



Research Paper

An analysis of non-fatal strangulation in adult males reporting rape or sexual assault between 2017 and 2024

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1. Introduction

Strangulation is the obstruction of blood vessels and/or airway by external pressure to the neck resulting in decreased oxygen supply to the brain. Non-fatal strangulation (NFS) is when the strangulation does not cause death. Fatal strangulation is where death ensues.¹ Four main methods of strangulation have been described²: (1) manual strangulation is application of pressure to the neck using the hands, (2) chokehold or head lock is the external pressure applied by an arm around the neck, (3) ligature is the use of an object such as a scarf or belt which is then tightened around the neck, and (4) hanging.

This paper presents an overview of data relating to male victims of non-fatal strangulation (NFS) during sexual violence who presented to a Sexual Assault Referral Centre (SARC) in Manchester, England over an eight-year period between 2017 and 2024. Given this context, the NFS referred to in this paper does not include hanging. This is an important contribution to current literature where research focusing on male victimisation of non-fatal strangulation is sparse,³ let alone male NFS victims presenting to SARCs. Academic understandings of sexual violence against male victims are, however, relatively further developed.

Across Western nations, men are suggested to make up 5–10 % of rape or sexual assault victim/survivors.⁴ In 2023, the Office for National Statistics (ONS) in England and Wales reported 1.2 % of men over 16 to have experienced sexual assault (attempted and completed) in the previous year.⁵ “Sexual assault” in this context has been used by the ONS to describe all types of sexual offences, including rape, assault by penetration, and unwanted sexual touching. Understanding the experiences of men, and how different behaviours are categorised is important particularly given the law around male rape has evolved. The first conviction for male-on-male rape in England and Wales was in 1995, a conviction that signified a shift in the relative importance the law placed

on recognising male victim/survivors.⁶ Even still, legislative changes do not necessarily signify cultural change. Rape myth acceptance can be an indicator of how society perceives sexual violence and victims more broadly. Hammond and colleagues⁷ reported that more than a third of participants in their sample agreed or strongly agreed with the statement “Men can defend themselves from sexual assaults”. How society perceives crimes of this nature can impact upon how victim/survivors respond to their own experience.

Men and women alike are considered to underreport sexual violence behaviours when they occur,⁴ however this underreporting is considered more pronounced for male victim/survivors.⁸ In the year ending March 2022, Office for National Statistics (ONS) data⁵ showed that of those who were subjected to sexual violence behaviours in the previous year, approximately 74 % were female and 26 % were male. Following this, data from 39 police forces showed the victim of the reported sexual offence to be female in 86 % of cases. This figure rose to 91 % when looking specifically at rape offences.⁵ What this could therefore be showing is that male victim/survivors are less likely to report. When male victim/survivors do disclose or report, their journey through support services may look different. Research published in 2005 reported that 27.6 % of male victim/survivors who attended a Sexual Assault Referral Centre (SARC) in the United Kingdom (UK) accessed specialist counselling following the assault, compared to 41.6 % of the SARC's female victim/survivor cohort.⁹ Internationally, male victim/survivors' engagement with sexual assault and rape specialist centres has also been discussed. In Canada, one study reported males to represent just under 4 % of the victims across 29 sexual assault centres in one province.¹⁰ The majority of men in their study were assaulted by a single male perpetrator with two victims reported having been strangled at the time of the assault. Similarly in the minority, male victims at a sexual assault centre in Denmark accounted for less than 2 % of all attendees

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over a 10-year period 2001–2010.¹¹ Again, echoing the Canadian findings, in all cases where the victim was male, the perpetrator was also male.

Strangulation is also a gendered crime. It is common for research to report the vast majority of victims of strangulation in any one sample to be female, and the vast majority of perpetrators to be male.^{12–14} In a review of 91 children (i.e. less than 18 years) non-fatally strangled during rape or sexual assault,¹⁵ 87/91 (96 %) were female and in all 91 cases, the alleged perpetrator was male. A study from southwest America showed that strangulation in domestic settings is reported to be significantly more common in heterosexual (different sex) couples compared with female-female or male-male homosexual couples.¹⁶

The current paper follows on from the 2021 paper “‘I thought he was going to kill me’: Analysis of 204 case files of adults reporting non-fatal strangulation as part of a sexual assault over a 3-year period”.¹⁴ In that paper, White and colleagues present an analysis of study participants who were individuals having undergone a forensic medical examination (FME) at the SARC after a report of rape or sexual assault. Of the total 2198 FME patients aged 18 years or over, between January 1, 2017 and December 31, 2019, 204 (9.3 %) also disclosed having been subjected to non-fatal strangulation during the rape or sexual assault. The proportion of experiences of NFS within the sexual violence rose to one in five when the alleged perpetrator was a current or former partner. The most common method of strangulation was the perpetrator using their hand or hands. Over a third of patients examined who said they had been strangled thought at the time of the assault they were going to die, and just under half (48 %) had at least one external objective injury to the neck or above attributable to the NFS. Loss of consciousness was reported by 15.7 % (n = 32) of the NFS patients, 8.8 % (n = 18) were incontinent of urine and 2 % (n = 4) incontinent of faeces as a result of the NFS. Whilst not exclusively a study on female victims/survivors of rape or sexual assault and strangulation, the vast majority (96.6 %) of study participants were female, and in almost all cases (98 %), the alleged perpetrator was male.

Whilst also focused on female victims/survivors, Zilkens¹⁷ study provides a helpful insight into typical presentations of sexual violence combined with non-fatal strangulation. Over a six-year period, 7.4 % (79 out of 1064) of their sample of females, aged 13 years and older, attending for a FME at the Western Australia SARC, disclosed NFS was a feature of the sexual violence they had been subjected to. This was more prevalent in assaults by intimate partners (in 22.5 % of cases) compared with other perpetrator relationships (in 6 % of cases), representing odds of NFS being present in intimate relationships at 8.4 times higher. The most common victim demographics reported across the full NFS sample (n = 79) were women aged 30–39 years in an intimate relationship with the alleged perpetrator. Just under half (49.4 %) of those strangled had no visible signs of injury.

Combined, Zilkens et al.'s and White et al.'s papers demonstrate an increased presence of NFS in cases of rape or sexual assault where the sexual violence perpetrator is or has been in an intimate relationship with the victim/survivor. Moreover, perceptions of victims of strangulation always having visible, physical injury following an assault should be challenged, with repeated data showing this not to be the case in around half of all instances.

With the gendered nature of the act of strangulation, recognised within¹³ and outside of¹¹ the context of sexual violence, it is important to consider how men are affected. The present study therefore helpfully spotlights men as victim/survivors of both sexual violence and strangulation and compares the way in which their experiences may differ to both 1) men who have been subjected to sexual violence but not NFS, and 2) women who have been subjected to both sexual violence and NFS. These comparisons are presented below.

2. Methods

2.1. Population and data collection

Saint Mary's Centre is a Sexual Assault Referral Centre (SARC) in Manchester, UK. Covering Greater Manchester and Cheshire, a population of approximately 3.5 million people, Saint Mary's offers a range of services for those reporting rape or sexual assault, including where appropriate, a forensic medical examination by a Forensic Physician, in accordance with the forensic and medical needs of the patient. Terminology when discussing sexual violence is important. For the purposes of this paper, the people attending Saint Mary's SARC for a forensic medical examination will be referred to as patients (rather than service users, clients, complainants, or victims) and those reported as having undertaken the strangulation, alleged perpetrators.

During the FME, the Forensic Physicians utilize an adult forensic medical examination proforma as an aide memoire, as well as completing body diagrams and photo documentation, as necessary. Additionally, in 2016 a non-fatal strangulation (NFS) proforma had been developed and introduced by Saint Mary's SARC (and with kind permission from Saint Mary's, since adapted by the Institute for Addressing Strangulation¹⁸). The Forensic Physicians use this NFS proforma in addition to the standard documentation in the cases where non-fatal strangulation is reported.

Likelihood of having a learning disability is assessed at the start of the FME using a Learning Disability Screening Questionnaire (LDSQ) developed by McKenzie and Paxton for a valid, relatively quick method of screening if an individual is likely to have a learning disability.¹⁹ This is standard practice for all FMEs undertaken at Saint Mary's SARC. A cut off score of 43 and below, as recommended by the LDSQ authors, was used to determine if a patient was likely to have a learning disability.

We extracted data from the general forensic medical examination proforma for all adult (aged ≥18 years) male patients (either born male or identified as being male, although noting that the recording of trans status was only introduced at Saint Mary's SARC in July 2018) between Jan 1, 2017 and Dec 31, 2024, noting those who did and did not report NFS.

For the male patients who reported NFS, author CW reviewed the contemporaneous medical notes and retrospectively extracted the additional NFS specific data using the same template spreadsheet previously used to report on male and female NFS cases over 2017–2014.¹⁴ We have used the female NFS cases over this time period as a comparator group to the male NFS cases between 2017 and 24. While there is the limitation of the female NFS comparison group having a shorter data collection window (2017–2019) than the male NFS group (2017–2024), this nonetheless serves as a useful comparative for the male NFS cases. Note, female NFS cases compose a much larger sample and retrospectively reviewing female NFS notes between 2019 and 24 was not viable for this study.

For all NFS cases, the proforma includes information on the strangulation method, actions and thoughts of the patient during the NFS, symptoms at the time of the assault or subsequently, and also information on injuries sustained (as observed during the FME). Symptoms at the time of the NFS included the following: flashing lights, tunnel vision, vision spots, blurred vision, loss of vision, seeing stars, hearing issues (roaring, buzzing, loss of hearing), dizziness, difficulty breathing, difficulty speaking, pain, loss of consciousness, incontinence of urine/bowels and loss of strength. Symptoms since the NFS included: neck pain, neck swelling, neck injuries, coughing, dysphagia, odynophagia, dysphonia, dyspnoea, vomiting, headache and memory disturbance. All symptoms were self-reported. Data on injuries sustained to head and neck were extracted from the FME notes.

For the purposes of this study, we distinguish between objective injuries (abrasions, bruises, including petechial haemorrhages or lacerations) and subjective injuries (swelling, tenderness, erythema) to account for the potential of inter-observer variation of the more

subjective measures, for example, colour perception.

The Health Research Authority have advised that this project is exempt from ethical approval requirements and is service evaluation, since non-generalisable data collected as part of routine care is reviewed retrospectively.

2.2. Statistical analysis

Demographic and baseline characteristics data for all male cases between 2017 and 24 were summarised using mean/median for continuous variables and using frequency of occurrence for categorical variables. Comparisons between those reporting NFS and those not reporting NFS were made using t-tests, Fisher's Exact test, or Pearson Chi-squared test as appropriate.

Within the male NFS cases, we summarised qualitative data surrounding the context of the NFS event, such as the location of the alleged assault, the method of strangulation and the perceived duration of the strangulation event, and data surrounding the presence of different symptoms both during and after the NFS event. We also summarised the prevalence of different injuries, both overall and in subgroups of cases that reported active vs. passive actions during the assault, those that lost consciousness (LOC) during the NFS event, patient ethnicity and duration between the NFS event and the FME. To serve as a comparison, we present the same data for female NFS cases across 2017–19 ($N = 197$). These female data were previously analysed in the White et al. (14) paper ($N = 203$) but the purposes of this comparison, the male cases have been removed from the 2021 dataset and will be analysed separately here.

Given the small number of male NFS cases, interpretation of p-values should be made with caution to avoid misinterpretation.

All quantitative analyses were undertaken using R version 4.3.1 with the packages 'tidyverse' and 'gtsummary'.

3. Results

During the 8-year study period, there were 381 adult male FME cases, of which 20 (5.25 %) reported NFS; Fig. 1 shows the year-on-year change in the proportion of male cases attending SARC who reported NFS (ranging from 0 % in 2021 to 9.1 % in 2024). Table 1 shows a summary of these cases, stratified by those who did and did not report NFS. Overall, the median age of male patients over the study period was 28 years, with no evidence of this being different across those who did and did not report NFS. There was a higher number of men identifying as gay in the NFS group (72 %) compared with the non-NFS group (36 %), while there was a higher number of men identifying as heterosexual in the non-NFS group (52 %) compared with the NFS group (17 %), although overall numbers in the NFS group are small, so such numerical differences require caution in interpretation. It was noted that there was one transman in the NFS group (1/20) and 19 transmen in the 361 men not reporting NFS. There may be some false negatives in the latter group as the recording of trans status was only introduced at Saint Mary's SARC in July 2018.

3.1. Context of the alleged NFS

3.1.1. Alleged perpetrators

In addition to the 20 adult male NFS cases over 2017–24, we had data on 197 adult female NFS cases over 2017–19 from our prior publication.¹⁴ A summary of the context of the alleged NFS across these cases, in terms of alleged perpetrator and patient demographics and

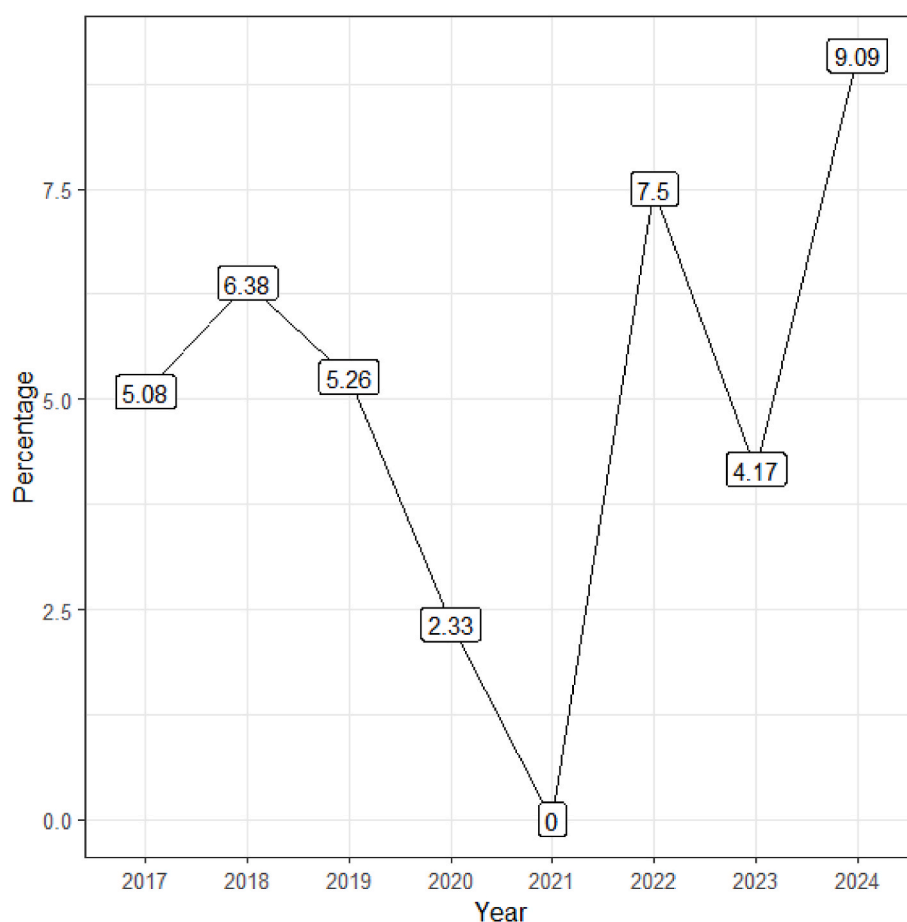


Fig. 1. Proportion of male NFS and male non-NFS cases per year.

Table 1

Baseline summary of the adult male patients, undergoing a FME, in the 8 years 2017–24, stratified by those who did and did not report NFS.

Variable	N	Overall, N = 381 ^a	Non-fatal Strangulation		p-value ^b
			No, N = 361 ^a	Yes, N = 20 ^a	
Referrer	376				0.6
Police		306 (81 %)	291 (82 %)	15 (75 %)	
Self (Missing)		70 (19 %)	65 (18 %)	5 (25 %)	
Age	380	28 (18, 90) [22, 34]	28 (18, 90) [22, 34]	30 (18, 61) [24, 39]	0.2
(Missing)		1	1	0	
Sexual Orientation	277				0.005
Bisexual		28 (10 %)	27 (10 %)	1 (5.6 %)	
Gay		106 (38 %)	93 (36 %)	13 (72 %)	
Heterosexual		138 (50 %)	135 (52 %)	3 (17 %)	
Other (Missing)		5 (1.8 %)	4 (1.5 %)	1 (5.6 %)	
Ethnicity	376	104	102	2	0.3
Asian		17 (4.5 %)	16 (4.5 %)	1 (5.0 %)	
Black		21 (5.6 %)	18 (5.1 %)	3 (15 %)	
White		325 (86 %)	309 (87 %)	16 (80 %)	
Mixed		9 (2.4 %)	9 (2.5 %)	0 (0 %)	
Other (Missing)		4 (1.1 %)	4 (1.1 %)	0 (0 %)	
Employment Status	345	5	5	0	>0.9
Disabled/Sick		35 (10 %)	33 (10 %)	2 (11 %)	
F/T Employed		126 (37 %)	118 (36 %)	8 (44 %)	
Unemployed		125 (36 %)	119 (36 %)	6 (33 %)	
P/T Employed		17 (4.9 %)	16 (4.9 %)	1 (5.6 %)	
Student		35 (10 %)	34 (10 %)	1 (5.6 %)	
Retired		5 (1.4 %)	5 (1.5 %)	0 (0 %)	
Other (Missing)		2 (0.6 %)	2 (0.6 %)	0 (0 %)	
Physical Disability	256	36	34	2	0.3
No		215 (84 %)	197 (83 %)	18 (95 %)	
Yes (Missing)		41 (16 %)	40 (17 %)	1 (5.3 %)	
Learning Difficulty	267	125	124	1	0.3
No		209 (78 %)	191 (77 %)	18 (90 %)	
Yes (Missing)		58 (22 %)	56 (23 %)	2 (10 %)	
LDSQ	356	114	114	0	0.15
(Missing)		100 (0, 100) [86, 100]	100 (0, 100) [86, 100]	100 (14, 100) [100, 100]	
Mental Health Issues	303	25	24	1	>0.9
Yes		209 (69 %)	196 (69 %)	13 (68 %)	
No (Missing)		94 (31 %)	88 (31 %)	6 (32 %)	
Number of Alleged Perpetrators	323	78	77	1	0.7
Multiple		40 (12 %)	37 (12 %)	3 (16 %)	
Single		283 (88 %)	267 (88 %)	16 (84 %)	
(Missing)		58	57	1	

^a n (%); Median (Range) [Interquartile Range].

^b Fisher's exact test; Wilcoxon rank sum test; Pearson's Chi-squared test.

nature of the alleged strangulation is given in Table 2. We found a statistically significant difference in the distribution of relationship between patient and alleged perpetrator across female and male NFS cases ($p = 0.001$). Specifically, the alleged perpetrator was a partner/ex-partner in 44 % of female NFS cases, compared to only 10 % in the male NFS cases. The alleged perpetrator was most commonly a stranger (35 %) or friend (20 %) in male NFS cases. A summary of the relationship between patient and alleged perpetrator across those who reported loss of consciousness is given in Table 3.

Across all 20 male NFS cases, the alleged perpetrator was also male (Table 2). The strangulation method across the male NFS cases was most commonly manual (either one or two handed), and in 14/20 male NFS cases, the patient reported the duration to be less than 20 s. There was no evidence of a statistical difference in the time between the NFS event and attending the FME between female and male NFS cases ($p = 0.3$).

3.1.2. Response of the patient during NFS

The actions of the patient during NFS, where provided, were classified as either active or passive. This was based on information from the proforma which gathered the patient's self-reports on whether or not they physically resisted the NFS. Fig. 2 shows the percentage of female and male NFS cases where the patient described their actions during the NFS as passive or active. The percentage of males who were active during the NFS was 45 % (9/20) whilst that of females was 38 % (75/197, $p = 0.715$). The percentage of males who reported being passive was 5 % (1/20) whilst that for females was 26 % (51/197, $p = 0.07$).

As part of the FME, patients were asked what their thoughts were during the NFS event. We categorised the sentiment of these statements. In 71/197 female NFS cases (36 %), the patient reported thinking they were going to die. A numerically similar percentage of male NFS cases reported similar thoughts (8/20, 40 %). Similarly, 14/197 female NFS cases (7.1 %) and 2/20 male NFS cases (10 %) reported being afraid/in-fear during the NFS event.

Below are some representative statements from the men regarding their thoughts during the strangulation:

"... saw death"

"He was after killing me"

"I was really surprised. I was frozen"

"How to get out of this situation, when will it end?"

3.1.3. NFS patients symptoms and injuries

Fig. 3 shows the number of symptoms reported by the male NFS patients at the time of the NFS event (left panel) and after the NFS event (right panel). Pain, difficulty breathing, dizziness and difficulty speaking were the most commonly reported symptoms at the time of the NFS event, whilst neck pain, neck injuries and dysphonia were most commonly reported symptom occurring between the NFS event and FME.

Only 2/20 (10 %) gave a history of loss of consciousness, compared to 31/197 (15.7 %) of the female NFS cases.

Of the 20 male NFS patients, 12 (60 %) had at least one objective injury to their neck or above noted during the FME (compared to 51 % of female NFS cases, Table 4).

Table 5 shows the number of injuries for male NFS cases, stratified by symptoms during and after the NFS event. Here, we found that of the 18 male NFS cases who reported a symptom during the NFS event, 10 (56 %) had at least one objective injury noted during the FME. Similarly, of the 19 male NFS cases who reported having a symptom after the NFS event, 11 (58 %) had at least one objective injury noted during the FME.

Out of the 9 male NFS cases where we could categorise their actions as being active during the NFS (Fig. 2), 4 had at least one objective injury noted at the time of FME. For the 1 male NFS case where actions were classified as passive, this individual also had at least one objective injury

Table 2

Summary of the context of the NFS for male and female patients. Male patients cover the period 2017–24, while females cover 2017–19.

			Patient Gender		
Variable	N	Overall, N = 217 ^a	Female, N = 197 ^a	Male, N = 20 ^a	p- value ^b
Relationship between patient and alleged perpetrator	216				0.001
Partner/ex-partner		88 (41 %)	86 (44 %)	2 (10 %)	
Friend		14 (6.5 %)	10 (5.1 %)	4 (20 %)	
Acquaintance <24hrs		25 (12 %)	22 (11 %)	3 (15 %)	
Acquaintance >24hrs		43 (20 %)	41 (21 %)	2 (10 %)	
Other		5 (2.3 %)	3 (1.5 %)	2 (10 %)	
Stranger		34 (16 %)	27 (14 %)	7 (35 %)	
Client (sex worker)		4 (1.9 %)	4 (2.0 %)	0 (0 %)	
Family: Second degree		2 (0.9 %)	2 (1.0 %)	0 (0 %)	
Family friend		1 (0.5 %)	1 (0.5 %)	0 (0 %)	
Family: non-biological		0 (0 %)	0 (0 %)	0 (0 %)	
(Missing)		1	1	0	
Alleged Perpetrator Gender	216				>0.9
Female		3 (1.4 %)	3 (1.5 %)	0 (0 %)	
Male		213 (99 %)	193 (98 %)	20 (100 %)	
(Missing)		1	1	0	
Patient Age	217	26 (21, 32)	25 (21, 32)	30 (24, 39)	0.064
Patient Ethnicity	214				0.2
White		187 (87 %)	171 (88 %)	16 (80 %)	
Black		11 (5.1 %)	8 (4.1 %)	3 (15 %)	
Asian		4 (1.9 %)	3 (1.5 %)	1 (5.0 %)	
Other		8 (3.7 %)	8 (4.1 %)	0 (0 %)	
Mixed		4 (1.9 %)	4 (2.1 %)	0 (0 %)	
(Missing)		3	3	0	
Assault Type	203				0.039
Penetrative		188 (93 %)	173 (94 %)	15 (79 %)	
Non-Penetrative		15 (7.4 %)	11 (6.0 %)	4 (21 %)	
(Missing)		14	13	1	
Assault location	217				0.093
Alleged perpetrator home		64 (29 %)	56 (28 %)	8 (40 %)	
Patient's home		72 (33 %)	68 (35 %)	4 (20 %)	
Shared home		22 (10 %)	22 (11 %)	0 (0 %)	
3rd party's home		15 (6.9 %)	14 (7.1 %)	1 (5.0 %)	
Hotel room		12 (5.5 %)	10 (5.1 %)	2 (10 %)	
Other		5 (2.3 %)	3 (1.5 %)	2 (10 %)	
Outdoors		21 (9.7 %)	18 (9.1 %)	3 (15 %)	
In vehicle		6 (2.8 %)	6 (3.0 %)	0 (0 %)	
Strangulation method	206				0.3
Ligature/Other object against throat		8 (3.9 %)	6 (3.2 %)	2 (11 %)	
Manual one hand		108 (52 %)	100 (53 %)	8 (42 %)	
Manual two hands		55 (27 %)	49 (26 %)	6 (32 %)	
Manual-unclear		10 (4.9 %)	10 (5.3 %)	0 (0 %)	
Headlock		13 (6.3 %)	12 (6.4 %)	1 (5.3 %)	

Table 2 (continued)

Variable	N	Overall, N = 217 ^a	Patient Gender		p-value ^b
			Female, N = 197 ^a	Male, N = 20 ^a	
Multiple Methods		12 (5.8 %)	10 (5.3 %)	2 (11 %)	
(Missing)		11	10	1	
Strangulation Duration	111				0.5
<10 s		50 (45 %)	48 (47 %)	2 (25 %)	
10–19 s		10 (9.0 %)	8 (7.8 %)	2 (25 %)	
20–29 s		3 (2.7 %)	3 (2.9 %)	0 (0 %)	
30–39 s		4 (3.6 %)	4 (3.9 %)	0 (0 %)	
40–49 s		1 (0.9 %)	1 (1.0 %)	0 (0 %)	
50–59 s		2 (1.8 %)	2 (1.9 %)	0 (0 %)	
>1 min		41 (37 %)	37 (36 %)	4 (50 %)	
(Missing)		106	94	12	
Time since strangulation	212				0.3
<1 day		96 (45 %)	88 (46 %)	8 (40 %)	
1–2 days		52 (25 %)	48 (25 %)	4 (20 %)	
2–3 days		27 (13 %)	21 (11 %)	6 (30 %)	
3–5 days		21 (9.9 %)	19 (9.9 %)	2 (10 %)	
5–7 days		8 (3.8 %)	8 (4.2 %)	0 (0 %)	
>7 days		8 (3.8 %)	8 (4.2 %)	0 (0 %)	
(Missing)		5	5	0	
Episodes of strangulation	183				0.2
One		117 (64 %)	105 (63 %)	12 (80 %)	
Multiple		66 (36 %)	63 (38 %)	3 (20 %)	
(Missing)		34	29	5	
Suspect previously strangled complainant	205	57 (28 %)	55 (30 %)	2 (11 %)	0.078
(Missing)		12	11	1	

^a n (%); Median (IQR).

^b Fisher's exact test; Wilcoxon rank sum test; Pearson's Chi-squared test.

noted.

A summary of the objective injury types across both male and female NFS patients is presented in [Table 6](#).

4. Discussion

This paper adds to the growing literature around NFS with a focus on men reporting NFS in the context of rape or sexual assault. It considers how their experience may differ to that of women reporting NFS in the context of rape or sexual assault or to men reporting rape or sexual assault but not NFS.

Our findings show that the overall rate of adult male NFS during the 8-year study period was 5.25 %. There was a decrease in prevalence during 2020 & 2021 (Covid pandemic years) with the final year, 2024, having the highest prevalence at 9.1 %. The numbers are small (n = 20), compared to 197 female cases between 2017 and 2019,¹⁴ so care is required when interpreting the results. The apparent trend in increased NFS rates in the context of sexual violence is in line with that seen with child cases¹⁵ and women.

In 2022 there was a change in legislation for England and Wales, making NFS a stand-alone offence.²⁰ Since then, it has been noted that there is an increase in police reported NFS.²¹ It is difficult to know if this is a true increase in prevalence or a result of increased awareness and reporting methods, or both. Research suggests that at a population level, pornography use is associated with sexual behaviours, including the use

Table 3
Summary of the male and female adult patients who reported NFS and loss of consciousness. Males cover the period 2017–24, while females cover 2017–19.

Characteristic	Adult Male NFS Cases			Adult Female NFS Cases		
	Overall, N = 20 ¹	No/Not Recorded, N = 18 ^a	Yes, N = 2 ^a	Overall, N = 197 ^a	No/Not Recorded, N = 166 ¹	Yes, N = 31 ^a
Age (years)	30 (24, 39)	29 (23, 38)	47 (39, 54)	25 (21, 32)	25 (21, 32)	29 (24, 34)
Ethnicity						
White	16 (80 %)	15 (83 %)	1 (50 %)	171 (88 %)	144 (88 %)	27 (90 %)
Black	3 (15 %)	3 (17 %)	0 (0 %)	8 (4.1 %)	6 (3.7 %)	2 (6.7 %)
Asian	1 (5.0 %)	0 (0 %)	1 (50 %)	3 (1.5 %)	3 (1.8 %)	0 (0 %)
Other	0 (0 %)	0 (0 %)	0 (0 %)	8 (4.1 %)	7 (4.3 %)	1 (3.3 %)
Mixed	0 (0 %)	0 (0 %)	0 (0 %)	4 (2.1 %)	4 (2.4 %)	0 (0 %)
Unknown				3	2	1
Relationship between service user and perpetrator						
Partner/ex-partner	2 (10 %)	2 (11 %)	0 (0 %)	86 (44 %)	70 (42 %)	16 (52 %)
Friend	4 (20 %)	4 (22 %)	0 (0 %)	10 (5.1 %)	10 (6.1 %)	0 (0 %)
Acquaintance <24hrs	3 (15 %)	2 (11 %)	1 (50 %)	22 (11 %)	20 (12 %)	2 (6.5 %)
Acquaintance >24hrs	2 (10 %)	2 (11 %)	0 (0 %)	41 (21 %)	38 (23 %)	3 (9.7 %)
Other	2 (10 %)	2 (11 %)	0 (0 %)	3 (1.5 %)	1 (0.6 %)	2 (6.5 %)
Stranger	7 (35 %)	6 (33 %)	1 (50 %)	27 (14 %)	19 (12 %)	8 (26 %)
Client (sex worker)	0 (0 %)	0 (0 %)	0 (0 %)	4 (2.0 %)	4 (2.4 %)	0 (0 %)
Family: Second degree	0 (0 %)	0 (0 %)	0 (0 %)	2 (1.0 %)	2 (1.2 %)	0 (0 %)
Family friend	0 (0 %)	0 (0 %)	0 (0 %)	1 (0.5 %)	1 (0.6 %)	0 (0 %)
Family: non-biological	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)
Unknown				1	1	0

^a Median (Interquartile range); n (%).

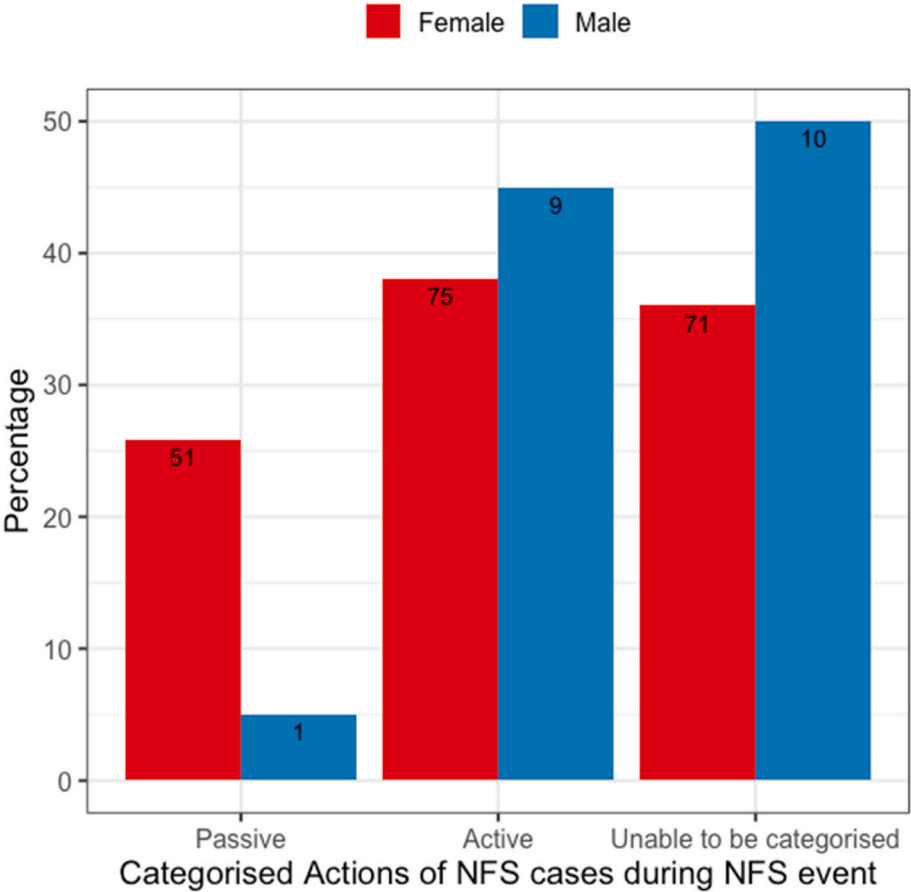


Fig. 2. Categorized actions of the male and female NFS patients during the NFS event, as reported at time of FME.

of strangulation or “choking”,²² which may also have an impact on increasing numbers. Whilst there is currently no clear evidential link between behaviours used during sex and behaviours used during sexual violence or abuse, this is something that could be considered and warrants further exploration.

4.1. Patient characteristics

When comparing the men who gave a history of having been strangled during the rape or sexual assault against the men who did not, there were few statistically significant differences. The two groups were broadly similar in terms of age, referral source, ethnicity, employment

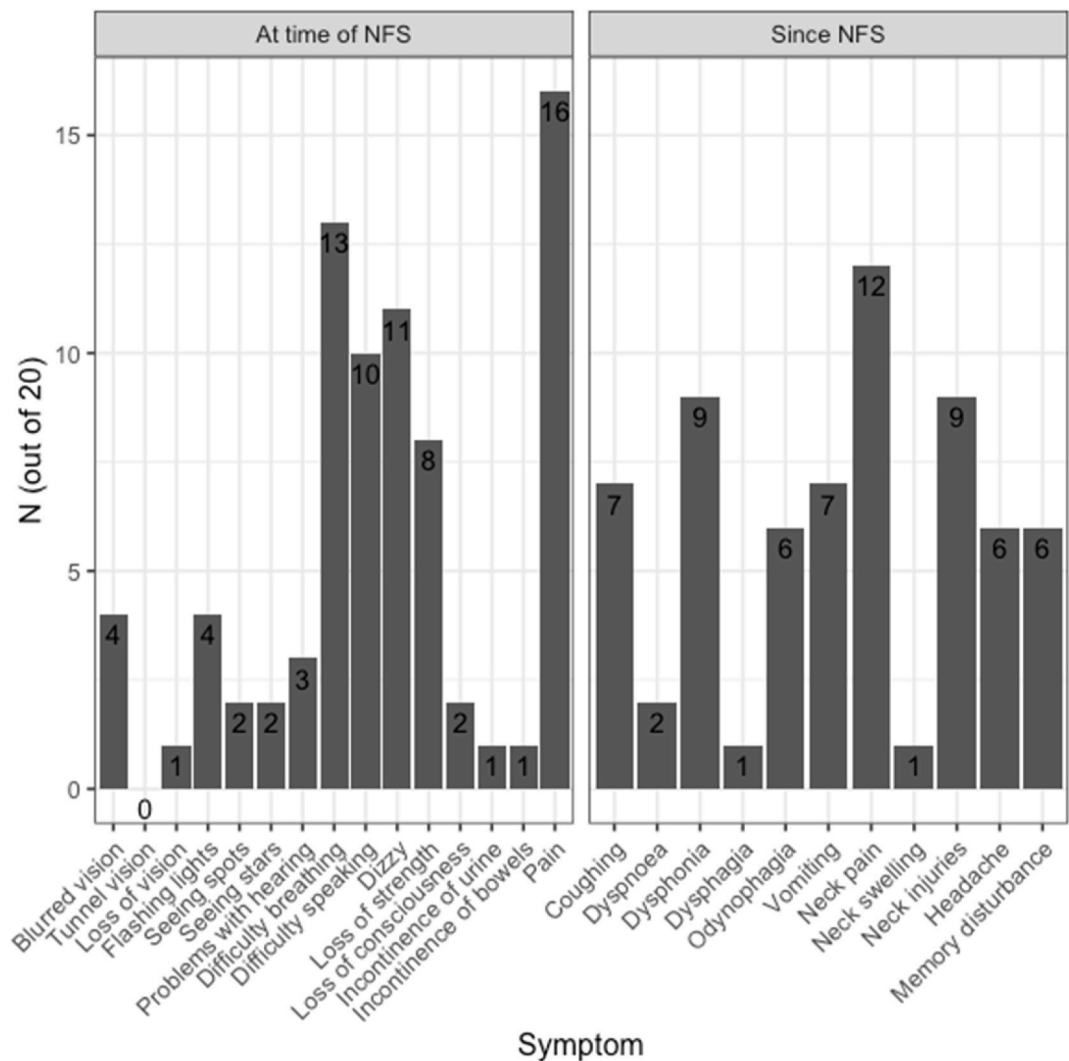


Fig. 3. Self-reported symptoms at time of NFS (left) and after the NFS event (right) of the male NFS cases.

status and physical or learning disabilities or mental health issues. In both groups, the prevalence of such issues such as learning disability and mental health issues were high indicating a general vulnerability to rape or sexual assault.^{23–25} Transgender rates appeared to be similar for the male NFS and non NFS cases (5 % v 5.3 %).

The main difference between the groups was seen when considering sexual orientation, with the men who had been strangled more likely to identify as gay (72 % v 36 %) and less likely to be heterosexual (17 % v 52 %).

It is not clear why this should be, given that all the cases were within the context of sexual violence. Some research notes that non-heterosexual people are more likely to report involvement in BDSM (bondage, discipline, domination, submission, sadism and masochism) and kink²⁶ and gay men were more likely to report having been choked during consensual sexual activity than heterosexual men.²⁷

4.2. Alleged perpetrator characteristics

The results reaffirmed the growing evidence that strangulation is a sex based crime. All twenty of the men in the NFS group reported that their perpetrator was male. This is in keeping with previous research. In Saint Mary’s paper reviewing 91 children giving a history of NFS during rape or sexual assault, all the alleged perpetrators were male.¹⁵ Out of 204 adult NFS cases, 200 identified the alleged perpetrator as male, 3 as female and one was unsure.¹⁴

This sex-based nature, in terms of biological sex of the person doing the strangling and the person being strangled, is in step with strangulation during consensual sexual activity.²⁸

4.3. Relationship between patient and alleged perpetrator

A significant difference between men and women reporting NFS was the nature of the relationship between the patient and alleged perpetrator. For the women, 44 % were strangled by a partner/ex-partner, whilst this was only 10 % of the male NFS cases who were more likely to be assaulted by a stranger or a friend. The location of assault reflects this, with men less likely to be assaulted in their home (own or shared) than women (20 % v 46 %). This has implications in terms of safety concerns, with the men seemingly at less ongoing risk from the alleged perpetrator.

4.4. Assault characteristics

There was no significant difference found between men and women reporting NFS in terms of the method of strangulation, where manual strangulation was most commonly used (84.3 % in the women, 74 % in the men).

Women were more likely than the men to report that the alleged perpetrator had strangled them on a previous occasion in addition to the reported incident (30 % v 11 %), possibly a reflection of the increased

Table 4

Summary of the objective injuries across male and female patients who reported NFS. Male patients cover the period 2017–24, while females cover 2017–19. Objective injuries for this analysis were any bruise, including petechial haemorrhage, abrasion or laceration to the neck, face, scalp, mouth, ear or eye, noted during the FME and attributed to the NFS.

Injury Site	Objective Injury	
	Female, N = 197 ¹	Male, N = 20 ¹
Neck Injury		
No/Not Recorded	113 (57 %)	10 (50 %)
Yes	84 (43 %)	10 (50 %)
Face Injury		
No/Not Recorded	148 (75 %)	16 (80 %)
Yes	49 (25 %)	4 (20 %)
Scalp Injury		
No/Not Recorded	181 (92 %)	19 (95 %)
Yes	16 (8.1 %)	1 (5.0 %)
Mouth Injury		
No/Not Recorded	173 (88 %)	18 (90 %)
Yes	24 (12 %)	2 (10 %)
Ear Injury		
No/Not Recorded	189 (96 %)	19 (95 %)
Yes	8 (4.1 %)	1 (5.0 %)
Eye Injury		
No/Not Recorded	191 (97 %)	20 (100 %)
Yes	6 (3.0 %)	0 (0 %)
Injury (overall)		
No/Not Recorded	97 (49 %)	8 (40 %)
Yes	100 (51 %)	12 (60 %)

likelihood that the alleged perpetrator was a partner or ex-partner. This may mean that the women are at increased risk of adverse medical consequences due to the repeated nature of the NFS, although it is not known what the severity of any individual episode of NFS is. A 2025 study of strangulation cases dealt with in New York emergency departments, found that although male patients accounted for only 5.2 % of strangulation domestic violence cases, the clinicians referred 24.8 % of the male victims for CT evaluation to rule out vascular injury, whilst they only referred 5.5 % of the female strangulation victims, with the authors concluding that there is a “suggestion of disparity among sexes in diagnosis”.²⁹

4.5. Symptoms and injuries

The male NFS cases were more likely than the female NFS cases to have an objective injury to neck or above attributable to the NFS (60 % v 51 %), with the neck being the most frequent site. 90 % of the male NFS cases and 82 % of the female NFS cases had their FME within 72 h of the alleged NFS. Again, a key message is that not all NFS patients will have a visible external injury.

Clinicians seeking to identify blunt cerebro-vascular injury (BCVI), that is injuries to the extracranial carotid and vertebral arteries that occur in the absence of penetrating trauma, sometimes use screening tools, such as the 2012 expanded Denver screening criteria.³⁰ Studies looking at strangulation and BCVI detected by CT angiogram show that there are no clinical features that reliably exclude BCVI. A recent study, reviewing 34 strangulation victims, found CT positive findings in 14.7 %³¹ with the authors concluding that, in light of the reported incidence of stroke in blunt carotid injury (20–30 %) when left untreated, all patients with a history of strangulation should undergo a CT angiogram as there were no clinical features that reliably exclude BCVI.

4.6. Reaction to the strangulation

Asked what they had been thinking during the NFS, a similar proportion of men and women expressed that they had thought they were about to die (40 % v 36 %).

A review of the literature looking at neuropsychological outcomes of

Table 5

Summary of the objective injuries for male cases who reported NFS, stratified by symptoms during and after the NFS event. Objective injuries for this analysis were any bruise, including petechial haemorrhage, abrasion or laceration to the neck, face, scalp, mouth, ear or eye, noted during the FME.

Characteristic	All NFS Cases	Any symptoms during the NFS event		Any symptoms after the NFS event	
	N = 20 ^a	No/Not Recorded, N = 2 ^a	Yes, N = 18 ^a	No/Not Recorded, N = 1 ^a	Yes, N = 19 ^a
Neck Injury					
No/Not Recorded	10 (50 %)	0 (0 %)	10 (56 %)	0 (0 %)	10 (53 %)
Yes	10 (50 %)	2 (100 %)	8 (44 %)	1 (100 %)	9 (47 %)
Face Injury					
No/Not Recorded	16 (80 %)	2 (100 %)	14 (78 %)	1 (100 %)	15 (79 %)
Yes	4 (20 %)	0 (0 %)	4 (22 %)	0 (0 %)	4 (21 %)
Scalp Injury					
No/Not Recorded	19 (95 %)	2 (100 %)	17 (94 %)	1 (100 %)	18 (95 %)
Yes	1 (5.0 %)	0 (0 %)	1 (5.6 %)	0 (0 %)	1 (5.3 %)
Mouth Injury					
No/Not Recorded	18 (90 %)	2 (100 %)	16 (89 %)	1 (100 %)	17 (89 %)
Yes	2 (10 %)	0 (0 %)	2 (11 %)	0 (0 %)	2 (11 %)
Ear Injury					
No/Not Recorded	19 (95 %)	2 (100 %)	17 (94 %)	1 (100 %)	18 (95 %)
Yes	1 (5.0 %)	0 (0 %)	1 (5.6 %)	0 (0 %)	1 (5.3 %)
Eye Injury					
No/Not Recorded	20 (100 %)	2 (100 %)	18 (100 %)	1 (100 %)	19 (100 %)
Yes	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)
Injury (overall)					
No/Not Recorded	8 (40 %)	0 (0 %)	8 (44 %)	0 (0 %)	8 (42 %)
Yes	12 (60 %)	2 (100 %)	10 (56 %)	1 (100 %)	11 (58 %)

^a n (%).

non-fatal strangulation noted that psychological outcomes indicated profound trauma reactions including acute and chronic fear, PTSD, dissociation, depression, anxiety, and suicidality.³² Although in the studies included in that review, almost all victims were female, it would seem from our study that, at least in the short term, men are psychologically impacted to a similar extent as women, something that needs to be borne in mind when considering the provision of aftercare services such as counselling or support through the criminal justice system.

5. Conclusions

Our data is in keeping with the international literature showing that non-fatal strangulation in the context of rape or sexual assault is a sex-based act, with higher prevalence in women than men and most alleged perpetrators being male, regardless of the sex of the victim.

It is still something to be taken seriously in men, with similar rates to women of injury, loss of consciousness and psychological impact (in terms of feeling that they were about to die).

Recommendations

With all research on sexual violence experiences, it should be considered whether barriers to disclosure and reporting may have an

Table 6

Summary of the (objective) injuries types across male and female patients who reported NFS. Male patients cover the period 2017–24, while females cover 2017–19.

Characteristic	Female N = 197 ^a	Male N = 20 ^a
Neck Injury		
Bruise	62 (31 %)	5 (25 %)
Petechial haemorrhage	32 (16 %)	4 (20 %)
Abrasion	31 (16 %)	3 (15 %)
Laceration	0	0
Face Injury		
Bruise	39 (20 %)	4 (20 %)
Petechial haemorrhage	7 (3.6 %)	0 (0 %)
Abrasion	18 (9.1 %)	1 (5.0 %)
Laceration	8 (4.1 %)	1 (5.0 %)
Scalp Injury		
Bruise	9 (4.6 %)	1 (5.0 %)
Petechial haemorrhage	0	0
Abrasion	4 (2.0 %)	0 (0 %)
Laceration	5 (2.5 %)	0 (0 %)
Mouth Injury		
Bruise	8 (4.1 %)	1 (5.0 %)
Petechial haemorrhage	8 (4.1 %)	1 (5.0 %)
Abrasion	5 (2.5 %)	0 (0 %)
Laceration	6 (3.0 %)	1 (5.0 %)
Ears Injury		
Bruise	6 (3.0 %)	0 (0 %)
Petechial haemorrhage	2 (1.0 %)	1 (5.0 %)
Abrasion	2 (1.0 %)	0 (0 %)
Laceration	1 (0.5 %)	0 (0 %)
Eyes Injury		
Bruise	4 (2.0 %)	0 (0 %)
Petechial haemorrhage	2 (1.0 %)	0 (0 %)
Abrasion	0	0
Laceration	0	0

^a n (%).

effect on the data presented. For this cohort, it could be suggested that being a male victim-survivor of rape or sexual assault, with an additional experience of having been strangled at the time, would present significant barriers for disclosure, as noted in existing literature. Front-line victim services should therefore continue to consider their approach to different identity groups with different experiences of sexual violence.

To support services' efforts to better identify and support victim-survivors of different sexual violence experiences, screening for NFS should be routine for all rape or sexual assault complainants. Therefore, there would not be a reliance on a victim-survivor to spontaneously disclose in order to access support.

To better respond to victims/survivors, pathways between emergency departments and sexual assault referral centres (or similar) should be established to ensure appropriate holistic care. Training for all practitioners along the pathway on the harms and risks of strangulation should be implemented to ensure a trauma-informed response and appropriate clinical investigations are undertaken, such as radiological imaging where indicated.

There needs to be an appreciation by all involved in the criminal justice system, that as with women and children, many males reporting NFS will not have a visible, objective, external injury and absence of such should not negate the allegation.

Strengths and limitations

The numbers in this study are small (n = 20) so care is required when interpreting the results. We continued the study for the eight-year period in order to increase the number of cases.

The data were collected from only one centre, Saint Mary's SARC, Manchester, and so the results may not be generalisable.

As is the case for all research of this nature, it is important to remain mindful that the men seen at the SARC for an FME may not be

representative of all men strangled in the context of rape or sexual assault.

The men were not all examined by the same Forensic Physician, although a standard FME proforma and, where applicable, NFS proforma, are utilized to reduce variation in assessment and documentation. However all data were collected by the lead author.

The data for the male NFS cases came from an eight-year period 2017–2024, whilst that from the female NFS comparator group was from the three years, 2017–2019.

Future research

The information reviewed was only that of the FME. It would be useful to follow up the patients, in terms of medical investigation results such as radiological imaging, as well as longer term health outcomes.

All the cases were of allegations of NFS. It would be instructive to follow case through any subsequent criminal justice system process.

Some speculative connections have been drawn, in this paper, between the use of strangulation as a behaviour during (consensual) sex and the use of strangulation during sexual violence. Further research should seek to better understand what, if any, connections – correlative or causative – there are between the use of strangulation in these two different contexts.

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