

only, respectively. In other words, officers identified a greater number of symptoms of disrupted blood circulation when defendants strangled victims via chokeholds/forearm/knees only.

Incident characteristics. The number of NFS/S signs documented by officers was not significantly impacted in cases involving co-occurring violence, a prior history of strangulation, and responding officers who had received specialized training on NFS/S. The inclusion of key incident characteristics in the models, however, revealed the importance of specialized training on documenting *symptoms* of NFS. Indeed, officers who had received specialized training on NFS increased the expected number of identified symptoms of disrupted blood flow by 65% (IRR = 1.35). Additionally, officers identified twice as many symptoms of disrupted blood flow in cases where officers documented a prior history of strangulation (IRR = 2.00).

Discussion

Domestic violence complaints involving NFS are homicides waiting to happen. Because strangulation statutes require evidence of impeded air and/or blood flow, defaulting to superficial examinations of injuries by a non-medical patrol officer risks overlooking symptoms that could be indicative of an underlying traumatic brain injury and/or structural damage to the neck (Bichard et al., 2021; De Boos, 2019; Smith et al., 2001). Likewise, emerging evidence suggests that the degree of melanin in victims' skin matters and that a reliance on visible injuries may facilitate racial, legal, and health disparities among those who are most likely to be murdered by an intimate partner (Baker & Sommers, 2008; Petrosky et al., 2017). The current study analyzed 133 cases of NFS that were documented using a standardized strangulation supplement. Findings from the diverse sample revealed key areas of Black survivors' bodies where certain types of injuries were most commonly under-identified. Three findings provide important implications for those who encounter survivors of NFS within the golden hour.

First, the standardized supplement provided considerable preliminary information on the types of evidence prosecutors need to meet the unique elements of strangulation statutes. Much has changed since Strack and colleagues' (2001) seminal study revealing how 50% to 85% of cases lacked sufficient physical evidence of NFS/S. Thanks to the proliferation of strangulation

statutes in the U.S. (Pritchard et al., 2017), as well as ongoing training initiatives (Reckdenwald et al., 2019), recent studies have found that the prevalence of visible signs and/or symptoms of NFS/S identified in DV complaints are substantially higher (Brady et al., 2021; Pritchard et al., 2018; Reckdenwald et al., 2017; 2019; 2020). Nevertheless, future research should explore the effectiveness of the supplement on criminal justice outcomes, such as arrest, referral, and charging decisions. In the interim, investigative agencies and forensic medical examiners would benefit from updating domestic violence policies and procedures to require the completion of the supplement when confronted with survivors of strangulation/suffocation.

Second and consistent with forensic examinations of sexual assault victims (Sommers et al., 2006), the findings provide additional support as to why a reliance on visible injuries can foster health and legal disparities for Black survivors. Compared to cases with White/Asian survivors, officers were less likely to identify visible injuries on Black survivors' neck, chin, and torso (i.e., chest/shoulders). The most common missing/overlooked signs on these areas of the body included redness and tenderness/pain on/in Black survivors' necks, as well as bruising on their torso and under the chin. Significant differences also emerged regarding the number of possible NFS signs identified for each area of the body. After accounting for how the victim was strangled, co-occurring violence in the same incident, and whether responding officers had received training on NFS, race remained a significant factor in the total number of signs documented by responding officers. When the victim was Black, predictive models estimated a 49% to 54% decrease in the number of injuries identified by officers on victims' neck (M_{Black}= 1.3 v. $M_{White/Asian}$ = 2.3) and overall (M_{Black}= 3.1 v. $M_{White/Asian}$ = 5.3) compared to cases with White victims. Despite not having access to photos of survivors' injuries to corroborate officers' observations, the estimated disparities are concerning for the health and safety of victims with darker skin tones.

Beyond the heightened level of fear following the attack, coupled with communities of colors' historical distrust of the legal and medical systems (Gramlich & Funk, 2020; Horowitz et al., 2019), there are a number of possible explanations for these disparities. Despite visual

inspections producing lower estimates of injuries compared to other advanced methods (i.e., tissue staining, ALS; Baker & Sommers, 2008; Holbrook & Jackson, 2013), direct visualization remains the standard assessment strategy for first responders, especially in communities with limited access to advanced technologies. Likewise, service providers have described how bruising looks more dramatic on those with lighter skin tones (Deutsch et al., 2017). The majority of supplements analyzed in the current study were completed within hours of the attack and it is possible that bruising had not yet developed while officers were on scene. Moreover, interviews with survivors and victim service providers have noted how female victims are not always comfortable exposing injured areas such as their torsos for male police officers to document (Deutsch et al., 2017). Regardless, the underidentification of injuries among survivors at the highest risk for femicide not only limits access to medical treatment, but equal justice under the law.

Additionally, findings suggested that officers who received specialized training identified twice as many symptoms of disrupted blood circulation than those who did not. A solution to improving accountability, then, would be for strangulation statutes to require officers and medical professionals to receive regular training on corroborating evidence of NFS. For example, in the current study, officers most commonly identified one or more symptoms of disrupted breathing (98%), followed by visible injuries (89%) and impeded blood circulation (87%). These results are consistent with literature suggesting that first responders are most likely to identify NFS/S in DV complaints when victims report difficulties breathing during and/or after the assault (Garza et al., 2021; Reckdenwald et al., 2019). This is likely related to the fact that the majority of victims are strangled manually with one or two hands. Perpetrators often escalate to strangulation during heated arguments about relationship insecurities (Brady et al., 2021; Joshi et al., 2012; Nemeth et al., 2012; Thomas et al., 2014), and the vulnerability of the neck is no match for the average 100 to 200 pounds of rage-induced pressure. Impeded airflow was also evidenced among the 57% and 72% of survivors reporting voice and swallowing changes, respectively. These symptoms are important to document due to the potential for underlying structural damage

to the neck, such as laryngeal injuries, or fractures to the hyoid bone and/or surrounding cartilage (De Boos, 2019; Stapczynski, 2010). Not only do breathing difficulties differentiate NFS from DV complaints where victims have not been strangled **(**Reckdenwald et al., 2019**),** they are indicative of potential respiratory failure and thus, evidence that one's normal breathing was disrupted.

Agencies would benefit from policies requiring emergency medical services (EMS) to be dispatched on-scene for victims presenting with neck pain, breathing challenges, and/or cardiovascular issues (e.g., loss of consciousness, memory loss, feeling dizzy). To reduce the pressure and risk for survivors to decide, officers can shift the blame to the department policy mandating the dispatch of EMS in cases involving NFS. Medical documentation and body camera footage are persuasive evidence that can improve outcomes in DV cases (Morrow et al., 2016; Peterson & Bialo-Padin, 2012). Officers should also be sure to capture victims' responses to questions about changes in their ability to breath/swallow/speak on body cameras or in a recording -- both on scene and during follow-up interviews.

Finally, findings underscore the usefulness of the supplement in documenting how the perpetrator attacked the victim. Detailed descriptions of the positions of the perpetrator and victim can help juries understand the mechanism of injury, as well as how injuries on both parties could be evidence of self-defense. While the nature of the data limited our ability to determine how the injuries were inflicted, asking victims to demonstrate how the perpetrator strangled/suffocated them can be helpful in identifying the predominant aggressors and vetting claims of mutual combat. For example, scratches/curvilinear abrasions on victims' face, neck, and/or bottom of their chin could be self-inflicted when attempting to free themselves from perpetrators' hands/arm/ligature. In some cases, the perpetrator may be the only party with visible injuries. Nevertheless, fighting back is primal and the most commonly used survival tactic among NFS survivors (Brady et al., 2021). Scratches/redness on perpetrators' face could be caused by victims fighting for their life while being strangled from the front. Bite marks or scratches on defendants' arms could be caused by victims' attempts to survive being strangled

from behind in a chokehold. Documenting positions and modalities is also integral to corroborating the *absence* of key symptoms of NFS/S.

The lack of visible injuries does not negate the seriousness of the crime. Most violent crimes do not result in injuries (Morgan & Truman, 2020) and even among the 48% of DV victims who report any injuries, only 11% experienced "serious" bodily harm, such as fractures, unconsciousness, internal injuries, and/or weapon wounds (Truman & Morgan, 2014). For example, petechiae is commonly associated with strangulation and occurs when consistent pressure to the neck ruptures congested veins causing small red dots on the skin, brain, and eyes (De Boos, 2019). Empirical estimates in NFS/S complaints, however, suggest that petechiae is relatively rare and/or unidentified (Reckdenwald et al., 2019; 2020). Yet, even with the standardized supplement, petechiae was identified in less than 10% of complaints. Loss of consciousness is another indicator of a life-threatening event, yet has been documented in only 15% to 18% of NFS complaints (Brady et al., 2021; Garza et al., 2021). Despite officers documenting at least one or more symptoms of disrupted blood circulation in 87% of cases, most symptoms were identified in less than half of complaints. Findings from the current study provide insight into why estimates of impeded blood circulation may not be as common as visible signs and/or symptoms of breathing disruptions.

Symptoms of impeded blood circulation are inherently subjective and, compared to visible injuries or symptoms of disrupted breathing (e.g., coughing/raspy voice), may be less obvious to trained and untrained first responders. It is also possible for officers to confuse disorientation with intoxication and unless asked, survivors might not consider their headache to be relevant or may be too embarrassed to disclose incontinence. Additionally, some symptoms of disrupted blood flow require time and consistent pressure to develop. For example, petechiae develops only when both jugular veins are obstructed long enough for the venous engorgement process to begin in the head. Estimates suggest a minimum of 10 to 30 seconds of pressure is necessary and that any interruption to the jugular occlusion restarts the clock (Hawley, 2013; Stapczynski, 2010). To strangle/suffocate someone to death is a physically strenuous five to 10

minutes and the fact that most victims survive by fighting back makes the application of continuous pressure challenging (Brady et al., 2021). This could explain findings from the current study showing that officers identified fewer symptoms of disrupted blood circulation in cases where victims were strangled with one or two hands only compared to attacks involving chokeholds/forearms/knee. Nevertheless, additional research is needed to corroborate this finding and future studies would benefit from data where party positions and modalities are documented.

Readers should consider the findings in relation to important limitations of the study. First, race/ethnicity is a questionably valid measure of skin tone considering that the degree of injury visibility is contingent on the underlying biological, physical, and chemical properties of the skin (e.g., skin hydration/viscoelasticity; Hussain et al., 2013; Sommers et al., 2019). Studies have overcome limitations of visual inspections using colorimetric analyses (Sommers et al., 2008) and reflectance spectrophotometry (Sommers et al., 2019), which produce quantifiable attributes of skin tone colors based on indices for lightness/darkness, saturation, and hue (see Wang et al., 2015). While these advanced methods have confirmed that the extent of injuries identified by nurse examiners were greater among those with lighter skin tones, additional research is needed to corroborate the findings from the current study using more reliable and valid measurements of skin tone.

Second, data were collected from FV complaints investigated by a single police department in Texas and subsequently reviewed by prosecutors specifically assigned to pursue strangulation cases. While generalizability may be limited, this is the first study to our knowledge to provide standardized estimates of NFS indicators across race/ethnicity. Third, the sample of cases was compiled by staff within the TCDAO and the research team was not able to verify the validity of the sampling frame. Due to time and logistical constraints, the research team was only able to code around 85% of the initially requested 300 cases. Finally, the inherent limitations of official data inhibit our ability to determine the accuracy of the documentation on the supplement. Future research would benefit from triangulating data sources by interviewing

responding officers and comparing police reports to body camera footage. Future studies could expand on our findings by comparing estimates obtained by police officers on-scene to supplements completed during follow-up interviews and/or forensic exams. Despite these limitations, the current findings provide insight into a potential solution for enhancing the quantity and quality of evidence collection in NFS/S cases.

Conclusion

The inadequacies of justice for victims of DV are often rooted in training and traditional beliefs about violence against women that are antiquated and, in some instances, wrong. As perpetrators continue to evolve in their power and control tactics, so too should first responders in how these complex complaints are investigated. This especially rings true for coercive controlling behaviors that are effectively terrifying and limited on evidence, such as NFS. Despite high estimates of ongoing abuse preceding NFS complaints, research suggests that NFS is only one of the many coercive control tactics abusers use that does not generate the evidence most first responders are trained to document (Brady et al., 2021; Pritchard et al., 2018; Reckdenwald et al., 2019; Strack et al., 2001). The current study demonstrates the utility of a strangulation supplement that can potentially save time and resources by reducing the grey areas in DV complaints, while triaging cases at the highest risk for lethality. While additional research is needed to identify other benefits and limitations of the supplement, this type of tool will allow officers to make informed choices regarding the direction in which the investigation will occur as well as providing trauma informed care. Consequently, the questions on the supplement can help first responders broaden their understanding of the nature and dynamics of abusive relationships while challenging incorrect notions or beliefs that there are obvious signs of trauma in all strangulation victims regardless of their race/ethnicity.

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Table 1. *Descriptives*

	N	% (*n*)	*M*	SD	Range
Defendant/Victim Characteristics					
Sex dyads	133		–	–	1-3
Male defendant/female victim		97.0% (129)	–	–	–
Male defendant/male victim		2.3% (3)	–	–	–
Female defendant/female victim		0.8 (1)			
Race/Ethnicity of victim	133	–	–	–	1-4
Hispanic		41.4% (55)	–	–	–
Black		30.1% (40)	–	–	–
Non-Hispanic White/Asian		28.6% (38)	–	–	–
Victim age (continuous)	133	–	34.2	10.3	18-65
Defendant age (continuous)	133	–	33.4	11.4	18-64
Defendant current intimate partner (0 = former)	133	97.7% (130)	–	–	0-1
Defendant previously strangled victim (0 = no)	133	85.0% (113)	–	–	0-1
Incident Characteristics					
Modality	129		–	–	1-5
One hand only		41.9% (54)	–	–	–
Two hands only		34.1% (44)	–	–	–
Chokehold/forearm/knee		8.5% (11)	–	–	–
Multiple modalities in same incident		15.5% (20)	–	–	–
Ligature		0.0% (0)	–	–	–
Other violence used besides strangulation (0 = no)		90.8% (119)			0-1
Multiple strangulations in same incident (0 = no)	133	39.1% (43)	–	–	0-1
Officers received specialized training on NFS		65.2% (86)	–	–	0-1
Medical attention	131				1-3
Basic first aid/sought treatment after incident		38.9% (51)	–	–	–
Transported by emergency medical services		25.2% (33)	–	–	–
Refused medical attention		35.9% (47)	–	–	–

Table 2. *The Nature & Extent of NFS/S Signs and Symptoms Identified by Officers* (N = 133)

	Full sample $N = 133$	Black survivors $n = 40$	Hispanic survivors $n = 55$	White survivors $n = 38$	χ^2
	M or % (*n*)	*M* or % (*n*)	*M* or % (*n*)	*M* or % (*n*)	
Identified any visible signs	88.7% (118)	82.5% (33)	89.1% (49)	94.7% (36)	2.9
Any symptoms of disrupted breathing	97.7% (130)	100.0% (40)	94.5% (52)	100.0% (38)	4.4
Any symptoms of disrupt blood flow	87.2% (116)	90.0% (36)	89.1% (49)	81.6% (31)	1.5
External signs on survivors'…					
Neck	79.7% (106)	65.0% (26)	81.8% (45)	92.1% (35)	9.1**
Face	47.4% (63)	42.5% (17)	54.5% (30)	42.1% (16)	1.9
Chin	40.6% (54)	22.5% (9)	52.7% (29)	42.1% (16)	8.8**
Head	27.8% (37)	22.5% (9)	34.5% (19)	23.7% (9)	2.1
Chest and/or shoulders	24.8% (33)	20.0% (8)	18.2% (10)	39.5% (15)	6.2*
Mouth and/or Palate	18.0% (24)	12.5% (5)	21.8% (12)	18.4% (7)	1.4
Ears	9.0% (12)	2.5% (1)	14.5% (8)	7.9% (3)	4.2
Nose	8.3% (11)	7.5% (3)	5.5% (3)	13.2% (5)	1.8
Eyes & Eyelids	7.5% (10)	5.0% (2)	12.7% (7)	2.6% (1)	3.8
Symptoms of disrupted blood flow					
Felt faint during/after	48.9% (65)	42.5% (17)	45.5% (25)	60.5% (23)	3.0
Dizziness during/after	44.4% (59)	40.0% (16)	49.1% (27)	42.1% (16)	0.9
Headache during/after	42.9% (57)	55.0% (22)	40.0% (22)	34.2% (22)	0.4
Disoriented during/after	33.8% (45)	22.5% (9)	41.8% (23)	34.2% (13)	3.9
Changes/loss of vision	33.1% (44)	32.5% (13)	38.2% (21)	26.3% (10)	1.4
Loss control of bodily functions	30.1% (40)	25.0% (10)	41.8% (23)	18.4% (7)	6.7*
Loss of consciousness	15.0% (20)	10.0% (4)	21.8% (12)	10.5% (4)	3.4
Changes/loss of hearing	12.0% (16)	5.0% (2)	16.4% (9)	13.2% (5)	2.9
Any petechiae	9.8% (13)	5.0% (2)	14.5% (8)	7.9% (3)	2.6
Symptoms of disrupted breathing					
Identified any voice changes	57.1% (76)	65.0% (26)	58.2% (32)	47.4% (18)	2.5
Identified any swallowing changes	72.2% (96)	70.0% (28)	72.7% (40)	73.7% (28)	0.2
Identified breathing difficulties	96.2% (128)	100.0% (40)	92.7% (51)	97.4% (37)	3.6

*$p < .05$; **$p < .01$

Table 3. *Count Models Examining the Role of Race/Ethnicity on the Extent of Signs and Symptoms Identified by Officers (N = 127)*

	Model 1: Total number of visible signs identified		Model 2: Total number of signs on victims' neck		Model 3: Total number of identified symptoms of disrupted blood flow	
	b (SE)	IRR	b (SE)	IRR	b (SE)	IRR
Race/ethnicity of victim						
Black[a]	-0.67 (.21)	0.51**	-0.66 (.18)	0.52**	-0.16 (.15)	0.85
Non-White Hispanic[a]	0.07 (.19)	1.07	-0.14 (.16)	0.87	0.09 (.14)	1.09
How victim was strangled						
One hand only[b]	0.39 (.30)	1.48	0.72 (.32)	2.05*	-0.45 (.18)	0.64**
Two hands only[b]	0.62 (.31)	1.86*	0.90 (.32)	2.45**	-0.37 (.19)	0.69*
Multiple modalities[b]	0.60 (.34)	1.82	0.69 (.35)	1.99*	0.03 (.20)	1.03
Control variables						
Co-occurring violence	0.11 (.28)	1.12	-0.11 (.23)	0.90	-0.30 (.19)	0.74
Prior strangulation	0.19 (.23)	1.21	-0.05 (.19)	0.95	0.70 (.20)	2.00**
Officer received NFS training	0.07 (.17)	1.07	-0.05 (.15)	0.95	0.30 (.13)	1.35
Model LR χ^2	18.06*		23.40**		36.09**	
Overdispersion parameter	.51 (.10)*		–		–	

IRR = Incidence rate ratio; [a]Compared to White survivors; [b]Compared to chokehold/forearm/knee; *$p < .05$; **$p < .01$.

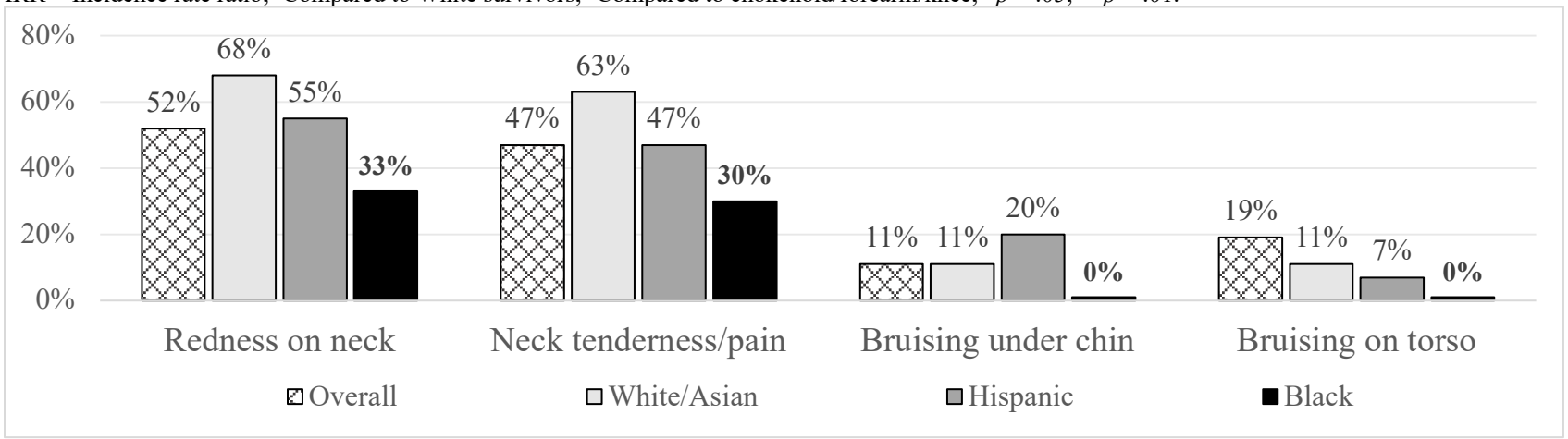


Figure 1. Prevalence estimates of the types of injuries most commonly under-identified among Black versus lighter skin-toned survivors.

Appendix. ***Strangulation Supplement***

AUSTIN POLICE DEPARTMENT - STRANGULATION SUPPLEMENT

TO BE COMPLETED IN ADDITION TO AVS

CASE # _____-_____ DATE OF ASSAULT _____ TODAY'S DATE _____

VICTIM INFORMATION

TO BE COMPLETED BY POLICE OFFICER

Victim's Name (last, first, middle) _____DOB_____R/S___ __

- Method and/or Manner (how was Victim strangled) ☐One Hand - R ☐One Hand - L ☐Two Hands ☐Forearm ☐Knee/Foot ☐ Chokehold Other (explain) _____
- Is the Suspect right or left handed? ☐Right Handed ☐Left Handed
- Estimate how long you were strangled _____ Minute(s) _____ Second(s) Multiple times? ☐Yes #_____ ☐No

Estimate Pressure Used (check) ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐9 ☐10 (1=WEAK – 10=EXTREMELY STRONG)

- Suffocated? ☐Yes ☐No ____ Minute(s) ____ Second(s) What was used? _____
- What did Suspect say during strangulation/suffocation? _____
- What did the victim say during the strangulation?_____
- Describe Suspect's demeanor during strangulation/suffocation? _____
- Describe how Suspect's face looked during strangulation/suffocation? _____
- What made Suspect stop? _____
- What did Victim think was going to happen during strangulation/suffocation? _____
- Has Suspect strangled/suffocated you before? ☐Yes # _____ ☐No
- Did you attempt to physically stop the strangulation? ☐Yes ☐No Describe: _____
- Were you shaken simultaneously while being strangled? ☐Yes ☐No

VICTIM'S SYMPTOMS

TO BE COMPLETED BY POLICE OFFICER

SYMPTOMS	DURING	AFTER	VOICE CHANGES	SWALLOWING CHANGES
unable to breathe	☐	☐	☐painful to speak	☐neck tenderness
difficult to breathe	☐	☐	☐raspy/hoarse voice	☐trouble swallowing
physical pain	☐	☐	☐coughing	☐painful to swallow
rapid breathing	☐	☐	☐unable to speak	☐neck pain
shallow breathing	☐	☐	☐whispering	☐other _____
coughing up blood	☐	☐	☐other _____	
nausea	☐	☐		
vomiting/dry heaving	☐	☐		
dizziness	☐	☐	Explain other _____	
headache	☐	☐		
feel faint	☐	☐		
disoriented	☐	☐		

- Loss of consciousness? ☐Yes ☐No ☐Victim not sure Unexplained Injury? Describe _____
- Any change or loss of hearing during/after strangulation/suffocation? ☐Yes ☐No Describe_____
- Any change or loss of vision during/after strangulation/suffocation? ☐Yes ☐No Describe_____
- How did your body/head feel during/after strangulation/suffocation? Describe_____
- Did the victim... ☐Urinate ☐Defecate ☐Feel the urge to do one or both? _____

FACE	EYES AND EYELIDS	NOSE	EARS
☐red or flushed	☐petechiae to R eye	☐petechiae	☐petechiae on ear(s)
☐petechiae	☐petechiae to L eye	☐scratch(es) or abrasion(s)	☐bleeding from ear(s)
☐scratch(es) or abrasion(s)	☐petechiae to R eyelid	☐swelling	☐bruising/discoloration/
☐sweating	☐petechiae to L eyelid	☐other _____	petechiae behind ear(s)
☐bruising	☐blood in eyeball(s)		☐swelling
☐other	☐other		☐other

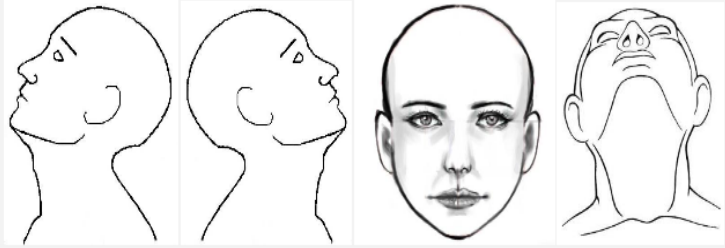
Explain other _____

MOUTH	UNDER CHIN	CHEST	SHOULDERS
☐bruise(s)	☐redness	☐redness	☐redness
☐swollen tongue	☐scratch(es)/abrasion(s)	☐scratch(es)/abrasion(s)	☐scratch(es)/abrasion(s)
☐swollen lip(s)	☐laceration(s)	☐laceration(s)	☐laceration(s)
☐scratch(es)/abrasion(s)	☐bruise(s)	☐bruise(s)	☐bruise(s)
☐ petechiae in palate ___	☐fingernail impression(s)	☐other _____	☐other _____
☐ other	☐other _____		

NECK	HEAD
☐redness	☐petechiae on scalp or head
☐tenderness/pain	☐laceration(s)
☐finger mark(s)	☐scratch(es)/abrasion(s)
☐scratch(es)/abrasion(s)	☐hair pulled
☐fingernail impression(s)	☐bump(s)
☐bruise(s)	☐other _____
☐ligature mark(s)	
☐petechiae	
☐swelling	
☐other _____	

PLEASE TAKE PHOTOGRAPHS

Diagram all injuries on the Victim



Describe any other injuries or symptoms _____

OFFICER CHECKLIST

- ☐If strangled/suffocated with object(s), photograph object(s) and collect for evidence.
- ☐Document where the object(s) was/were found in the Offense Report.
- ☐Determine if jewelry was worn by either party (ring(s), necklace(s), watch(es), etc.). Photograph / look for patterns and photograph.
- ☐If defecation or urination in clothes, collect clothes as evidence.
- ☐If Victim vomited, take a photo of vomit.
- ☐Call On-Call Domestic Violence Detective if you need assistance.
- ☐Call On-Call Domestic Violence Detective if Victim is transported to the hospital from injuries due to strangulation/suffocation.
- ☐ Advise on future symptoms (headaches, throat/neck pain, etc.) Advise victim that she/he should be with somebody, and should not be alone for 24 hours. Who will you be with? _____ Contact number: _____
- ☐If Victim is transported to the hospital from injuries due to strangulation/suffocation then an officer NEEDS to standby at hospital until relieved by the On-Call Domestic Violence Detective.
- ☐PHOTOGRAPH SUSPECT: hands, arms, face, chest and any areas where Suspect states any injuries/contact occurred.