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Legal aspects of sexual violence—Does forensic evidence make a difference?

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ABSTRACT

A survey was done of 307 alleged victims of sexual violence reported to the police departments in Greater Aarhus, Denmark, in 1999–2004. The legal disposition was ascertained and related to victim and assault characteristics together with the forensic medical and laboratory findings. The police pressed charges in more than half of the cases and 11% turned out to be false allegations. Nineteen percent of all cases ended with sentencing of the defendant. Sperm was detected in 35% of the examined and analysed cases, and in 46% consumption of alcohol prior to the assault was reported. Information in the forensic report regarding injury documentation, intoxication, and detection of sperm and DNA match between victim and alleged assailant did not aid in the prosecution of the case. Severe coercion used by the assailant increased the likelihood of conviction. Intoxication estimation and sperm detection suffered from low sensitivity compared with laboratory analyses. Results suggest the need for new research and optimising the sexual assault examination protocol to strengthen the legal impact of forensic evidence.

1. Introduction

As previously reported, 66% of the known sexual assaults in Greater Aarhus during a period from 1999 to 2004 were notified to the police authorities [1]. What were the legal consequences, and did the forensic examination make a difference?

Conviction rates of defendants in cases of sexual assault vary from 10% to 69%, and significant associations between successful prosecution and evidence of trauma, use of weapons and severe coercion, and young age have been found, but inconsistently [2–10]. In other studies, focus has been on the association with charge filing [11–14]. Previous Danish studies revealed conviction rates from 15% to 24% and that several injuries were associated with imprisonment [15–18].

Published studies concerning forensic findings reported sperm detection on microscopy in 13% to 63% of cases [2–6,12,15,16,19–23]. The documentation of genital lesions ranged from 10% to 87% [2,24–30], and bodily (extra-genital) lesions ranged from 25% to 90% of the cases [13,31]. Self-reported use of alcohol prior to the assault was reported in 42% to 71% of cases [16,24,31–35].

Complainants of sexual violence can report the incident to the police department, or they can seek help from the local rape crisis referral centre. Often, but not always, the police authorities in Aarhus request that a medical examination be conducted at the Western Danish Sexual Assault Center (WeDSAC). Since 1999, the centre has used a sexual assault examination protocol for documentation and forensic evidence collection [36]. At the centre, the victims of police-notified cases as well as victims without police filing are offered the same examination and support. In case of notification, a written report is subsequently mailed to the police department, and the samples collected are transferred to forensic laboratories for – upon police request – analysis. In the other case, protocols and biologic material and clothes are kept for three months awaiting the victim's decision regarding filing or not. In case of later filing, the police request a forensic report and ensure that the collected samples are transferred to laboratories for analysis.

Previous Danish studies were based on case material collected many years ago and sample sizes were small. Internationally, there is also a striking paucity of information to assess the impact of forensic evidence. The minimum amount of forensic evidence needed to aid the prosecution and whether service initiatives can be improved has not been rigorously determined [37]. Hence, a

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new study with a larger sample size that includes cases without examination is required to fulfill demands from the victims and the police for the best care concomitant with optimal forensic evidence collection.

The aims of this study were to ascertain the legal and law enforcement aspects of cases of sexual assault in a well-defined area and determine associations between conviction and victim characteristics, assault characteristics, and medical findings. In addition, the sexual assault examination protocol was evaluated with regard to the legal usefulness of collecting forensic samples and documentation with emphasis on injuries, alcohol, and sperm detection.

2. Materials and methods

The study was a retrospective descriptive single-sample survey. In this study sexual violence (or assault) is defined as involuntary attempted or achieved penile, finger, or object penetration of the vagina, anus, or mouth, which is in accordance with the WHO [38].

Cases of sexual assault in a well-defined geographical area were identified in a five-year period from November 1, 1999 to December 31, 2004 in the files of three data sources: (a) the police departments of Greater Aarhus, (b) the WeDSAC, and (c) the Institute of Forensic Medicine at the University of Aarhus (IFM). The area, covering 4561 km^2, contains the second largest city in Denmark and had an average population during the study period of 645,000 inhabitants (539,000 people aged 12–87 years). This equates to 1/8 of Denmark's population.

Cases reported to the police were identified in police departments files using search criteria regarding sexual crimes in the Danish penal code in victims over the age of 12 years [39].

Cases from the WeDSAC included all referrals to the centre known to have been reported to the police. Information from the victims undergoing a medical examination had been recorded on a standardised registration form. Genital lesions were identified by macroscopic visualisation during the gynaecologic examination. Colposcopy was used occasionally. Sperm samples were taken from the mouth, vagina, or anus and examined by microscopy of dried and haematoxylin and eosin-stained slides.

Information of interest and possible determinants of the legal outcome were as follows:

(a) sociodemographics of the victim; (b) the assault characteristics comprising meeting place prior to assault, place of assault, type of the assault (complete when vaginal, anal and/or mouth penetration), ejaculation, use of coercion (mild (shackled), moderate (blow, kick, bite), or severe (weapons or strangulation)), and levels of relationship to the assailant: partner (victim and assailant knew one another sexually, e.g. present or ex-husband/boyfriend), family (assailant is a relative), acquaintance (knew one another but had not had a sexual relationship previously), contact/date (victim and assailant only just met, typically less than 24 h before the alleged assault, hence had not had a sexual relationship previously), and stranger (victim and assailant had not previously seen each another), (c) time delay from assault to filing and from assault to medical examination, (d) findings at the medical examination including presence of sperm, bodily injuries (redness, bruising, abrasion, swelling, laceration, and fracture), and genital injuries (abrasion, swelling, and laceration); (e) genetic findings including presence of sperm and DNA match between victim and suspect, (f) alcohol consumption (three measures: self-reported alcohol intake 6 h prior to the assault – information considered valid [40,41], clinical estimate by the medical examiner, and the blood-alcohol content (toxicology report)).

The legal outcomes of the sexual assault cases mentioned in the study are given in accordance with the Danish Administration of Justice Act and regrouped in order to improve comprehension of the management of the public prosecutor's onus of proof:

A. No suspect or settings incompatible with rape,
B. alleged assailant free—the public prosecutor failed to lift the onus of proof,
C. alleged assailant convicted – guilty of charge,
D. false report/accusation admitted by the "victim" or charged by the police.

The four groups (A–D) were used as the legal disposition of the police and can be seen in the Figure. Groups B and C were used in the regression analysis for conviction.

Fig. 1.

Permission to go through police reports was obtained from The Danish Ministry of Justice. The Danish Data Protection Agency allowed the collection of data.

Statistical analysis was made using STATA 8.2. Tests applied for categorical data were Pearson's χ^2-test, Fisher's exact test, χ^2_{trends}-test, and statistical significance was assumed if $P < 0.05$. Male gender was associated with conviction, but since very few males were present, and none of the charged cases ended without conviction, male gender was excluded from the regression analysis. Variables with bivariate significance for females were included in the multivariate logistic regression analysis and used to estimate the strength of the association of the selected variables with the legal outcome by crude and adjusted odds ratios (OR) and 95% confidence intervals (95% CI). Interaction terms as effect measure modification were examined upon the published model.

3. Results

3.1. Legal disposition

In total, 307 cases of sexual violence reported to the police departments in Aarhus were identified, and the legal outcome was known in 277. The notification happened within 24 h after the assault in 71% of the cases. The top of the Figure shows the preliminary legal outcomes. It is seen that charges were filed in 151 (54.5%) cases, and 97 (35%) were cases with no identified perpetrator or evidence clearly revealed the suspect could not have been the assailant or obviously had no desire to commit sexual aggression. The bottom of the Figure shows the final legal outcomes. Regarding filing charges, 89 cases (59%) were dropped before prosecution – the vast majority because of insufficient evidence. A conviction was secured in 52 (19%) of cases. The convictions ranged from fines, conditioned sentences, and social supervisory control to two and a half year's imprisonment.

3.2. Description of the filing victim and reported assault

Table 1 summarises the victim and assault characteristics of the cases reported to the police. Twelve (4%) victims were males with a median age of 14.5 (range 13–28 years), and the female median age

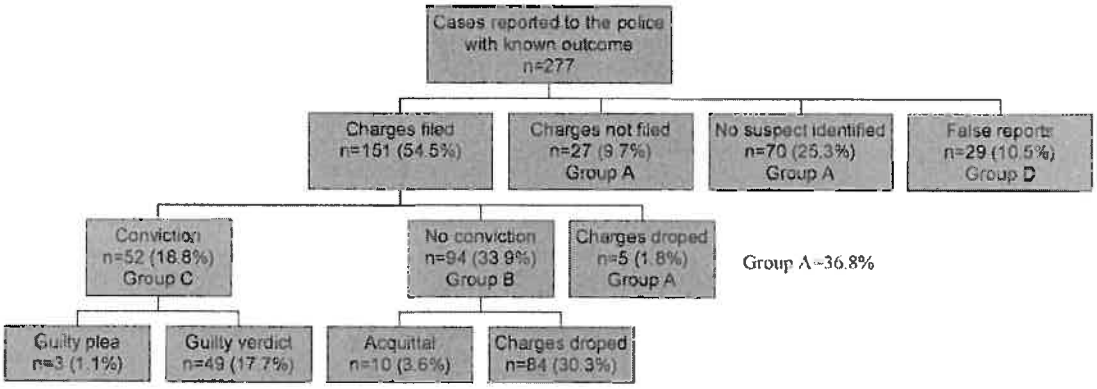

Fig. 1. Legal disposition of cases of sexual assault reported to the police departments in Greater Aarhus between November 1999 and December 2004.

Table 1
Distribution of victim sociodemographics and assault characteristics of all police-reported cases, of female cases only, and of charged female cases ($n = 140$ excluded 5 dropped cases due to baseless charge) by conviction

Variable	Total reported		Conviction (females)		P
	All, n (%) ($N = 307$)	Females, n (%) ($N = 295$)	Yes, n (%) ($N = 46$)	No, n (%) ($N = 94$)	
Victim					
Sex					
Male	12 (4)		6 (12)	0	0.002[a]
Female	295 (96)		46 (88)	94 (100)	
Age					
Mean age males (range)		16 (13–28)	14 (13–16)	–	
Mean age females (range)		26 (12–87)	29 (13–81)	26 (12–87)	
Age-groups					
12–14 years	46 (15)	40 (14)	8 (17)	17 (18)	0.8
15–17 years	53 (17)	48 (16)	4 (9)	16 (17)	0.2
18–24 years	92 (30)	92 (31)	11 (24)	19 (20)	0.9
25–34 years	57 (19)	56 (19)	11 (24)	20 (21)	1.0
35–87 years	59 (19)	59 (20)	12 (26)	22 (23)	Ref.
Type of dwelling ($n = 272$)					
Alone/with kids	88 (32)	88 (34)	16 (37)	32 (37)	
With somebody else	184 (68)	172 (66)	27 (63)	55 (36)	1.0
Occupation ($n = 262$)					
Employed/education	192 (74)	182 (72)	25 (60)	64 (79)	
Unemployed	70 (26)	68 (27)	17 (40)	17 (21)	0.02
Ethnicity					
Denmark	262 (85)	251 (85)	36 (95)	83 (94)	
Middle East/Africa	21 (7)	20 (7)	2 (5)	6 (6)	0.8
Rest	24 (8)	24 (8)			
Assault characteristics					
Meeting place ($n = 262$)					
Private	115 (44)	112 (44)	34 (74)	50 (56)	0.04
Public	147 (56)	140 (56)	12 (26)	40 (44)	
Place of assault ($n = 304$)					
Private	158 (52)	150 (51)	37 (80)	63 (67)	0.1
Public	146 (48)	142 (49)	9 (20)	31 (33)	
Identical place ($n = 262$)					
Yes	193 (74)	186 (74)	36 (78)	65 (72)	0.4
No	69 (26)	66 (26)	10 (22)	25 (27)	
Assailant relationship ($n = 305$)					
Known			38(83)	75 (80)	
Partner	48 (16)	48 (16)			
Family	9 (3)	9 (3)			
Acquaintance	73 (24)	63 (21)			
Contact	57 (19)	57 (19)			
Stranger	118 (39)	116 (40)	9 (17)	19 (20)	0.7
Sexual intercourse ($n = 291$)					
Attempted	104 (36)	103 (37)	17 (38)	25 (27)	
Completed	187 (64)	176 (63)	28 (62)	67 (73)	0.2
Anal penetration ($n = 287$)					
Yes	30 (10)	22 (8)	6 (13)	10 (11)	0.7
No	257 (90)	253 (92)	39 (87)	80 (88)	
Coercion ($n = 280$)					
None/verbal threats	77 (27)	76 (28)	8 (18)	31 (33)	Ref.
Light	147 (53)	140 (52)	21 (48)	51 (55)	0.3
Moderate	25 (9)	24 (9)	5 (12)	4 (4)	0.03
Severe	31 (11)	30 (11)	11 (22)	7 (8)	0.003

n highlighted if $n \neq 307$.
[a] Fisher's exact test.

was 21 (range 12–87 years). A known assailant was reported in 61% of the cases.

Fifty-five percent experienced vaginal intercourse, 10% were subjected to anal intercourse, and 17% were exposed to oral intercourse (>64% because different sexual acts could take place during the same assault). In 41% of the cases, the victim reported ejaculation by the perpetrator. If the assault was not completed, strangers were involved in 65% of the cases. In 32% of the cases with severe violence, the perpetrator was a partner, and in 63% of the severe violence cases, the intercourse was completed. The unemployed victims suffered from partner-rape twice as often as the employed/students.

Table 2 shows that the most frequent meeting place prior to the assault was a private setting (44%), but street encounters were also often seen (28%). In almost every case in which victim and assailant met at their own residences, the sexual assault also took place

Table 2
Meeting place prior to the assault, place of assault, and how often they were the same

Place	Meeting place		Place of assault		Identical places
	N	%	*N*	%	%
Private					
Victim's residence	60	23	73	24	92
Assailant's residence	29	11	52	17	97
Other private home	26	10	33	11	58
Public					
Street/backyard	72	28	75	25	79
Pub/bar	35	13	11	4	29
Park/forest/beach	23	9	46	15	83
Other places (e.g. car)	8	3	7	2	50
Place of education	6	2	4	1	50
Work	3	1	3	1	67
Total	262[a]	100	304[a]	100	74[b]

[a] 45 and 3 cases missing, respectively.
[b] In average.

there, whereas this occurred in only 29% of the cases when victims met their offenders at a pub or discotheque.

3.3. Medical and laboratory findings

Two hundred and sixteen (70%) victims underwent a forensic medical examination. The forensic medical examination revealed that 78% of the victims had injuries: 58% had skin or bone injuries, 19% had both extra-genital and genital lesions, and only 1% had genital damage alone. No significant differences ($\chi^2 = 0.9$) were found regarding presence of bodily injuries and time from assault to examination if less than 72 h postassault, and no significant trend ($\chi^2 < 0.05$, $\chi^2_{trends} = 0.1$) was established regarding genital lesions. Table 3 summarises the medical and laboratory findings of the cases notified to the police.

Table 3
Distribution of forensic medical findings and forensic laboratory results of all medically examined police-reported cases, females only, and charged female cases ($n = 140$ excluded five dropped cases due to baseless charge) by conviction

Variable	Total examined		Conviction (females)		*P*-value
	All, *n*(%) (*N* = 216)	Females, *n*(%) (*N* = 210)	Yes, *n*(%) (*N* = 46)	No, *n*(%) (*N* = 94)	(χ^2)
Time-delay assault-examination					
<24 h	163 (76)	157 (75)	37 (80)	73 (78)	0.7
>24 h	53 (24)	53 (25)	9 (30)	21 (22)	
Bodily injuries ($n = 209$)					
Yes	162 (78)	160 (77)	31 (84)	52 (79)	0.5
No	47 (22)	47 (23)	6 (16)	14 (21)	
Genital injuries					
Yes	42 (19)	41 (19)	7 (19)	20 (29)	0.3
No	174 (81)	170 (81)	30 (81)	49 (71)	
≥4 Lesions ($n = 212$)					
Yes	63 (30)	63 (31)	16 (42)	17 (25)	0.07
No	149 (70)	143 (69)	22 (58)	52 (75)	
Self-reported alcohol consumption of more than 1 unit ($n = 188$)					
Yes	86 (46)	86 (46)	9 (28)	23 (38)	
No	102 (54)	102 (54)	23 (72)	38 (62)	0.4
Clinically intoxicated ($n = 208$)					
Yes	47 (23)	47 (23)	5 (14)	11 (16)	
No	161 (77)	161 (77)	31 (86)	56 (84)	0.7
Blood-alcohol >0.00 ($n = 62$)					
Yes	41 (66)	41 (66)	6 (50)	12 (67)	0.4
No	21 (34)	21 (34)	6 (50)	6 (33)	
Sperm seen in microscope ($n = 152$)					
Yes	45 (30)	45 (30)	10 (31)	10 (23)	0.4
No	107 (70)	106 (70)	22 (69)	34 (77)	
Sperm by laboratory ($n = 119$)					
Yes	42 (35)	42 (35)	11 (38)	17 (35)	0.8
No	77 (65)	77 (65)	18 (62)	31 (65)	
Positive DNA match[a]					
Yes	31 (14)	31 (15)	13 (26)	17 (18)	0.3
No	185 (86)	181 (85)	38 (74)	77 (82)	

n highlighted if $n \neq 216$.
[a] Between samples from victim and reference from suspect. No is due to no material detected, no reference, no suspect, no samples taken or no analysis of sample.

Regarding the self-reported alcohol intake 6 h prior to the assault, 46% had drunk more than one unit (0.2 pro mille) of alcohol. According to the time delay from assault to examination and interpreting the clinical rating for alcohol intoxication, 34% of the victims examined no later than 12 h after the assault were estimated to be under the influence of alcohol. The correlation between self-reported and physician-estimated consumption 12 h prior to the assault showed disagreement regarding not reported drinking and estimated influence in 5%, and disagreement regarding reported drinking and estimated no influence in 34% of the medically examined cases. Concerning the objective data, the toxicology report displaying the blood alcohol content revealed that 66% had a positive pro mille with a mean level of 0.58 (range 0.01–2.27). Disagreement with the physician-estimated intoxication was found in 13% of the cases. However, in 154 (71%) of the medically examined cases, a toxicology reports was missing, either because no blood sample was taken (113) or because no analysis was performed/test result not found in police report. Forty-two percent of the victims with no blood sample taken arrived for medical examination later than 24 h postassault. The cases without a toxicology report disclosed a majority (122/154—79%) of victims had been estimated clinically not to be intoxicated.

Microscopic detection of sperm revealed that spermatozoa were seen in 30%. No significant differences ($\chi^2 = 0.3$) were found regarding microscopic detection of sperm and time from assault to examination up to 72 h postassault. The medical examiner did not find sperm in 19% (8/42) of the cases detected by the genetics laboratory.

3.4. Associations of conviction

Tables 1 and 3 also give the victim and assault characteristics, and the medical and laboratory findings, respectively, in the charged female cases by conviction. In general, the forensic determinants investigated were not associated with conviction. Bivariate significant findings were use of moderate or severe coercion by the assailant, victim unemployment, and a private meeting place prior to assault. Regarding alcohol, the three different variables showed no associations.

Use of severe coercion by the assailant was the only determinant significantly associated with conviction after adjustment (OR 7.1), as seen in Table 4.

4. Discussion

4.1. Findings

Determinant for conviction was use of severe coercion by the perpetrator. No forensic findings were associated with conviction.

Table 4
Multivariate logistic regression analysis showing the association (odds ratio – OR) between female victim and assault characteristics and forensic medical findings of police-reported cases of sexual assault and the legal outcome: conviction ($n = 117$)

Determinants	Crude OR	95% CI	Adjusted OR	95% CI
Victim/assault variables				
Coercion used				
Severe	6.1	1.8–20.3	7.1	1.8–27.3
Moderate	4.8	1.1–21.0	4.8	0.9–25.1
Mild	1.6	0.6–4.0	1.7	0.6–4.7
None/verbal threats	Ref.			
Unemployment	2.6	1.1–5.7	2.2	0.8–5.8
Private meeting place	2.3	1.0–4.9	1.8	0.7–4.6
Age 12–17[a]	1.0	0.5–2.0	1.4	0.5–3.8

CI: Confidence interval.
[a] Age-variable dichotomised.

The police authorities filed charges in 55% of the cases, and 19% of all cases ended with conviction. In 19% of cases, the forensic clinician did not find sperm detected by the genetics laboratory.

4.2. Limitations, strengths

Information regarding personal aspects and the alleged assault is frequently given by the victim just after the assault and could be deficient because of stress, tiredness, or alcohol intoxication. But the police questioned the complainant several times and took notice of the testimony of the alleged perpetrator and possible witnesses and the victims had chosen to notify the police, and therefore this information is not believed to cause bias. However, false accusations are clearly nothing but information problems and will increase the characteristic features of false allegation, but they will have no influence on the associations with conviction. The real information problem concerns cases in which charges were not filed due to unfounded accusation. Are false statements also involved in these cases? Such cases probably lowered the false allegation rate, thus increasingly bias the number of cases not charged and cases with no conviction.

The police officer selects which victims will have a forensic examination, and chooses whether or not to send biological material for alcohol or genetic analysis. This creates selection problems in the estimates of association with conviction, because not every single victim is examined or supplies forensic evidence. However, no bias is believed to occur because the non-examined victims, assuming the police stuck to the instructions, probably had experienced attempted sexual assaults or delayed reporting. The possible DNA match between victim and alleged perpetrator is thus not consistent and is difficult to interpret as a factor for conviction because its influence is reduced by the missing evidence collection. Concerning injuries, lack of an examination could also decrease the association with conviction.

Confounding can arise in connection with all determinants used. Variables of special interest are age and gender that in turn could promote certain settings and encounters. For instance, age and gender can confound the association with place of assault, sexual act, and relationship to perpetrator. This was, however, eliminated by use of regression analysis for female victims only. Gender stratification was not possible because of the very low number of male cases. However, conditions and associations specific to males deserve further examination, but await more material. The above-mentioned problems with selection overestimating some assault characteristics will not cause association biases, and thus not affect the outcome measures and maintain good intern validity.

Another matter to be taken into account is the differences between the Danish and the Anglo-American administration of justice. One of the most outstanding differences in the Danish practice of law is the public prosecutor's possibility of dropping the filed charge without involving the court. This appraisal implementation is constructed in part to protect the complainant in case of expected acquittal due to the lack of convicting evidence. Charging, importantly, is also decided with regard to the defendant's rights. Hence, this could mean more charges. The kind of trial – court judge, lay judge, or grand jury – may also affect the legal outcome conviction because lay people are more influenced by emotions than are professional judges and give higher credibility to the victim's statements [42]. Thus, different charging and trial procedures lower international extern validity.

4.3. Comparison and interpretation of results

The identified incidence of charging in this study is higher than in four Canadian and American series, which revealed that 29% to

33% of police files end with charges, even though all victims had a medical examination [2,4,5,12]. Furthermore, the cited studies had higher proportions of severe coercion (17% to 28%) and more genital and extra-genital injuries – determinants known to be associated with charging. Thus, comparing studies shows that Danish judicial practice results in more charges and that a higher number of cases are dropped before prosecution. This indicates that comparison by charges is difficult across national borders and that the preferred end-point should be conviction.

The rate of conviction in relation to notification was 19%. The same percentage was found in an Aarhus study published in 1993 [16]. Based on this figure and acknowledging the small sample size, the improved training for sexual assault examiners after the establishment of the WeDSAC has not increased the efficacy of forensic evidence for successful prosecution. American and Canadian studies from the early 1980s through late 1990s report rates from 10% to 69% [2–5,7,10,12], and in Norway 29% of the cases end with sentences [6]. The proportion of conviction in relation to cases taken to court was consistent with previous reports [6,31]. Overall, the conviction rate in Aarhus was in line with compared studies, because they generally only included forensically examined cases and weapons, severe coercion and completed penile penetration were more often involved. For a change in charging and prosecuting procedures to be relevant, it would require a new study comparing convictions more thoroughly, together with cases of charges dropped due to insufficient evidence.

Forensic evidence collection and injury documentation cannot by themselves reveal whether an examined case of sexual violence is a crime against the complainant or not. Nor can this judgement rest on the complainant's credibility alone or the prosecutor's assessment of the likelihood of conviction. The latter practice is previous stated [7,13]. Hence, as the circumstances in sexual assault cases most often only involve the complainant and the accused, a third part – the forensic medical examiner – should serve as a witness. However, our study of forensic reports shows no associations between successful conviction and injury documentation, intoxication, and detection of sperm or DNA match. Instead, the perpetrator's use of severe coercion (strangulation or presence of weapons) was significantly associated with conviction after regression adjustment. This is in concordance with other studies [4,6]. Extra-genital injuries and young age are the only two factors found elsewhere to be significantly related to conviction, but this could not be corroborated in the present study [2,4,5,10,16,43].

The low frequency of sperm detected by microscopic examination reflects that 36% of the cases concerned attempts at penile penetration and that completed intercourse did not mean ejaculation (reported by victim in 41%). Another issue could be the 19% mismatch between clinical microscopy and genetics laboratory analyses. Some of the disagreement is due to the use of the phosphatase test and sediment microscopy by the geneticists. No studies have shown an association between sperm finding and conviction [2–6,12,15,16,19–22]. Hence, the presence of sperm has poor sensitivity in predicting sexual assault and securing conviction. Of course, the possibility of detecting DNA from an unknown perpetrator is potentially important and should be pursued.

The number of victims in Aarhus reporting alcohol intake was lower or equal to rates of 46% to 71% reported in previous Scandinavian studies [24,33–35]. We cannot explain this difference but drinking habits might not be the same throughout Scandinavia. It is difficult to evaluate the physician's skill in estimating the victim's alcohol intoxication in correlation with the self-reported estimate because of the time delay between assault and examination. The examples of discrepancy between the estimate and the laboratory measurement are inexpedient and show the deficiencies in the clinical test used. Neither measures of self-reported or clinically estimated alcohol intake nor laboratory analysis were associated with unsuccessful prosecution, as otherwise indicated by Schei et al. [6]. Thus, these observations could explode the myth that alcohol intoxication prior to sexual assault is an attenuating circumstance and that the assault is therefore the victim's own fault.

One can state that a forensic examination is a medical procedure done in the dark, because we hope to find evidence, and the evidence found is of low sensitivity regarding assault or not. Many tests are for safety reasons only [44]. This situation would not be accepted in other medical disciplines [45]. However, the resultant reports should be of great use in the preliminary investigations, e.g. because detection of sperm, used by the police as a first step in the elimination of doubtful cases, especially when the complainant states amnesia, and additionally helping the victim realise the context of the assault, seems useful. A study is necessary which examines the primary outcome of the evidence collection and documentation used by the police detectives in the very early stages of investigation, as well as one that determines differences among subgroups of cases.

The varying results of intoxication and sperm detection and the missing association between conviction and forensic findings suggest that the sexual assault examination protocol needs to be optimised. Improvements could be achieved if the medical examiner looked for sperm even after 48 h and used techniques for quicker sperm detection like wet-mounted smears or prostate specific antigen-test [46,47]. Additionally, the medical examiner should improve the clinically estimated alcohol intake. What may not be relevant is routine genetic analysis of biological material, as it has no special influence on conviction. This is not surprising, because most complainants know their offender, and the offender seldom denies having sexual intercourse with the woman involved. Furthermore, the medical examiner may hesitate sending the collected material for analysis, awaiting the outcome of the primary police investigation.

4.4. Conclusions

Acknowledging the lower extern validity because of different systems of legislation worldwide, this study does give medical examiners and law enforcement officers a helpful tool by drawing attention to specific details important for the legal outcome. Documenting injuries carefully, having certain expectations of one finding leading to another, and creating a realistic image of a victim rather than a stereotype are important and should underline the responsibility of assuring the defendant's rights [14], which is extremely important when living in a community governed by law. Because up to 45% of all police-notified cases are either false or baseless, the examiner not only pays attention to obtaining evidence in favour of the victim. Furthermore, the finding that only an assault variable had any association with conviction could indicate that the forensic findings make no difference regarding conviction, and the question of guilt – after the doubtful cases are eliminated with the help of forensics documentation and evidence – is essentially a matter of trust and credibility.

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