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Research Paper

Non-fatal strangulation versus general assault in a clinical forensic medicine cohort: Characteristics of patient, perpetrator and presentation

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ABSTRACT (6)

Background: Interpersonal violence impacts communities, victims, perpetrators, families, and children. This audit of 315 cases of non-sexual assault compares characteristics of general assault to those of non-fatal strangulation (NFS).

Method: Clinical review of all cases referred to Clinical Forensics Australian Capital Territory (CFACT) by ACT Policing between 2018 and 2022, following allegations of non-sexual assault. Descriptions of the model of care, victim characteristics, alleged perpetrators, and presentations in NFS versus general assault, from forensic medical examination.

Results: Patients: Of 315 cases, 170 were victims of NFS, females (153/170, 90%), males 16/170 (9%), and one person with another preferred term. General assault cases comprised 145/315 (46%) presentations, 69/145 (47.6%) patients being female, 76/145 (52.4%) male. A majority of individuals who experienced NFS 113/170 (66%) presented within 12 h of the events, 41% of victims thought they might die during the NFS. *Perpetrators*: Most NFS perpetrators were male (161/170: 95%), NFS was mostly perpetrated by a partner 104/170 (62%), ex-partner 35/170 (21%), or family member 17/170 (10%). Repeated assaults by the same perpetrator was common 109/170 (64%). Children were present in 48/170 (28%) cases of NFS.

Discussion: NFS is gendered violence overwhelmingly affecting women, many experience NFS repeatedly. Later presentation may affect clinical signs, symptoms, and evidence collection. Forensic medicine management of NFS provides an opportunity to effect change, especially in those who thought they may die during the attack. Intervention to prevent trauma in children may be enabled by reporting their presence during an assault. Twenty-four-hour service provision enables both clinical and forensic assessment following NFS.

Conclusions: NFS is gendered, mostly affecting women, occurs in a family violence context, perpetrated by current and/or ex-partners, and often occurs with children present. Clinical forensic medicine doctors can provide care and support, provide referrals, and collect forensic medical evidence to support legal process.

1. Introduction (4)

Interpersonal violence has major impacts on the health of the Australian community[1] for victims, families, perpetrators,[2] and particularly children who witness violence.[3] Without active management, family violence usually recurs, with escalation in frequency and severity.[4] Agencies with designated responsibility to intervene in cases of interpersonal violence include health, police, support agencies, and legal bodies. In the spectrum of interpersonal violence, non-fatal strangulation (NFS) is a major risk factor for subsequent homicide.[5] Accordingly, many jurisdictions, including the Australian Capital Territory (ACT), recognise the seriousness of this crime and have specific legislation in place to address it.[6] As part of the intervention in the ACT, Clinical Forensic Medical Services (CFMS) doctors use a variety of clinical tools to assess individuals who present following NFS,[7] including documentation tools, forensic photography, and radiological imaging.

In this paper, we present an audit of 315 cases referred to Clinical Forensics ACT (CFACT) by ACT Policing, comparing the characteristics of general assault to those of NFS. Elements of the clinical presentation which need to be addressed by the model of care of service provision are

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explored.

2. Method (3)

Ethical approval

The data are reported under ethical approval ACT Reference 2023. LRE.00009. REGIS Reference 2022/ETH02749.

Characteristics which may allow individuals to be identified are not presented.

2.1. Model of care at Clinical Forensics ACT (CFACT)

CFACT provides forensic and medical assessment on a 24-h, 7-day-a-week basis to individuals who have been referred by ACT Policing following a report of non-sexual assault. Cases of assault are assessed by a Forensic Medical Officer (FMO) and vary in type, being either NFS or general assault. Forensic medical evidence collection occurs in a variety of settings, including hospitals and ACT Policing premises; however, therapeutic care is provided as a priority and in conjunction with the Emergency Department (ED) at Canberra Health Services.

The examining FMO completes a specific assault clinical protocol for all ACT Policing referrals, including medical and legal consent, history, examination, and forensic photography. The clinical protocol allows free text to record individuals' description of the alleged events in their own words. Specific NFS parameters are also included according to the legislation.[6] Following the completion of the clinical protocol and forensic photography, medicolegal reports and photobooks are produced.

2.2. Study population

The study population comprised all 315 patient presentations to CFACT in the study period (January 1, 2018 to December 31, 2022). This paper examines a case series of all non-sexual assault patients aged 14 and over who were clinically examined following referral by ACT Policing.

2.3. Statistical analysis

Data from the clinical protocol was codified into a password-protected MS Excel spreadsheet with a secured data entry interface. Those who presented following a report of NFS were compared with those not involving NFS. Statistical comparison used p-values generated by *t*-test for continuous variables, and Chi2 testing for binary/categorical variables. Analysis used STATA/BE 18.0 with determination of frequencies for categorical variables, measures of central tendency, and variability for one continuous variable (age). Missing values are attributed to non-response or "unsure" answers; upon analysis these missing values are completely random and randomly distributed. These tables were created with asdocx program, "asdocx: Create high-quality tables in MS Word from Stata output. Written by Shah, A. (2018)."

3. Results (1)

Of the study population, 170/315 cases (54%) involved NFS. Females comprised 153/170 (90%) of individuals reporting NFS, males 16/170 cases (9%), and 1/170 (0.6%) who provided another preferred term. General assaults, those not involving NFS, comprised 145/315 (46%), with females 69/145 (47.6%) and males 76/145 (52.4%) (Fig. 1).

Table 1 describes aspects of the CFACT model of care. Forensic photography was undertaken in 161/170 (95%) NFS cases and 131/145 (90%) of general assault cases. Reporting to the child protection authorities occurred for cases where children were present during the assault either by police or healthcare workers. Referral to ED for additional

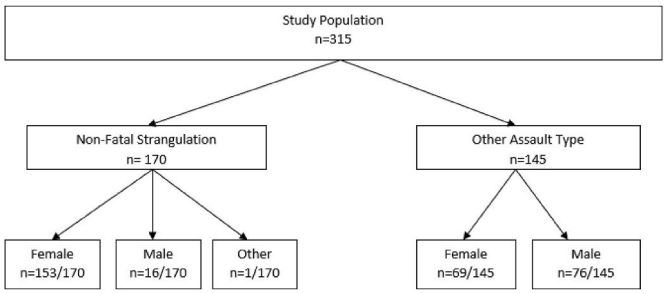

Fig. 1. Victim study population by presentation type and gender (non-sexual assault).

care occurred in 27/170 (16%) cases involving NFS. Unfortunately, the referral rate was not recorded for cases of general assault. Most patients, approximately 75% in both categories, had received other types of medical care prior to being assessed by CFACT.

Table 2 describes the characteristics of victims and their presentations. Individuals presenting following NFS were significantly more likely to be female (153/170, 90%) than those reporting general assault 69/145 (48%). Women subjected to NFS were typically of reproductive age.

Most individuals who experienced NFS presented within 12 h of the reported events (113/170, 66%); however, delayed reporting of greater than 12 h occurred in 57/170 (34%) of individuals.

Forty-one percent of individuals thought they might die during and/or after the NFS.

Those presenting after NFS tended to be younger than those who presented after general assault. Males who presented for NFS were slightly younger than females.

An analysis of the time between the reported incident to forensic medical care presentation and reporting of the incidence (Fig. 2) illustrates peaks at the 2-to-4-hour interval and at 1–2 days in patients who presented following the reported assault.

Table 3 describes the characteristics of perpetrators. The perpetrators of NFS were male in 161/170 (95%) of cases. It is not possible to compare the gender of the NFS perpetrators to the gender of the general assault perpetrators due to missing data in the latter group. The majority (109/170, 64%) who experienced NFS had experienced previous assault by the same perpetrator; this percentage may be higher but again is limited by missing data. Most NFS was perpetrated by a partner (104/170, 62%), ex-partner (35/170, 21%), or family member (17/170, 10%).

Table 4 shows that nearly all NFS is perpetrated by only one assailant (167/170, 98%). Children were present in 48/170 (28%)of NFS cases. Patients presented throughout the 24-h cycle and were more likely to present after hours (67%) than during business hours (33%).

4. Discussion (2)

4.1. Non-fatal strangulation is gendered violence

Individuals presenting following NFS are significantly more likely to be female than those reporting general assault, consistent with other studies showing that NFS is a form of gendered violence.[5] Most NFS is perpetrated by a person who is in or has had a relationship with the victim, demonstrating that NFS is a family violence crime.

4.2. Later presentation may affect the appearance of clinical signs and symptoms

With healing, signs and symptoms of NFS disappear over time. In our study population, 34% of individuals presented after 12 h, potentially decreasing the ability to collect forensic evidence that NFS had occurred.

Table 1
CFACT model of care.

Characteristic	Value	NFS (n = 170)	NFS %	General Assault (n = 145)	General Assault %	Total	Total %	p-value
Forensic Photographs	Yes	161	95%	131	90%	292	93%	0.14
	No	9	5%	14	10%	23	7%	
Child Protection Report	Yes	38	22%	8	6%	46	15%	0.000028
	No	129	76%	133	92%	262	83%	
	Missing	*3*	*2%*	*4*	*3%*	7	2%	
Medical Treatment already received	Yes	126	74%	109	75%	235	75%	0.50
	No	*40*	*24%*	*35*	*24%*	75	24%	
	Missing	*4*	*2%*	*1*	*1%*	5	2%	
Referred to ED	Yes	27	16%	*Not recorded*	*Not recorded*	27	9%	0.67
	No	142	84%	1		143	45%	
	Missing	*1*	*1%*	*144*	*99%*	145	46%	

Missing values not included in p-value.

Table 2
Characteristics of victims and their presentations.

Characteristic	Value	NFS (n = 170)	NFS %	General assault (n = 145)	General assault %	Total	p-value
Gender	Male	16	9%	76	52%	92	<0.00001
	Female	153	90%	69	48%	222	
	Other	1	1%	0	0%	1	
Alcohol	Yes	54	32%	42	61%	96	0.71
	No	103	61%	88	29%	191	
Time to Presentation	<12 Hours	113	66%	90	62%	203	0.26
	12-24 Hours	30	18%	21	14%	51	
	>24 Hours	27	16%	34	23%	61	
	*Mean Time^*	*14h*		*17h*		*15h*	
Thought might Die	Yes	70	41%	*missing*			<0.00001
	No	100	59%	*missing*			
Age Group	14–19	19	12%	21	15%	40	0.000102
	20–24	34	20%	22	15%	56	
	25–29	30	18%	11	8%	41	
	30–34	30	18%	20	14%	50	
	35–39	21	12%	12	8%	33	
	40–44	18	11%	16	11%	34	
	45–49	12	7%	9	6%	21	
	50–59	4	2%	16	11%	20	
	60–69	2	1%	8	6%	10	
	Over 70	0		10	7%	10	
Age (Years) (mean, SD)	All	31.17, 10.23		37.58, 17.50			
	Male	30.63, 11.65		39.69, 18.49			
	Female	31.27, 10.1		35.25,16.14			

Missing values not included in p-value ^ Removing outliers where time >20 days (480 h).

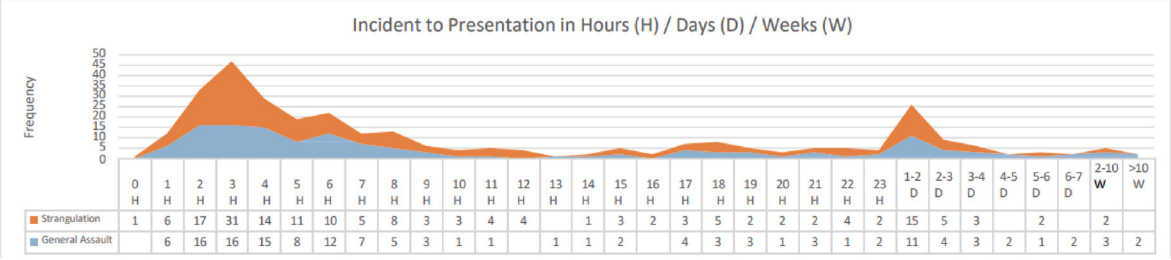

Fig. 2. Time of reported incident to presentation.

A further consequence of later reporting is that there is less evidence that can support a judicial process, or at the very least maintain the strangulation offence and remove the option of downgrade to common assault. The ability to offer a 24-h, 7-day service is key in the early medical intervention, identification, and documentation of injuries.

4.3. NFS is an opportunity to effect change for all affected individuals

Strack[8] describes many individuals subjected to NFS who thought they were going to die. In our study population, individuals were therefore asked what they thought was going to happen before and after the NFS, and 41% of individuals reported that they thought they were going to die. This open question may assist the examining clinician to determine patient expectations and motivations to effect change,

Table 3
Characteristics of perpetrators.

Characteristic	Value	NFS (n = 170)	NFS %	Generalassault (n = 145)	Generalassault %	Total	p-value
Gender	Male	161	95%	88	61%	249	0.00293
	Female	6	5%	11	8%	17	
	Multiple	0		3	2%	3	
	Missing	*3*	*2%*	*43*	*30%*	46	
Previous Assault by Same Perpetrator	Yes	109	64%	33	23%	142	<0.0001
	No	35	21%	67	46%	102	
	Missing	*26*	*15%*	*45*	*31%*	71	
Relationship to Victim	Acquaintance	10	6%	30	21%	40	<0.0001
	Ex-Partner	35	21%	10	7%	45	
	Family Member	17	10%	9	6%	26	
	Multiple	3	2%	21	14%	24	
	Partner	104	61%	32	22%	136	
	Stranger	1	1%	35	24%	36	
	Missing	*0*		*8*	*6%*	8	

Missing values not included in p-value.

Table 4
Characteristics of assaults.

Characteristic	Value	NFS (n = 170)	NFS %	General assault (n = 145)	General assault %	Total	Total %	p-value
No of Assailants	One	167	98%	116	80%	283	90%	<0.0001
	Multiple	3	2%	21	14%	24	8%	
	Missing	*0*		*8*	*6%*	8	*3%*	
Children Present	Yes	48	28%	15	10%	63	20%	<0.0001
	No	122	72%	130	90%	252	80%	
Time of Presentation	00:00–08:59	50	29%	38	26%	88	28%	0.20
	09:00–17:00	56	33%	62	43%	118	37%	
	17:01–23:59	64	38%	45	31%	109	35%	

Missing values not included in p-value.

enabling referral to appropriate services. Naturally asking about what the patient thought was going to happen to them must be asked sensitively in the forensic medical setting.

4.4. Many individuals who experience NFS experience NFS repeatedly

Repeated instances of NFS increase the likelihood of life-threatening and fatal NFS.[5] This study shows that many individuals who experience NFS (64%) have experienced assault by an intimate partner before the forensic medical presentation. Sensitively asking the patient if they have experienced NFS previously, offers further insight into the patient's motivations for presentation, and the opportunity to assist them explore the escalation of violence to which they are being subjected.

4.5. The presence of children during an assault may cause long term trauma without intervention

There is significant long-term trauma in children who witness intimate partner violence, including physical and emotional injury.[9] Children who witness intimate partner violence against a parent are more likely to experience intimate partner violence as adults.[10] Other outcomes for these children as they grow into adults include experiencing sexual violence,[11] psychiatric disorders,[12,13] and physical health issues.[14] Witnessing domestic violence in childhood may also lead to becoming a perpetrator of intimate partner violence.[15]

Children were present in 28% of the cases presenting to CFACT following NFS. The presence of children during NFS may prompt a victim to consider options that will protect children.

Stopping ongoing victimisation and perpetration of family violence is essential for a healthy community. The documented presence of children during family violence offers an opportunity for early intervention through a coordinated approach from police, health, and education authorities. Mandatory reporting is legislated and occurred in this study by either police or healthcare workers, with the hope that tailored services would be provided.

4.6. A 24-h service is needed in clinical forensic medicine

Patients were more likely to present to CFACT after hours, demonstrating that a 24-hr forensic service is needed. Further, since evidence collection is key to achieving legal outcomes, a 24-h service maximises the quality of evidence. Quality otherwise lessens with time as healing of injuries occurs. Finally, the ability to access multi-disciplinary intervention (police, health care, counselling, child protection and practical support) on a 24-h basis is critical to enabling choices for patients.

4.7. Strengths and limitations

This research has been facilitated by collaboration between CFACT staff and ACT Policing. The evidence collected by CFACT doctors can support prosecution through corroboration of events detailed by police. The model of care assists in the coordinated management of those affected by NFS, including victims, perpetrators, and children, with clinical protocols supporting the clinical and forensic assessment of patients following NFS.[7] In our study, clinical protocols enabled this research to be undertaken to provide a picture of NFS in the ACT.

Some data points were not recorded in the clinical records reviewed for this study. This was most commonly because victims had pressing clinical needs or were uncertain in their recollection of events and may have been impacted by the effect of trauma on memory.

5. Conclusions (5)

This study demonstrates that NFS is heavily gendered, occurs in the family violence context, is perpetrated by current and/or ex-partners, and often occurs with children present.

Clinical forensic medicine doctors play a critical role in NFS following referral from law enforcement agencies, offering clinical assessment, referral to support agencies, and early evidence collection. The results from this study support the need for clinical forensic medicine on a 24-h basis. The integration of police and health data within strict ethical parameters should continue to occur, to enable the provision of best practice underpinned by a robust evidence base.

6. Key points/summary box

1. Non-fatal strangulation (NFS) differs from general assault in its characteristics. NFS is gendered, overwhelmingly impacting women, and it occurs in a family violence setting. As such, it carries a grossly higher risk of subsequent homicide than general assault.
2. Children are present in just under a third of cases of NFS, offering an opportunity for intervention through child support systems.
3. NFS is largely perpetrated by men who have previously committed assaults on the same woman.

Declaration of conflict of interest

The authors have no competing interests which may have influenced the outcomes of this study. Its publication was funded by Family Safety, Community Services Directorate ACT Government, and an Australian Government Research Training Program Scholarship.

Confidentiality

Due to the sensitive nature of the patient presentations in this study, no raw data has been shared beyond authors. All data was de-identified prior to the analysis required for publication.

CRediT authorship contribution statement

Vanita Parekh: Conceptualization, Methodology, Formal analysis, Investigation, Resources, Data curation, Writing – original draft, Writing – review & editing, Visualization, Supervision, Funding acquisition. **Anna Brkic:** Conceptualization, Methodology, Software, Validation, Formal analysis, Investigation, Resources, Data curation, Writing – original draft, Writing – review & editing, Visualization, Supervision, Project administration, Funding acquisition. **Janine McMinn:** Conceptualization, Methodology, Software, Validation, Formal analysis, Investigation, Data curation, Writing – original draft, Writing – review & editing, Visualization, Supervision. **David Williams:** Conceptualization, Methodology, Formal analysis, Investigation, Resources, Data curation, Writing – original draft, Writing – review & editing, Visualization, Supervision, Funding acquisition. **Jane Van Diemen:** Conceptualization, Methodology, Data curation, Writing – original draft, Writing – review & editing, Visualization, Supervision.

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