



University of Southern Denmark

Stranger rape; distinctions between the typical rape type and other types of rape. A study based on data from Center for Victims of Sexual Assault

Friis-Rødel, Anne Mie; Leth, Peter Mygind; Astrup, Birgitte Schmidt

Published in:

Journal of Forensic and Legal Medicine

DOI:

10.1016/j.jflm.2021.102159

Publication date:

2021

Document version:

Accepted manuscript

Document license:

CC BY-NC-ND

Citation for published version (APA):

Friis-Rødel, A. M., Leth, P. M., & Astrup, B. S. (2021). Stranger rape; distinctions between the typical rape type and other types of rape. A study based on data from Center for Victims of Sexual Assault. *Journal of Forensic and Legal Medicine*, 80, Article 102159. <https://doi.org/10.1016/j.jflm.2021.102159>

Go to publication entry in University of Southern Denmark's Research Portal

Terms of use

This work is brought to you by the University of Southern Denmark.

Unless otherwise specified it has been shared according to the terms for self-archiving.

If no other license is stated, these terms apply:

- You may download this work for personal use only.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying this open access version

If you believe that this document breaches copyright please contact us providing details and we will investigate your claim. Please direct all enquiries to puresupport@bib.sdu.dk

Stranger rape; Distinctions between the typical rape type and other types of rape. A study based on data from Center for Victims of Sexual Assault

Anne Mie Friis-Rødel^a, MD.

Peter Mygind Leth, MD^a, Professor.

Birgitte Schmidt Astrup^{a*}, MD, Assoc. Professor

^aInstitute of Forensic Medicine, University of Southern Denmark, J.B. Winsløvs vej 17, Odense C, Denmark

*Corresponding author

ABSTRACT

Objective: The aim of this descriptive cohort study was to characterize *stranger rape* compared to other types of rape.

Method & Materials: All cases of women aged 12 years or older, who contacted a Center for Victims of Sexual Assault in the region of Southern Denmark and underwent a forensic examination in 2018, were collected and analyzed. Descriptive frequencies, Pearson's χ^2 -test and Fisher's exact-test were performed.

Results: Compared to other types of rape, *stranger rape* were reported to the police more frequently, earlier and more frequently independently, without contact to family, friends or other authorities. In cases of *stranger rape* women were exposed to threats and violence more often, and clinical findings were found to coincide with the women's report more frequently. Regarding the offenders' level of planning, it was not possible to find significant differences between *stranger rape* and other rape types by comparing frequencies of the offenders' use of condoms and weapons and/or other remedies as surrogate markers for degree of planning.

Conclusion: There were several significant characteristic differences between *stranger rape* and *other types of rape*. Characterizing the 'archetypical rape' in opposition to other and more frequent types of rape, may give the public, the

police, the courts and aid organizations the background needed to understand the importance of rape typologies when handling cases of sexual assault.

Keywords:

Stranger rape

Sexual assault

Rape

Center for Victims of Sexual Assault

Rape typology

1. Introduction

In Denmark, Centers for Victims of Sexual Assault (CVSA) provide a 24-hour service, including free forensic examination by a forensic pathologist, emergency contraception, treatment for sexually transmitted diseases, psychological assistance and legal support, irrespective of police involvement^{1,2}

In 2018, the Danish police received 980 reports of attempted rape and rape of women aged 10 years or older.³ It is, however, estimated by The Danish Council for Crime Prevention, that approximately 5400 women are victims of rape or attempted rape on an annual basis.⁴ In Denmark rape in 2018 was defined as sexual intercourse (vaginal, anal or oral) obtained through means of violence, threats, coercion, or if the victim were unable to express non-consent.⁵

The reason why so many women fail to report sexual assault to police is not clear. Several papers have investigated this gap, but many are challenged by possible selection bias.⁶⁻⁹ Not meeting the criteria for a stereotypical rape is mentioned by some women, as a reason for not involving police. This is corroborated by several studies finding that victims of *stranger rape* have a higher reporting rate.^{2,10}

Rape typology is many faceted.¹¹ Some of the widely accepted subdivisions are: typing based on victim-perpetrator relationship, perpetrator motive, degree of pre-crime planning, and type of coercion used.

The *stranger rape*,¹² where victim and perpetrator are completely unknown to each other, is the type of rape best known in the public and is by many perceived as the Archetypical rape^{10,13,14}. The perception that 'genuine' sexual assault as a violent *stranger rape*, is according to rape myth research part of a heteronormative, male dominant, cultural tradition.^{15,16}, and rape myth acceptance in society is a factor in judicial inequality in sexual crimes.¹⁷ A few studies have investigated rape myth acceptance in Denmark¹⁸, and found a significant influence. According to the questionnaire-based surveys by Heinskou et al. (2017)¹⁹ and Boesen Pedersen et al. (2018)²⁰, *stranger rape* is, however, a relatively rare type of rape in Denmark.

Investigation and possible conviction of *stranger rape* cases presents a particular challenge, because the perpetrator is unknown¹⁰, which makes forensic and trace evidence especially important. Since some perpetrators of *stranger rape* are serial offenders, the evidence must be found quickly, and kept in file in order to be able to arrest the perpetrator before he or she can repeat the crime.²¹

As a hypothesis it is assumed that *stranger rape* compared to *other types of rape*,

1. Is a rare type of rape.
2. More frequently occurs in public areas
3. Is reported to the police
 - a. More frequently
 - b. Sooner after the incident
 - c. More frequently directly by the victim alone.
4. More frequently happens with the use of
 - a. Violence, threats of violence, or other types of threats.
5. More frequently shows total or partial correlation at the forensic examination between clinical finding and the description of the incident.
6. More often is planned by the perpetrator.

2. Materials and Method

2.1 Study group

This descriptive cohort study was based on the following inclusion criteria:

Cases involving women, aged 12 or above, who contacted a CVSA in the Region of Southern Denmark and had a forensic examination in the year 2018. Only males were excluded.

The forensic examination was conducted by a trained forensic pathologist who followed a standardized procedure including relevant history and clinical findings.

Subtyping regarding victim/perpetrator relationship was carried out based on the following criteria:

- *Stranger rape* When the victim does not know the perpetrator.
- *Acquaintance rape* When the victim and the perpetrator know each other, but have not had a sexual relationship. For instance, co-workers, classmates, or neighbors.
- *Contact rape* When the victim and the perpetrator have interacted in a romantic way or been

in a situation that could evolve into a sexual relationship. Also known as *date rape*.

- *Partner rape* When the rape is committed by a present or former sexual partner.

Figure 1 is a list of relevant variable definitions.

An attempt was also made to subtype regarding the level of pre-crime planning by the perpetrator using surrogate markers as “use of condom” and “use of weapons or other remedies”. Lastly, subtyping regarding the type and degree of coercion was carried out.

An evaluation of the correlation between physical findings or lack of findings at the forensic examination and the alleged details of the incident was performed. It could be injuries, dirt on clothes etc.

2.2 Statistical analysis

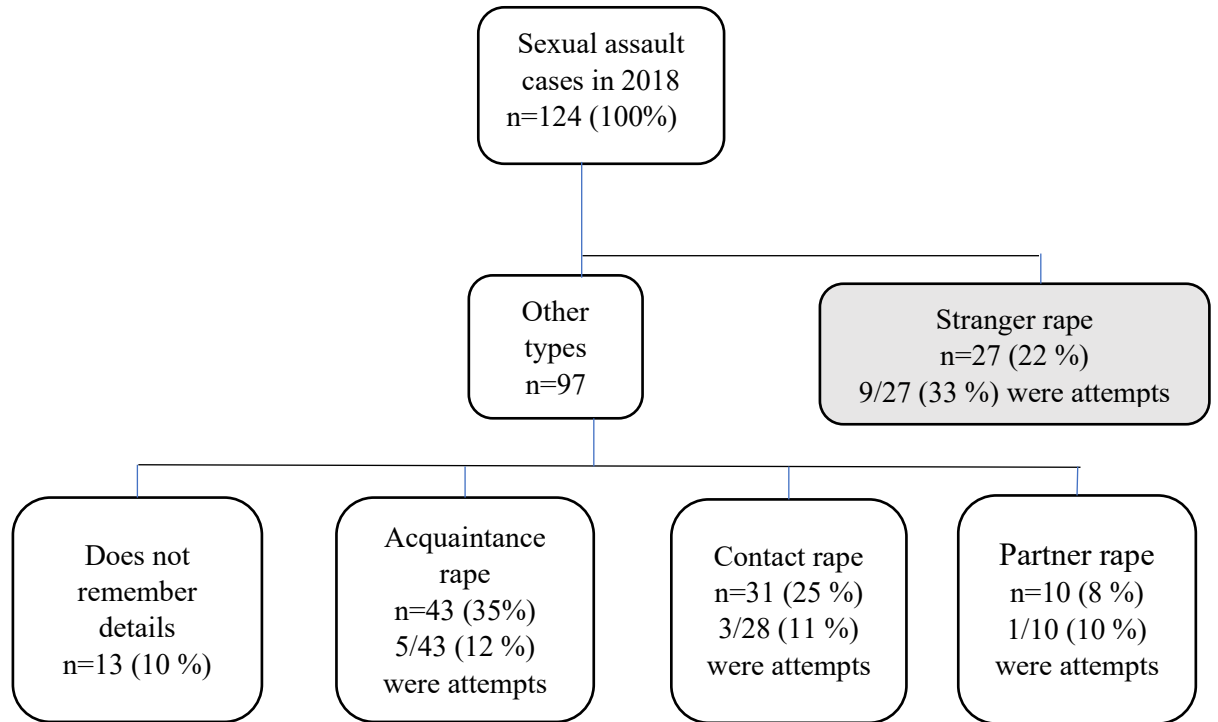
Data was systemized, recorded, and analyzed in “IBM SPSS 25 statistical software”. In this study, descriptive frequency analysis was used to explore possible trends and associations. Pearson’s χ^2 -test and Fisher’s exact-test were used to determine whether there was a significant difference between groups. *Unknown, Irrelevant* was recorded as “Missing data” when calculating p-values, odds ratios [OR] and confidence intervals [CI] and were thus not included in the calculations. Results were considered significant if the p-value was <0.05 . Odds ratios and confidence intervals were only calculated if a significant difference was found.

2.3 Ethical considerations.

This retrospective, single-center, registry study is considered exempt from Institutional Review Board approval. All data in this study are handled respecting individual anonymity and confidentiality.

3. Results

Figure 2



3.1 Number and distribution of rape cases and types

124 cases were included in the study of women aged 12-94 years, mean age 23.3 +/- 11.1 years (SD). Women were Caucasian (including Middle Eastern) 117 of cases, the 7 remaining women were Inuit.

Of the 124 reports, 27 (21.8%) were characterized as *stranger rape*. Figure 2 shows a detailed distribution in number and percentages.

3.2 Location

The majority (85 %) of *stranger rapes* took place in public areas, opposed to 30 % of *other rape types*. The difference was significant (OR 12.1 (p<0.001). Similarly, there was significant difference when comparing *stranger rape* with each of the *other types of rape* individually, except for the cases where the victim does not remember details.

<ul style="list-style-type: none"> • Location 	<ul style="list-style-type: none"> • Categorized as either <i>public</i>, <i>private</i> or <i>unknown</i>. <i>Public</i> includes places such as outdoor areas, public toilets, train stations as well as publicly located tents or cars. <i>Private</i> includes private indoor areas such as residences, either belonging to the involved parties or others
<ul style="list-style-type: none"> • <i>Estimated time between incident and police reporting</i> 	<ul style="list-style-type: none"> • Categorized as either <i>Up to 12 hours after the incident</i> or <i>Over 12 hours after the incident</i>.
<ul style="list-style-type: none"> • <i>Reporting sequence</i> 	<ul style="list-style-type: none"> • Categorized as either <i>Directly</i>, <i>With the participation of others</i> or as <i>Unknown</i>. <i>Directly</i> meaning that the woman reported the incident to the police without consulting another person beforehand.
<ul style="list-style-type: none"> • Use of threats 	<ul style="list-style-type: none"> • Categorized as <i>Threats total</i> and further divided into selected <i>Methods of Threats</i> <ul style="list-style-type: none"> • <i>Verbal threats</i> defined as cases where the woman was verbally coerced into having sex. For example, a husband threatening to leave the marriage, or a perpetrator threatening to expose and/or humiliate the woman in front of family and friends. Verbal threats of violence would also be included in this category as well as in the category <i>threats of violence</i> which include both verbal and nonverbal threats of violence.
<ul style="list-style-type: none"> • <i>Use of violence</i> 	<ul style="list-style-type: none"> • Categorized as <i>Violence total</i> and further divided into selected <i>Methods of violence</i>. <ul style="list-style-type: none"> • The use of violence, beyond what was found necessary to complete the rape is defined as <i>Excessive violence</i>. • <i>Other types of violence</i> included for example cases with biting, hair pulling and throwing objects at the woman.
<ul style="list-style-type: none"> • <i>Correlation between clinical findings and the description of the incident</i> 	<ul style="list-style-type: none"> • Categorized as <i>Yes</i>, <i>No</i> or <i>Partly</i> based on the forensic findings found in the genital and extragenital area and the woman's description of the incident <i>Yes</i>, noted in cases of perfect correlation between description and findings for both genital and extragenital findings. <i>Partial</i>, noted when assessing at least one correlation between description and findings for either genital or extragenital findings. Only lesions and other findings that, according to the physician, could well have arisen in connection with the incident are included in the assessment of a possible correlation. This regardless of whether the findings were characteristic or not.
<ul style="list-style-type: none"> • <i>The perpetrator's degree of planning</i> 	<ul style="list-style-type: none"> • <i>Used condom</i> is categorized as either <i>Yes</i>, <i>No</i> or <i>Irrelevant</i> (No intercourse with penial penetration). • <i>Used weapons or other remedies</i> is categorized as either <i>Yes</i> or <i>No</i>.

The difference maintained significance when excluding attempted rape. (OR 6.6). All cases of *attempted stranger rape* were reported as having occurred in public areas, while all other types of attempted rape were reported solely in private locations.

3.3 Police reporting

Details of the Police reporting is shown in Table 1. The majority (99/124 = 80%) of all cases were reported to the police. *Stranger rapes* were reported to the police in 89 % of the cases, while all *other types of rape* had a slightly lower police reporting rate (77 %). The difference was not significant. The lowest police reporting rate was seen in *partner rape* (70%). Among the rape attempts, *attempted acquaintance rape* was only police reported in 40 % of cases, opposed to *attempted stranger rape* with a reporting rate of 100 % (p=0.027).

In seven out of ten cases (71%) *stranger rapes* were reported to the police within 12 hours, compared to less than half (44 %) of *other types of rape* (OR 3.1, p=0.022) The difference was significant.

Almost half (46 %) of all reports on *stranger rape* were reported directly to the police before talking to other parties about the incident. *Other types of rape* were reported directly in just under a fifth of the cases (18 %). The difference was significant (OR 3.8, p=0.006).

Table 1: Police reporting

Timing of police reporting for *stranger rape* compared with *other types of rape* as well as other types of rape separately. (Chi² and Odds ratio)(incl = including).

	Up to 12 hours (n=50) n (%)	More than 12 hours (n=49) n (%)	P-value	OR (95% CI)
<i>Stranger rape incl. attempts</i>	17 (70.8)	7 (29.2)	-	-
<i>Other types of rape incl. attempts</i>	33 (44.0)	42 (56.0)	0.022	3.1 (1.13-8.43)
Rape between acquaintances incl. attempts	16 (45.7)	19 (54.3)	0.056	
Contact rape incl. attempts	10 (45.5)	12 (54.5)	0.081	
Partner rape incl. attempts	2 (28.6)	5 (71.4)	0.078	
Does not remember the incident	5 (45.5)	6 (54.5)	0.258	

Direct police reporting before the involvement of other parties, like friends/family. *Stranger rape* compared with *other types of rape** as well as other types of rape separately. (Chi² and Odds ratio) (incl = including).

	Direct reporting (n=24) n (%)	With the participation of others (n=72) n (%)	P-value	OR (95% CI)
<i>Stranger rape incl. attempts</i>	11 (45.8)	13 (54.2)	-	-
<i>Other types of rape incl. attempts</i>	13 (18.1)	59 (81.9)	0.006	3.8 (1.41-10.47)
Rape between acquaintances incl. attempts	3 (8.6)	30 (85.7)	0.001	8.5 (2.02-35.46)
Contact rape incl. attempts	4 (18.2)	18 (81.8)	0.046	3.8 (0.99-14.66)
Partner rape incl. attempts	5 (71.4)	2 (28.6)	0.394	
Does not remember the incident	1 (9.1)	9 (81.8)	0.061	

*Out of the total 99 cases that were reported to the police, 3 cases were stated as Unknown, as it was not clear from the available material how the rape was reported to the police. These 3 cases were not included in the calculations.

3.4 Use of threats and violence

Details of the use of threats and violence is shown in Table 2. The use of threats and violence is defined in Figure 1. A significantly larger percentage (33 %) of those examined for *stranger rape* compared to those for *other types of rape* (12 %) stated that they were exposed to threats (OR 3.5, p=0.01). When subdivided into selected types of threat, it also showed a significant difference in *verbal threats* (OR 3.4 p=0.022). The only type of threat that was used to a greater extent in *other types of rape*, than *stranger rape* was *other types of threats*.

There was a significant difference in the use of violence in general, between *stranger rape* and *other types of rape* (OR 3.3, p=0.015).

3.5 Correlation between clinical findings and the description of the incident

These correlations are specified in Table 3 and defined in Figure 1. In all cases of *stranger rape*, there was either full or partial correlation between the forensic physicians' clinical findings and the woman's description of the incident. In the case of *other types of rape* there was correlation in 83 % of cases. The difference was significant.

Table 2: Use of threats and violence in *stranger rape* compared to *other types of rape* as well as other types of rape separately. (Chi² and Odds ratio) (incl = including).

	<i>Stranger rape</i> incl. attempts	<i>Other types of rape</i> incl. attempts	P-value	OR (95% CI)	Tendency ↑↓*
	n (%)	n (%)			
Threats total	9 (33.3)	12 (12.4)	0.010	3.5 (1.29-9.75)	↑↑↑
Threats with weapon	3 (11.1)	2 (2.1)	0.990		↑
Threats of physical violence	2 (7.4)	2 (2.1)	0.164		↑
Verbal threats	7 (25.9)	9 (9.3)	0.022	3.4 (1.13-10.40)	↑↑
Other types of threats	0 (0.0)	5 (5.2)	0.256		↓
Violence total	21 (77.8)	50 (51.5)	0.015	3.3 (1.21-8.95)	↑↑↑
Restrained	19 (70.4)	35 (36.1)	0.001	4.2 (1.65-10.70)	↑↑↑
Held down	10 (37.0)	28 (28.9)	0.415		↑
Pushed/Pulled	14 (51.9)	20 (20.6)	0.001	4.2 (1.67-10.30)	↑↑↑
Kicked	3 (11.1)	3 (3.1)	0.086		↑
Tied	1 (3.7)	3 (3.1)	0.874		↑
Struck with a flat hand	1 (3.7)	4 (4.1)	0.922		↓
Struck with a clenched hand	1 (3.7)	4 (4.1)	0.922		↓
Attempted strangulation	3 (11.1)	12 (12.4)	0.859		↓
Excessive violence	3 (11.1)	9 (9.3)	0.776		↑
Other types of violence	5 (18.5)	5 (5.2)	0.024	4.2 (1.10-15.93)	↑↑

*Percent difference <10% ↑/↓, 10-20% ↑↑, >20% ↑↑↑.

Table 3: Correlation between clinical findings and description of the incident in *stranger rape* compared to *other types of rape* as well as other types of rape separately. (Chi² and Odds ratio) (incl = including).

	Total/Partial correlation n (%)	No correlation n (%)	P-value	OR (95% CI)
<i>Stranger rape incl. attempts</i>	27 (100)	0 (0.0)	-	-
<i>Other types of rape incl. attempts</i>	80 (82.5)	17 (17.5)	0.022	-
Rape between acquaintances incl. attempts	35 (81.4)	8 (18.6)	0.020	-
Contact rape incl. attempts	28 (90.3)	3 (9.7)	0.240	
Partner rape incl. attempts	9 (90.0)	1 (10.0)	0.270	
Does not remember the incident	8 (61.5)	5 (38.5)	0.002	-

3.6 The perpetrator's degree of planning

The perpetrator's degree of planning is specified in Table 4 and defined in Figure 1. In general, for all types of rape (excl. attempts) there was a very low percentage of condom use descriptions (9.2%). There were no descriptions of condom use among *stranger rape* and for *other types of rape*, condom use was reported in 7 % of all cases. These were all found among *rape between acquaintances* (5 %) and *contact rapes* (2 %).

In 2.4 % of *stranger rapes*, the use of weapons or other remedies was stated to promote the perpetrator's purpose, while the percentage among *other types of rape* was almost the double of that (4 %).

Table 4: The perpetrator's degree of planning, visualized through the use of condoms and/or weapons. In *stranger rape* compared to *other types of rape* as well as other types of rape separately. (Chi² and Odds ratio)(incl.=including).

Use of condom at *stranger rape* compared to *other types of rape*

	Yes n(%)	No n(%)	Unknown* n(%)	p-value
<i>Stranger rape</i>	0 (0.0)	12 (9.7)	6 (4.8)	-
<i>Other types of rape</i>	8 (6.5)	47 (37.9)	20 (16.1)	0.431
Rape between acquaintances	6 (4.8)	22 (17.7)	10 (8.1)	0.268
Contact rape	2 (1.6)	18 (14.5)	8 (6.5)	0.467
Partner rape	0 (0.0)	7 (5.6)	2 (1.6)	-

Use of weapons or other remedies for *stranger rape* compared to *other types of rape*

<i>Stranger rape incl. Attempts</i>	3 (2.4)	22 (17.7)	2 (1.6)	-
<i>Other rape types incl. Attempts</i>	5 (4.0)	69 (55.6)	23 (18.5)	0.406
Rape between acquaintances incl. Attempts	2 (1.6)	34 (79.1)	7 (5.6)	0.392
Contact rape incl. Attempts	2 (1.6)	25 (20.2)	4 (3.2)	0.662
Partner rare incl. Attempts	1 (0.8)	9 (7.3)	0 (0.0)	1.000
Does not remember the incident	0 (0.0)	1 (0.8)	12 (9.7)	1.000

*The total 'Unknown' includes 6 cases where there was no penile penetration and therefore noted as irrelevant and not included in the calculations.

4. Discussion

While many papers have different rape typologies and their characteristics as supporting data, the present study is the first study to focus strictly on *stranger rape* in a European context. Our results add to the current knowledge and literature on sexual assault.

Most of our presumptions regarding *stranger rape* were confirmed, the cases being reported sooner and more often directly to the police. We found that the use of violence and threats were more prominent in *stranger rapes*, and that the findings made by the forensic pathologist were in complete accordance with the information regarding the incident. We could not, however, show a higher degree of planning by using the surrogate markers *use of condom* and/or *use of weapons or other remedies*.

Of the total 124 cases, 22 % was described as *stranger rape*. A similar percentage was found in other comparable, retrospective cohort studies^{2, 10, 22, 23} and in Heinskou (2017) questionnaire based-survey¹⁹, but it

is lower than the 30% found in Boesen Pedersen (2018) questionnaire-based survey.⁴ Other retrospective cohort studies reports a higher prevalence of stranger rapes^{6, 24-26} Overall, the cohort studies vary in time and setting. Cultural differences may explain the differences in these studies, as they only represent cases known to authorities and therefore are prone to selection bias.

However, *stranger rape* was not the least prevalent type of rape in the present study, *partner rape* (8 %) was. This is noticeably lower than in the Danish questionnaire-based studies: the 38% found in Boesen Pedersen et al.(2018)⁴ and the 32 % (adults only) found by Heinskou et al. (2017)¹⁹. This indicates that the obstacles to be overcome when contacting authorities regarding a sexual assault committed by a partner can be (too) high.

In this study, the percentage of cases reported to the police was 80 % which is in accordance with comparable studies^{2, 10, 23, 25}

The majority (89 %) of the cases of *stranger rape* were reported to the police. However, the reporting rate of *stranger rape* in this study was not significantly different from the rate among *other types of rape*. This is probably due to selection bias. Only cases seen at a CVSA are included in the present study. When comparing to distribution in questionnaire-based studies, the data suggest that the dark figure for *stranger rape* is smaller than for *other types of rape*.

Among police reported incidents, the *stranger rape* victims filed a police report significantly earlier than victims of *other types of rape*, with 71 % vs 44 % reporting < 12 hours after the incident. In addition, almost half (46 %) of the stranger rapes were reported directly to the police which is a significantly more than *other types of rape*, with just 18 % reported directly.

The above two findings are, to our knowledge, not published before, and indicates that women subjected to *stranger rape* are not only more likely to report to the police, but also to do so sooner and more often directly, than women exposed to one of the *other types of rape*, in which there is a relation between the offender and victim. A likely reason for this direct police-reporting behavior, is the notion that the police adhere to rape myth beliefs, and that the victim in *stranger rape* cases will be believed. Recent research suggests, that rape myth acceptance is a declining factor in police investigations, as shown in London by²⁷ Murphy et al. and in Denmark by Hansen et al. (2019)²⁸ It is, however, the beliefs of the victim herself that determines, whether

she thinks she will be believed. Even more likely, however, is the fact that in *stranger rape* cases, the perpetrator does not belong to the social circle of the victim, and therefore police reporting will not have as comprehensive consequences, as reporting someone you know. In other words, less consideration is needed, and the need for advice from relatives or authorities is less prominent. This is in accordance with previous studies^{23, 29}. In a recent study, Knoth et al.³⁰ showed that victims advisories had a large influence on police reporting behavior, especially in acquaintance rapes, underlining the fact that things gets complicated, if a perpetrator in some way belongs to the victim's social circle. When comparing the woman's description of the incident with the clinical findings, it was assessed that there was either complete or partial correlation in all cases of *stranger rape*, and thus no cases where there was no correlation at all. This was significantly different from the frequency of correlation in other rape cases, as descriptions of a *stranger rape* more often was consistent with the clinical findings than it was the case with *other types of rape* .

This may indicate that women who contacts the CVSA in *stranger rape* cases do not circumvent the truth to the same extent as others in relation to the description of the incident. This could support the notion that victims tend to expect the police to believe in rape myths, and sometimes feel exaggeration is helpful. The concept of false allegations is well described in the literature, and it is our experience as field workers, that false allegations are seen in both *stranger rape* and *acquaintance rape* cases in non-negligible numbers. It has not been possible to control for false allegations in the present study.

The study shows a clear correlation between the type of rape and the location of the incident. 85 % of *stranger rapes* occurred in a public area, which is significantly higher from *other types of rape*. Thus, the hypothesis that *stranger rape* occurs more often in public areas than *other types of rape* can be supported in this study and coincide with the results in Larsen et. al.(2015)², Stermac et al. (1995)³¹ and Logan et al. (2007)³², but not in accordance with Jones et al. (2004)³³. The discrepancy is most likely due to differences in the definitions of *stranger rape*, Jones et al. (2004), includes date rapes in the category.

All attempted *stranger rapes* were also described as having occurred in a public area. This, in contrast to *other types of rape*, in which all attempted rapes occurred at private locations. In addition, there were no *stranger rapes* occurring at private locations that were not completed. These factors may indicate, that the

likelihood of avoiding completion of *any rape* is greater when the assault occurs in a public area, than when the assault occurs at a private location.

We found a significantly higher frequency of threats, especially verbal threats in cases of *stranger rape* compared to *other types of rape*, as well as use of violence in the form of *restrained* and *pushed/pulled*. These findings are in accordance with our hypothesis, and a previous study³³. The findings are, however, contrasted in other studies^{26,34}, like the prospective Paris study by Seyller et al. (2016)²⁶ who found that a significantly larger proportion of victims from ‘intimate partner sexual assault’, experienced threats and violent assault.

We used the variables *use of condoms* and *use of weapons or other remedies* as proxy-indicators for the degree of planning¹¹, however numbers were small for both variables. In case of condom use, many victims probably do not notice, and in some cases penile penetration is not a part of the rape. The percentage of cases with *use of weapons or other remedies* was lower among *stranger rape* cases compared to *other types of rape, including attempts*, but the difference was not significant and compared individually, *stranger rape* had a higher percentage of *use of weapons or other remedies* than all the other rape types, although no significant difference was found. Thus, the hypothesis that perpetrators of *stranger rape* more often plan the assault than perpetrators of *other types of rape* cannot be supported based on the material in this study.

Our study population is a complete sample of female victims of sexual assault seen by a small team of forensic pathologists in the Region of Southern Denmark in the year 2018. This setup makes the relatively small dataset robust.

However, the perfect sexual assault dataset is unavailable. This is partly because of a (probably) large group of victims out of reach for researchers and authorities alike, and partly because of questionable data. False allegations, omissions or wrongly interpreted information are not uncommon in the stressful scenarios of sexual assault interviews. The knack of sexual assault research (as with all research) is to use data with caution. The present study reflects reality, the cases that are seen in our local CVSA. When comparing data to

questionnaire-based results, one can get a small, but valuable insight in the character of the cases that does not reach authorities.

5. Conclusion

We found that *stranger rapes* were indeed outdoor occurrences that involved more violence or threats than *other types of rape*. We found that *stranger rape* cases were reported sooner and more often directly by the victim herself compared to *other types of rape*. This has not been previously demonstrated.

In rape myth research, *stranger rape* is perceived as the stereotypical, credible type of sexual assault. We found that *stranger rape* did indeed differ from other types of rape in many respects, most of which are in accordance with theory of rape myths.

Funding:

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflicts of interest

There are no conflicts of interest.

References

1. Odense Universitetshospital. Center for Voldtægtsofre OUH Odense Universitetshospital2019 [updated 12 april 2019; cited 2019 27 maj]. Available from: <http://www.ouh.dk/wm122842>.
2. Larsen ML, Hilden M, Lidegaard O. Sexual assault: a descriptive study of 2500 female victims over a 10-year period. BJOG. 2015 Mar;122(4):577-84. PubMed PMID: 25315463. Epub 2014/10/16.
3. Danmarks Statistik. Statistikbanken - gratis statistik2007.
4. Pedersen A-JB, Kyvsgaard B, Balvig F. Udsathed for vold og andre former for kriminalitet. Det Kriminalpræventive Råd (Digitalt): 2018 December. Report No.: ISSN 2245-8425.
5. Justice DMO. www.retsinformation.dk 2021 [cited 2021].

6. Jones JS, Alexander C, Wynn BN, Rossman L, Dunnuck C. Why women don't report sexual assault to the police: the influence of psychosocial variables and traumatic injury. *J Emerg Med.* 2009 May;36(4):417-24. PubMed PMID: 18462905. Epub 2008/05/09. eng.
7. Ceelen M, Dorn T, van Huis FS, Reijnders UJL. Characteristics and Post-Decision Attitudes of Non-Reporting Sexual Violence Victims. *Journal of Interpersonal Violence.* 2019;34(9):1961-77.
8. Wolitzky-Taylor KB, Resnick HS, McCauley JL, Amstadter AB, Kilpatrick DG, Ruggiero KJ. Is reporting of rape on the rise? A comparison of women with reported versus unreported rape experiences in the National Women's Study-Replication. *J Interpers Violence.* 2011 Mar;26(4):807-32. PubMed PMID: 20522886. Epub 2010/06/05. eng.
9. Boateng FD, Lee HD. Willingness to Report Sexual Offenses to the Police in Ghana. *Victims and Offenders.* 2014;9(4):436-54.
10. Rohde MC, Charles AV, Banner J, Brink O. Rape and attempted rape in Aarhus County, Denmark Police reported and unreported cases. *Forensic Sci Med Pathol.* 2006 Mar;2(1):33-8. PubMed PMID: 25868502. Epub 2006/03/01.
11. Douglas J, Burgess A, Burgess AW, Ressler RK. *Crime Classification Manual: A Standard System for Investigating and Classifying Violent Crime.* 3. Aufl. ed. New York: Wiley; 2013.
12. Astrup BS. Kapitel: Voldtægt. *Retsmedicin.* 4 ed: FADL; Endnu ikke udgivet.
13. Faergemann C, Lauritsen JM, Brink O, Skov O. [Development in violence in Odense City from 1991-2002]. *UgeskrLaeger.* 2007;169(26):2532-5.
14. Faergemann C, Lauritsen JM, Brink O, Stovring H. The epidemiology of repeat contacts with an Emergency Department or an Institute of Forensic Medicine due to violent victimization in a Danish urban population. *JForensic LegMed.* 2007;14(6):333-9.
15. Frese B, Moya M, Megías JL. Social perception of rape: how rape myth acceptance modulates the influence of situational factors. *J Interpers Violence.* 2004 Feb;19(2):143-61. PubMed PMID: 15005999. Epub 2004/03/10. eng.
16. Brownmiller S. *Against our will: Men, women and rape.* London U6 Secker and Warburg; 1975.
17. Fansher AK, Zedaker SB. The Relationship Between Rape Myth Acceptance and Sexual Behaviors. *J Interpers Violence.* 2020 May 13;886260520916831. PubMed PMID: 32401140. Epub 2020/05/14. eng.
18. Nielsen LH, Hansen M, Ingemann-Hansen O. Predicting charges and convictions for rape suspects in Denmark: characteristics associated with the notion of the 'credible criminal'. *Journal of Scandinavian Studies in Criminology and Crime Prevention.* 2018;19(2):136-51.
19. Heinskou MB, Schierff LM, Ejbye-Ernst P, Friis C, B., Liebst LS. *Seksuelle Krænkelser. Det Kriminal Præventive Råd (Digitalt): 2017 Oktober. Report No.: DKR-nr. 16-221-0088.*
20. Boesen Pedersen A-J, Kyvsgaard B, Balvig F. *Udsathed for vold og andre former for kriminalitet. Offerundersøgelserne 2005-2018. Hovedtal*
Copenhagen: 2019 Contract No.: 978-87-93469-32-7.
21. Corovic J, Christianson SA, Bergman LR. From crime scene actions in stranger rape to prediction of rapist type: single-victim or serial rapist? *Behav Sci Law.* 2012 Nov-Dec;30(6):764-81. PubMed PMID: 22829437. Epub 2012/07/26.
22. Kjaerulff M, Bonde U, Astrup BS. The significance of the forensic clinical examination on the judicial assessment of rape complaints - developments and trends. *Forensic Sci Int.* 2019 Apr;297:90-9. PubMed PMID: 30797159. Epub 2019/02/24.
23. Schei B, Sidenius K, Lundvall L, Ottesen GL. Adult victims of sexual assault: acute medical response and police reporting among women consulting a center for victims of sexual assault. *Acta Obstet Gynecol Scand.* 2003 Aug;82(8):750-5. PubMed PMID: 12848647. Epub 2003/07/10. eng.

24. Fryszer LA, Hoffmann-Walbeck H, Etzold S, Mocker M, Sehoul J, David M. Sexually assaulted women: Results of a retrospective analysis of 850 women in Germany. *Eur J Obstet Gynecol Reprod Biol.* 2020 Jul;250:117-23. PubMed PMID: WOS:000573025800020. English.
25. Gisladdottir A, Gudmundsdottir B, Gudmundsdottir R, Jonsdottir E, Gudjonsdottir GR, Kristjansson M, et al. Increased attendance rates and altered characteristics of sexual violence. *Acta Obstet Gynecol Scand.* 2012 Jan;91(1):134-42. PubMed PMID: 21943075. Epub 2011/09/29. eng.
26. Seyller M, Denis C, Dang C, Boraud C, Lepresle A, Lefèvre T, et al. Intimate Partner Sexual Assault: Traumatic Injuries, Psychological Symptoms, and Perceived Social Reactions. *Obstet Gynecol.* 2016 Mar;127(3):516-26. PubMed PMID: 26855090. Epub 2016/02/09. eng.
27. Murphy A, Hine B, Yesberg JA, Wunsch D, Charleton B. Lessons from London: a contemporary examination of the factors affecting attrition among rape complaints. *Psychology Crime & Law.* PubMed PMID: WOS:000614490400001.
28. Hansen NB, Hansen M, Campbell R, Elklit A, Hansen OI, Bramsen RH. Are rape cases closed because of rape stereotypes? Results from a Danish police district. *Nordic Psychology.* 2019 Jan;71(1):51-61. PubMed PMID: WOS:000463776600005.
29. McCall-Hosenfeld JS, Freund KM, Liebschutz JM. Factors associated with sexual assault and time to presentation. *Prev Med.* 2009 Jun;48(6):593-5. PubMed PMID: 19341766. Pubmed Central PMCID: 2701303. Epub 2009/04/04. eng.
30. Harrison JM, Murphy SM. A care package for managing female sexual assault in genitourinary medicine. *Int J STD AIDS.* 1999 May;10(5):283-9. PubMed PMID: 10361915. Epub 1999/06/11. eng.
31. Stermac LE, Du Mont JA, Kalemba V. Comparison of sexual assaults by strangers and known assailants in an urban population of women. *Cmaj.* 1995 Oct 15;153(8):1089-94. PubMed PMID: 7553516. Pubmed Central PMCID: PMC1487328. Epub 1995/10/15. eng.
32. Logan TK, Cole J, Capillo A. Differential characteristics of intimate partner, acquaintance, and stranger rape survivors examined by a Sexual Assault Nurse Examiner (SANE). *J Interpers Violence.* 2007 Aug;22(8):1066-76. PubMed PMID: 17709810. Epub 2007/08/22. eng.
33. Jones JS, Wynn BN, Kroeze B, Dunnuck C, Rossman L. Comparison of sexual assaults by strangers versus known assailants in a community-based population. *Am J Emerg Med.* 2004 Oct;22(6):454-9. PubMed PMID: 15520939. Epub 2004/11/03. eng.
34. Moller AS, Backstrom T, Sondergaard HP, Helstrom L. Patterns of Injury and Reported Violence Depending on Relationship to Assailant in Female Swedish Sexual Assault Victims. *J Interpers Violence.* 2012 May 14. PubMed PMID: 22585117. Epub 2012/05/16. Eng.