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Title:

Male sexual assault: physical injury and vulnerability in 103 presentations.

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Abstract

Objectives: To i) describe the demographic and assault characteristics of males alleging recent sexual assault, ii) determine the severity and frequency of general body injury and the frequency of anal and genital injury, iii) identify vulnerability factors and assault characteristics associated with injury.

Design: Cross-sectional study

Setting: Sexual Assault Resource Centre (SARC), Western Australia.

Participants: Total of 103 post-pubertal males attending SARC from Jan-2009 to Dec-2016.

Methods: Men underwent a standardised medical examination and data collection by forensically trained doctors following consent for general body and/or ano-genital examination. Men were considered vulnerable if at least one of the following factors was present: current mental illness; intellectual or physical disability; alcohol intoxication; previous sexual victimization; living in prison or homeless (no fixed address), aged < 18 years. Statistical analysis was performed by Fisher exact test. An algorithm was used to classify general body injuries as mild, moderate or severe.

Results: At least one vulnerability factor was present in 88.3% of the 103 men. More than one factor was present in 54.4%. General body injury was observed in 58.0% (40/69) of men consenting to general body examination; 46.4%, 10.1% and 1.4% were classified as having respectively, mild, moderate and severe injuries. Three assault characteristics were associated with general body injury: the use of blunt force (p=0.002), multiple assailants (p=0.049) and deprivation of liberty (p=0.040). Genital injury and anal injury was observed in, respectively, 6.5% (5/77) and 14.3% (11/77) of men consenting to ano-genital examination. Of the 49 men examined following completed penetrative anal assault, 18.4% (9/49) had anal injuries. In these 49 men, those assaulted by strangers were more likely to have an anal injury compared to non-stranger assaults (p=0.019). No demographic, clinical or vulnerability characteristics of the sexually assaulted men were associated with general body, genital and/or anal injury.

Conclusion: Although general body injuries were more frequent than genital and anal injuries, most of the body injuries were mild in severity. While the majority of

men in our study presented with one or more vulnerabilities only assault characteristics (not vulnerabilities) were associated with injury.

Keywords

sexual assault; male; injury severity; genital injury; anal injury; vulnerability

BACKGROUND

Despite the growing body of research into sexual violence, the sexual assault of the post-pubertal male remains under-represented in the literature and public policy. Sexual violence is known to disproportionally affect females, however the true prevalence of male sexual assault is underestimated due to lack of disclosure and under-reporting. Males present to specialist sexual assault services in far fewer numbers than females [1-3]. This may be influenced by barriers to disclosure specific to males and male sexual assault. In Western Australian legislation, male sexual assault includes i) the non-consensual penetration of the mouth by a penis, ii) penetration of the anus by a penis, finger or object, iii) fellatio performed non-consensually or iv) the non-consensual manipulation of the penis to cause penetration of the vagina, anus or urethra of the offender [4]. Results from the Personal Safety Survey conducted by the Australian Bureau of Statistics in 2012 estimate that 4% of adult males and 17% of adult females experienced sexual assault since the age of 15 years [5]. According to recent figures from Australian police crime records, 1838 males and 13664 females aged over 14 years were recorded as having been a victim of sexual assault in 2015[6].

Limited data is available on the demographics, service provision and outcomes in cases of sexual assault of males as it is acknowledged that not all males seek help following a sexual assault [7, 8]. Published work tends to focus on topics such as the sexual orientation of the patient and their psychological well-being following the assault. From the perspective of clinical forensic medicine, there are relatively few verified reports quantifying the frequency of physical and genital and anal injuries in men following sexual assault [9-11] compared to the number quantifying injuries in women following sexual assault [12-18]. There is a lack of information on which

demographic and assault characteristics are associated with increased risk of injury. Currently, Australian forensic physicians providing expert opinion in court rely on the few non-Australian male studies to support their opinions, or quote injury prevalence translated from female studies. This is not best practice as there may be differences between the sexes. This paper sets out to provide information that can be used by a forensic physician when giving evidence in a male sexual assault trial.

Vulnerability, in the context of this study, is defined as the diminished capacity of an individual to anticipate, resist and/or recover from sexual assault. In a recent large study of more than 500 females alleging sexual assault, 59% had at least one of four specific vulnerability factors (i.e. intellectual or physical disability, history of present/former mental health problems, history of present/former alcohol/substance abuse or former sexual assault [19]. Other factors that may contribute to vulnerability to sexual assault include adolescence and/or poor social circumstances such as homelessness or incarceration. To our knowledge, there is a lack of information on the prevalence of vulnerability factors in the setting of post-pubertal male sexual assault. A small Canadian study of 38 males alleging sexual assault has reported that 15% had a cognitive disability, 13% had a mental illness and 21% were either homeless or institutionalised. Given that there is evidence to suggest that men are more often coerced through the use of verbal and substance facilitated coercion strategies, rather than physical coercion [20], determining the prevalence of vulnerabilities may provide opportunities to develop targeted prevention policies.

In some instances, men who have been sexually assaulted may experience difficulty obtaining a medical, forensic and counselling service [21]. In Perth Western Australia, the Sexual Assault Resource Centre (SARC) has been providing medical, forensic and counselling services to both men and women for the past 40 years. SARC is the major sexual assault referral centre for police, hospitals, mental health services, prisons and other emergency providers in Perth and surrounding areas. All SARC doctors are forensically trained: four doctors have completed the Master of Forensic Medicine, two are Fellows of the Australian College of Legal Medicine (FACLM) and six have Fellowships of the Faculty of Clinical Forensic Medicine from the Royal College of Pathologists of Australasia.

The primary aim of this study was to describe the frequency and severity of general body, anal and genital injury in a cohort of post-pubertal males referred to SARC following recent sexual assault and to determine which patient and assault characteristics are associated with injury. The secondary aim was to describe the study population with respect to the prevalence of specific factors that may have made them vulnerable to sexual assault.

METHODS

Definitions:

Anal injury included injury to the perianal location, anus and rectum.

Assailant types were categorized as stranger, intimate partner (current and ex-partner), acquaintance/friend, accidental acquaintance (known <24 hours), unknown (no memory), fellow prisoner, work colleague, carer and other.

Blunt force assault included a history of being punched, kicked, slapped, dragged, stomped, hit, pushed, knocked, beaten, pulled hair and non-fatal strangulation.

Current mental illness was based on the patient's self-reported history and included psychotic (e.g. schizophrenia, bipolar disorder) and non-psychotic (e.g. anxiety, depression) disorders.

Disability included physical and intellectual disability, either individually or combined.

General body injury included injuries found on the head, mouth, neck, torso, arms and legs.

Genital injury included injuries on the penis, scrotum and perineum.

Indecent assault was a sexual act or contact without consent but with no completed or attempted penetration. This includes genital touching outside of the clothes and kissing.

Injury Severity: An algorithm [22] was used to allocate the men according to injury severity: i) no injury, ii) mild injury which had no impact on physical function and did not require any medical treatment, iii) moderate injury which impacted on function

and/or required treatment or iv) severe injury. Details on the algorithm are given in Table 2.

Injury types included bruises, abrasions, lacerations, incised wounds, penetrating (stab) wounds and burns. Yellow bruises detected within 18 hours of the assault time were excluded. Redness and/or tenderness were not included due to their non-specific nature. Injuries considered by the forensic clinician to be self-inflicted were excluded.

Men/males included persons who are biologically male who also identify as male (i.e. excludes transgender males who are transitioning).

Oral injuries attributed to penile-oral penetration were those in which other blunt force injury to the head and mouth had been excluded as a cause of oral injury.

Sexual assault included completed or attempted penetration of the patient's mouth by a penis; completed or attempted penetration of the patient's anus by a penis, finger, tongue or object without the patient's consent. Also included in this category was the non-consensual contact of the patient's penis with the assailant's hand. The nature of the penetration was classified as unknown if the patient suspected sexual assault but had no or incomplete recollection of the event.

Suspected drug-facilitated sexual assault was defined as a sexual assault where either the patient, doctor or police suspect that the person's capacity to consent to sexual intercourse was impaired by the covert administration of a drug or alcohol by the assailant.

Vulnerabilities were defined as conditions that may place men at an increased risk of sexual assault such as being homeless or in prison, current mental illness, impairment (physical or intellectual disability, alcohol intoxication), a history of prior victimisation (sexual assault and/or sexual abuse) and adolescence (aged 13 to 17 years).

Selection of Study Participants

Patients included males aged 13 years and older referred to SARC for an emergency consultation between 1 January 2009 and 31 December 2016 following a

history of recent sexual assault. Excluded from the study were patients who (i) did not give consent for research, (ii) did not know either the date of the sexual assault or could not estimate time since assault, (iii) admitted that the report was fallacious and/or the alleged assault was considered to be a false report by the police or the forensic physician. Results for general body and ano-genital injuries are restricted to patients referred to SARC for emergency consultation within 10 days of the sexual assault and who consented to, respectively, general body and ano-genital examination.

Forensic Examination and Data Collection

The SARC Medical Forensic Services Clinical Information System (SARC-MCIS) has been used to capture clinical and forensic information since 2009 [23]. Patients with a history of sexual assault within the previous 14 days are physically examined by a forensically trained doctor using a standard protocol following informed consent. Macroscopic visualization (naked-eye examination) is used for ano-genital examination. The history and examination data is entered into the Information System by the treating clinician. Detailed informed consent is obtained from each patient and/or guardian who agrees to the use of their de-identified data for research purposes. Missing or inconsistent data was queried and amended where possible following clinician chart review. Chart review was also completed for cases with oral injury and completed oral penetration with a penis to establish probable causation of oral injury.

Statistical Analysis

Descriptive statistics were used to characterize both study subjects and the sexual assault. These were summarized as the mean ± standard deviation for continuous data and as the percentage for categorical data. The Fisher exact test was performed to compare categorical variables between groups. A p-value of less than 0.05 was considered significant. Non-parametric test for trend across ordered groups was used to examine the effect of alcohol on injury.

Ethics Approval

Ethics approval was obtained from the Women and Newborn Health Services Human Research Ethics Committee (Approval number 2014089EW) and Curtin University Human Research Ethics Committee (Approval number HR98/2015).

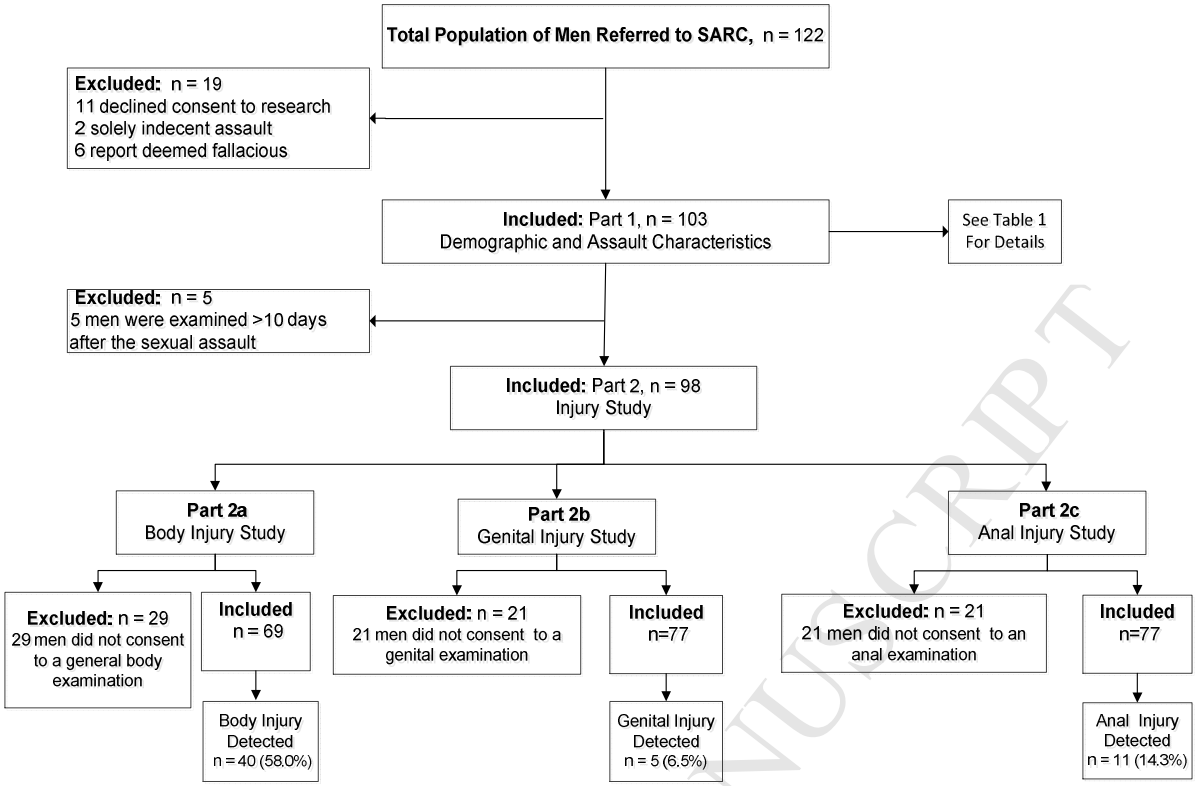
RESULTS

Cohort and Assault Characteristics

During the 8 year study period a total of 2353 persons were referred to SARC for emergency consultation: 122 (5.2%) male, 2228 (94.7%) female and 3 transgender (0.1%). Of the 122 males, 11 (9.0%; mean age 24.8 ± 7.2 years) did not consent for use of their data for research, 2 presented following solely indecent assault, 6 alleged assaults were considered to be a false allegation. Of the remaining 103 male patients who are the subject of this study, 79.6% (n=82) were examined at SARC, with the remaining examined in either hospital (10.6%, n=11) or prison (9.7%, n=10). Police were involved in 61.2% (n= 63) of cases at time of forensic examination.

Three men were seen more than once for sexual assault during the study period with each visit included in the analysis. Five men had time to examination >=10 days and were excluded from the study with regards to the results pertaining to injury. Of the remaining 98 men who came within 10 days of the sexual assault, 70.4% (n=69) consented to general body examination and 78.6% (n=77) consented to ano-genital examination. Sixty-one percent (n=60) consented to both types of examination and 12.2% (n=12) declined to be examined at all. Injury frequency was based on cases that gave consent for examination. The flow diagram in Figure 1 provides an overview of the study design, together with the frequency of general body, genital and anal injury in the men consenting to specific types of forensic examinations.

Figure 1. Flow diagram of study population showing frequency of general body injury, genital injury and anal injury.



Demographic, Vulnerability and Assault Characteristics

Table 1 provides details on the frequency of the demographic, vulnerability and assault characteristics of the 103 study participants (mean age 30.3 ± 11.5 years, range 13-62 years). Fifteen (14.6%) of the study participants were 13 to 17 years old. The most frequent vulnerability factors included current mental illness (46.6%), alcohol intoxication at time of sexual assault (40.8%), a history of prior sexual victimisation (32.0%) and intellectual and/or physical disability (26.2%). Additional vulnerability factors considered were homelessness or residing in a state prison and being classified as a child (aged 13-17 years old). At least one of these six vulnerability factors was present in 88.3% (n=91) of men. Two factors were present in 54.4% (n=56) and 27.2% (n=28) had three or more vulnerability factors.

The most frequent assailants were either acquaintances or friends of the patient (42.7%), with strangers and cell-mates/prisoner respectively, representing 22.3% and 8.7% of the cases. Completed anal penetration and completed oral penetration was reported by, respectively 60.2% (n=62) and 24.3% (n=25) of the 103 study participants. Forty men (38.8%) reported penis contact. Details on different combinations of types of sexual assault perpetrated on the study participants are

given in Table 1. Three of the 30 men reporting blunt force assault reported that they had been non-fatally strangled.

Table 1 Demographic, vulnerability and reported assault characteristics of 103 men presenting to the Sexual Assault Resource Centre following a recent history of sexual assault.

Demographic/Vulnerability Characteristics	**n**	**(%)**
Age		
13-15	2	(1.9)
16-19	22	(21.4)
20-29	30	(29.1)
30-39	23	(22.3)
>39	26	(25.2)
Current Mental Illness		
No	55	(53.4)
Yes	48	(46.6)
Disability		
None	76	(73.8)
Intellectual	21	(20.4)
Physical	5	(4.9)
Physical & Intellectual	1	(1.0)
Alcohol Use		
No	45	(43.7)
Yes: Not Intoxicated	16	(15.5)
Yes: Intoxicated	42	(40.8)
Use of Sedating Agents		
No	94	(91.3)
Yes	9	(8.7)
Use of Stimulants		
No	100	(97.1)
Yes	3	(2.9)
Previous Sexual Abuse		
No	64	(62.1)
Child Abuse	17	(16.5)
Adult Sexual Assault	8	(7.8)
Child Abuse & Adult Sexual Assault	8	(7.8)
Uncertain/Not asked	6	(5.8)
Place of Residence [a]		
Private Residence	72	(69.9)
Prison	11	(10.7)
Other Supported Accommodation	9	(8.7)
No Fixed Address	8	(7.8)

Assault Characteristics	n	(%)
Assailant Gender		
Male	92	(89.3)
Female	2	(1.9)
Unknown/Missing	9	(8.7)
Assailant Type		
Acquaintance/friend (>24hrs)	27	(26.2)
Stranger	23	(22.3)
Accidental Acquaintance (<24 hrs)	12	(11.7)
Cell mate/ prisoner	9	(8.7)
Unknown/No recollection	9	(8.7)
Work Colleague	5	(4.9)
Internet Acquaintance	5	(4.9)
Carer	3	(2.9)
Intimate Partner	2	(1.9)
Other	8	(7.8)
Number of Assailants [c]		
Single	77	(74.8)
Multiple	16	(15.5)
Uncertain	10	(9.7)
Location of Assault [d]		
Indoors	74	(71.8)
Outdoor	27	(26.2)
Unknown	2	(1.94)
Type of Sexual Assault		
Anal penetration only	31	(30.1)
Anal & Oral penetration	8	(7.8)
Anal & Oral penetration & penis contact	11	(10.7)
Anal penetration & penis contact	12	(11.7)
Attempted anal/oral penetrations	2	(1.9)
Oral penetration only	5	(4.9)
Oral penetration & penis contact	1	(1.0)
Penis contact only	16	(15.5)
Unknown nature of assault	17	(16.5)
Type of Physical Assault[e]		
None	69	(67.0)

Other	3	(2.9)
Time to Examination		
<24 hours	44	(42.7)
24 to <72 hours	27	(26.2)
3 to <10 days	27	(26.2)
10 days or more	5	(4.9)
Vulnerability Count [b]		
0	12	(11.7)
1	35	(34.0)
2	28	(27.2)
3	20	(19.4)
4	7	(6.8)
5	1	(1.0)
Blunt Force Only	25	(24.3)
Weapon Only	4	(3.9)
Blunt Force & Weapon	5	(4.9)
Bitten	0	(0.0)
Verbal Threats		
No	58	(56.3)
Yes	24	(23.3)
Uncertain	18	(17.5)
Not asked	3	(2.9)
Deprivation of Liberty		
No	82	(79.6)
Yes	10	(9.7)
Uncertain	11	(10.7)
Suspected Drug-Facilitated Assault		
No	71	(68.9)
Yes	24	(23.3)
Uncertain	8	(7.8)

[a] There were no men living in residential age care facilities such as aged care nursing homes and age care hostel accommodation. Other supported accommodation includes supported group homes or disability services facilities which provide supported accommodation that excludes residential age care facilities. No fixed address means the patient is currently homeless. "Other" place of residence included backpacker lodge and hostel.
[b] The Vulnerability Count quantifies the number of specific vulnerability factors , including current mental illness, intellectual or physical disability, living in prison or no fixed address, alcohol intoxication, previous sexual victimization and age <18years.
[c] Of the 77 men reporting single sexual assault assailants, 6 (7.8%) stated that their assailant had been aided by another person.
[d] Location of Assaults: 14 (13.6%) assaults occurred in Patient Residence, 25 (24.3%) in the Assailant Residence, 10 (9.7%) in Prison, 10 (9.7%) in Park/Bushland and 8 (7.8%) in Other Private Residence.
[e] Weapons reported to have been involved in 9 cases include knife(3), razor blade (2), gun(2), machete(1), sword(1), bottle (1), chair(1), used needle and syringe(1). Multiple weapon use reported by 2 men.
Previous sexual victimization: uncertain/not asked includes 2 men who stated 'No" to prior adult sexual assault but were either uncertain or not asked about child abuse.

General Body Injury

Fifty-eight percent (n= 40) of the 69 cases (mean age 29.2± 11.5 years, range 16-62 years) examined for general body injury within 10 days of the assault had an injury. All of the factors listed in Table 1 were examined for an association with general body injury using Fisher's exact test. Of these, only a history of blunt force assault, multiple assailants and deprivation of liberty were statistically associated with risk of general body injury (Table 2). Body injury was present in all men reporting deprivation of liberty, 85.7% of men reporting multiple assailants and 83.3% reporting the use of blunt force during the assault. No demographic or vulnerability characteristics of the sexually assaulted men were associated with body injury. The

most common general body injuries in the 69 examined cases were on the arm (43.5%, n=30), head (20.3%, n= 14), torso (20.3%, n=14) and leg (13.8%, n=13) with injuries present on/in the mouth (8.7%, n=6) and neck (2.9%, n=2) being less frequent.

Table 2: Frequencies for general body injury according to assault characteristics in 69 men who consented to a general body examination following recent alleged sexual assault.

	All	General Body Injury				
	(N=69)	No (n=29)		Yes (n=40)		Fisher's Exact p-value
	n	n	%	N	%	
Number of Assailants						
single	50	25	50.0	25	50.0	0.049
multiple	14	2	14.3	12	85.7	
uncertain	5	2	40.0	3	60.0	
Type of Physical Assault Reported						
None	42	23	54.8	19	45.2	0.007
Blunt Force Only	19	4	21.1	15	78.9	
Weapon Use Only	3	2	66.7	1	33.3	
Blunt Force & Weapon	5	0	0.0	5	100.0	
Reported Blunt Force						
No	45	25	55.6	20	44.4	0.002
Yes	24	4	16.7	20	83.3	
Reported Weapon Involvement						
No	61	27	44.3	34	55.7	0.453
Yes	8	2	25.0	6	75.0	
Reported Deprivation of Liberty						
No	55	25	45.5	30	54.5	0.040
Yes	7	0	0.0	7	100.0	
Uncertain	7	4	57.1	3	42.9	

Table 3 presents details on frequency of different general body injury types and classification of injury by severity. Almost a half (46.4%) of the men had mild injuries, 10.1% moderate and 1.4% serious injuries. General body injury was absent in 42.0% of men alleging recent sexual assault.

Table 3 The frequency of injury type and classification of injury by severity in 69 sexually assaulted men that consented to a general body examination.

Injury Severity Scale	**Injury Type**		**Injury Scale**	
Diagnostic criteria*	n	%	n [a]	%
No Injury			29	42.0
1. No general body injuries.	29			
Mild [b]			32	46.4
1. Mild classification given to men who do not meet criteria for any other classification	32			
Moderate [c]			7	10.1
1. Physical injury requiring hospital referral	2	2.9		
2. Incised wounds	3	4.3		
3. Hand/foot fractures	0	0.0		
4. Physical signs suggestive of non-fatal strangulation and a history of non-fatal strangulation but not referred to hospital	0	0.0		
5. At least 10 bruises/abrasions > 3cm (excludes linear abrasions)	3	4.3		
6. At least one laceration >2cm	1	1.4		
7. Burns	1	1.4		
Severe [d]			1	1.4
1. Required ICU/HDU Care due to general body injuries	0	0.0		
2. Stab wounds	0	0.0		
3. Gunshot wounds	0	0.0		
4. Fractures (excluding hand/foot fractures)	1	1.4		
5. Hospital referral required for assessment of non-fatal strangulation due to symptoms and/or signs of non-fatal strangulation.	0	0.0		

[a] The total number of injury types for moderate and severe injury does not add up to number allocated to injury severity classification because some patients satisfied multiple diagnostic criteria.

[b] Mild injury defined as injuries having no discernible impact on the patient's physical function or not requiring treatment.

[c] Moderate injury defined as impacting on function and/or requiring medical treatment. Patients needed at least one out of the seven moderate diagnostic criteria to qualify for allocation to moderate injury category.

[d] Severe injury category, defined as having at least one out of the five severe diagnostic criteria. Where the patient experienced both moderate and severe types of injuries the reported injuries are for the severe injuries.

Genital Injury

Overall, injury to the penis, scrotum and perineum was detected in 6.5% (n=5) of the 77 men who gave consent for genital examination (regardless of the nature of the assault). The injuries were: i) <0.5cm abrasion on glans penis, ii) <0.5 cm bruise on shaft of penis, iii) 1-2 cm abrasion on glans penis, iv) <0.5cm abrasion on scrotum v) 0.5-1cm laceration on glans penis. Three of the 19 men reporting oral assault of their penis had a genital injury. None of the genital injuries required medical treatment.

Anal Injury

Anal injury was detected in 14.3% (n=11) of the 77 men who gave consent for anal examination (regardless of the reported nature of the assault). Of these, 49 men reported penetrative anal assault; 38 (77.6%) were anally penetrated with a penis, 5 (10.2%) were anally penetrated with an object and 11 (22.4%) were anally penetrated with a finger. Anal injuries were detected in nine (18.4%) of the 49 men examined following penetrative anal assault; five were penetrated by a penis, two by both penis and finger and two were solely penetrated by finger. Of the 49 men reporting completed anal penetration, six (12%) had an anal laceration, four (8%) had an anal bruise and one had anal abrasions. Four (8%) of the 49 men reporting completed anal penetration had a perianal injury and 6 (12%) had an injury of the anal canal. No rectal injuries were detected.

Eleven (22.5%) of the 49 men reporting penetrative anal assault were assaulted by a stranger and 38 men were assaulted by non-strangers. In this sub-group of 49 men, stranger assaults were associated with higher prevalence of anal injury (45.5% (5/11) vs 10.5% (4/38); p= 0.019). No other factors listed in Table 1 were associated with anal injury.

One patient with no detailed memory of the nature of the assault and another patient reporting solely penis contact were found to have an anal injury indicating completed anal penetration.

Oral Injury

A total of 22 men reported completed oral penetration assault with a penis and also consented to general body examination. Two (9.1%) of these men sustained oral injuries. One case had a bruise (<0.5cm) of the soft palate, while the other had a mixed injury (<0.5cm) of the rest of the mouth. Four men who did not give a history of oral penetration with a penis also sustained oral injuries. On review, these injuries were unlikely to have been related to unreported oral penetrations as three men had been punched in the face and mouth and the fourth fell on his face when very intoxicated.

Discussion

Injury Frequency

One intention of this study was to fill a gap in the literature by identifying the frequency of general body, anal and genital injury in post-pubertal males referred to a Sexual Assault Resource Centre following recent alleged sexual assault. Although 58% of examined men had a general body injury, they were for the most part, mild in severity (46%). Only 10% presented with moderate injury and only one man presented with a severe injury. We have recently examined injury severity in female presentations following recent allegations of sexual assault [22]. In this study of over 1100 post-pubertal females, 71% presented with a general body injury. However, similar to the men, the majority of the women (53%) had mild injuries, with 17% moderate and 2% severe injuries. Our findings support those of McLean et al, in that the presence of any general body injury was also found to be less common in males referred to SARC-Manchester compared to their female counterparts [9]. In contrast to injury studies in women [22, 24], no men in our study had injuries severe enough to warrant admission to a high dependency/intensive care unit or referral to hospital for assessment of non-fatal strangulation. A potential reason for police and clinicians not associating severe injuries in males with the possibility of sexual assault is the “rape myth” that a male can protect himself from sexual assault. Emergency departments and police may not consider sexual assault in a severely injured man who is either unable or unwilling to give a full history of the incident. Emergency services may be more suspicious of sexual assault contributing to the injuries of severely-injured

women. This would result in the study under-identifying sexual assault in males with severe injury.

With respect to the ano-genital findings of our study, completed anal penetration was reported by 60% of men; similar to the 66% reported by SARC-Manchester [9]. We detected anal injuries in 18% of men examined after alleged completed anal penetration, slightly less than SARC-Manchester men reporting anal rape, of whom 26% sustained an anal injury. In common with the SARC-Manchester study, we found that the detection of anal injuries was not restricted to men reporting anal penetration. For example, we detected anal injury in a man who could not recall the nature of his assault and in another who reported non-anal assault but did not report anal penetration. These examples reinforce the necessity of conducting anal examinations despite the history provided by the patient at time of examination.

Over 40% of the men who agreed to a genital examination reported that the assailant had made contact with the patient's penis. However genital injury was uncommon with only 3 of the 32 cases reporting penis contact sustaining a genital injury. Of note, each of these three men alleged that non-consensual fellatio (oral sex) was performed on them. Genital injury was not, however, restricted to men reporting penis contact with two such men found to have a genital injury.

Vulnerability and Male Sexual Assault

Another study objective was to gain a better understanding of the frequency of vulnerabilities in men presenting to SARC-Perth and determine whether any vulnerabilities or any assault characteristics are associated with physical injuries. Six specific vulnerability factors, including current mental illness, intellectual or physical disability, alcohol intoxication, a history of previous sexual victimization, currently living in a prison or having no fixed address (i.e. homeless) and adolescence, were of particular interest in this study. We determined that 88% of the men had at least one of the six vulnerability factors with over half presenting with at least two and over a quarter presenting with three or more of the factors. Despite the rather high prevalence of vulnerabilities there was no evidence to suggest that any of these vulnerability factors, nor the co-existence of multiple vulnerability factors, were associated with general body, genital and/or anal injuries. Indeed, of all the characteristics examined, only a history of blunt force assault, multiple assailants

and deprivation of liberty were associated with extra-genital injury, with stranger assaults being the only factor associated with anal injuries. These findings are in contrast to studies in female complainants of sexual assault where many more factors, including age, intellectual disability, mental illness, assailant type (e.g. intimate partners), alcohol intake prior to assault and physical location (i.e. inside vs outside) have been identified as being associated with injury [12, 15-17, 22].

During this 8 year study, males represented 5.2% percent of all patient referrals to SARC-Perth for forensic examination, similar to 4.3% SARC-Manchester in the UK [1] yet greater than the 1.9% reported by the Centre for Victims of Sexual Assault in Copenhagen (Denmark) [3]. However the average age of the men seen in SARC-Perth was 30 years, almost six years older than in SARC-Manchester. At the Department of Forensic Medicine in Paris [2], where the average age of both males and females was less than 16 years of age, males represent a somewhat higher proportion (14%) of sexual assault referrals.

Younger age has been proposed as one possible vulnerability factor predisposing both males and females to possible sexual assault [25]. However as males become post-pubertal, they are considered more able to defend themselves and the prevalence of male sexual assault decreases when compared to that of females. So while almost a quarter of our study participants were aged less than 20 years of age, our data suggests that factors other than youth may have increased their vulnerability to sexual assault.

Over a quarter of our men were classified as having a disability, a slightly higher proportion than reported in Canada where approximately 20% presented with a disability [10]. However, while intellectual and cognitive disabilities were equally represented in the Canadian study of male sexual assault, males with intellectual disability greatly outnumbered males with physical disability in our study. This may reflect earlier findings which suggest that people with intellectual disabilities are at greatest risk of victimization [26]. In a study of relatively young French males, who were on average 15 years old, less than 4% had a disability [2]. It is likely that their youth as opposed to disability, made them vulnerable to sexual assault.

Almost half of the males in our cohort, compared with 40% in the Canadian study, had a self-reported current mental illness [10]. The high incidence of self-reported

mental illness supports the need for a close partnership between forensic, clinical and counselling services. All patients seen at SARC are offered a follow-up phone call by a counselling team within 1-7 days. Suitable and interested patients are then offered follow-up psychotherapy in the form of one-on-one counselling or group psychotherapy.

The majority of SARC-Perth men reported that they had consumed alcohol prior to being sexually assaulted. While the 56.3% prevalence of alcohol use was high in SARC-Perth, it was not as high as the 65.5% reported by men attending the Centre for Victims of Sexual Assault in Copenhagen [3]; however, it was much higher than in a 1991 survey of 28 men in the United Kingdom where 28% reported drinking alcohol [25]. Neither the Danish nor the UK study reported on intoxication status. However we report that 40.8% of SARC-Perth men admitted to being intoxicated at the time of the sexual assault. As in women, intoxication increases vulnerability to sexual assault and severe intoxication may exacerbate that. It is possible that the high level of alcohol intoxication, in combination with the presence of many of the other vulnerability factors identified in our study, may have contributed to the reported low incidence of weapon use in Perth.

It has been estimated that prevalence of child sexual abuse in Australian males is 1.4-8.0% for penetrative abuse and 5.7-16.0% for non-penetrative abuse [27]. Men with a history of child sexual abuse (24%) are therefore overrepresented in our study (with 8% reporting a history of both child sexual abuse and previous (adult) sexual assault). Overall, almost a third (32%) of our study population reported previous sexual victimization, twice the prevalence reported in the Danish study. Based on these rather high rates, we suggest that policies need to be in place to minimize the risk of re-victimisation in these vulnerable men.

Implications for practice and research

To our knowledge, the frequency of injury severity in male sexual assault has not been previously published. Expert witnesses giving evidence in court will now be able to refer to general physical and ano-genital injury rates in males alleging recent sexual assault. To further assist forensic clinicians in providing expert testimony in court we have analysed the prevalence of genital injuries separately from anal injuries and put the genital injury in context with type of penis contact or lack thereof,

as reported by the patient. However, while our sample size is relatively large compared to other studies examining presentations of sexually assaulted post-pubertal males, it is probably too small to make meaningful comment on the severe end of the injury spectrum.

This cohort of 103 post-pubertal men was gathered over eight years from the only sexual assault service in metropolitan Perth, Western Australia. To our knowledge it is the largest study of injury following recent sexual assault of post-pubertal males and yet the numbers are small when compared with more than two thousand women examined at SARC over the same time period. The cohort size is much smaller than would be predicted by the prevalence of adult male sexual assault. As such, recruitment to similar research studies and the capacity to fully understand injury following sexual assault of post-pubertal males will require combined centre studies with larger cohorts.

Study Limitations

A limitation to our study is that our findings regarding the types and frequency of injuries may be difficult to generalise to all males who have experienced sexual assault as it is recognised that a large proportion of men do not seek medical and/or forensic services following a sexual assault. The men not seeking a medical and/or forensic service may differ in the types and frequency of injuries sustained.

In addition the vulnerability of the men in our study may represent a selection bias among male users of a sexual assault centre. It is possible that the relatively small sample size, when compared with similar studies conducted in females, led to our inability to identify more injury risk factors. It is also possible that some men with false allegations of sexual assault were included, although we attempted to exclude them: this may explain why some men in our study had no injuries. Anecdotally Sexual Health Physicians and General Practitioners report that male sexual assault victims have utilised their services for sexually-transmitted infection screening and HIV prophylaxis. This may further limit our findings so as not be generalizable to all male sexual assault. Furthermore, SARC-Perth is part of a women's health service so men may be more likely to access alternative services. As previously discussed, the cognitive bias of clinicians may have led to some cases of male sexual assault

being overlooked in men presenting with severe extra-genital injuries in our hospital emergency departments.

Conclusion

The high prevalence of vulnerability factors in men presenting to SARC highlights their complex clinical needs following recent sexual assault. This study demonstrates that psycho-social supports, in addition to medical and forensic services, are paramount. Of note, there were no specific vulnerability factors associated with increased injury severity in this cohort. Assault characteristics rather than vulnerability factors were the determinants of injury severity. Although general body injuries were more frequent than genital and anal injuries, most of the injuries were mild in severity. However, about 1 in 10 males in this study had moderate or severe general body injury. The authors postulate that men with no vulnerability factors are likely to have reduced risk of sexual assault and/or may choose not to report the sexual assault allegation to police or access health services.

Highlights

Most post-pubertal males have no or mild injury following recent sexual assault.

Anal injuries were detected in 1 in 5 men following penetrative anal assault.

1 in 20 sexually assaulted men had a genital injury. All genital injuries were mild.

Men had many vulnerability factors associated with the incident of sexual assault.

Vulnerability factors did not contribute to injury severity in male sexual assault.

Conflicts of interest

None.

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