Knowing the unseen and seeing the unknown

Health consequences of sexual abuse - a gynaecologic perspective

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Cover illustration: Leonardo da Vinci (1452-1519) *Study for the Head of Leda*

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Preface and acknowledgments

The present thesis consists of a review and three papers, and is based on two studies. One is a register-based study carried out during a three-year assignment as a research fellow at The Centre for Victims of Sexual Assault at Copenhagen University Hospital Rigshospitalet in Denmark.
The other study is a Nordic questionnaire study (The KK-NorVold Study) on abuse among patients visiting gynaecological departments in Denmark, Finland, Iceland, Norway and Sweden. A Nordic research network entitled NorVold conducted the study. The data collection was done during my employment as a registrar at the Department of Obstetrics and Gynaecology, Glostrup County Hospital, and was completed during my research fellowship at the Centre for Victims of Sexual Assault.

Supervisors:
Professor Berit Schei, Jens Langhoff-Roos PhD, Katrine Sidenius MD

Data presented in the following papers (copies included):

I. Hilden M, Schei B, Sidenius K. Genitoanal injury in adult female victims of sexual assault. Forensic Science International, in press.

II. Hilden M, Sidenius K, Langhoff-Roos J, Wijma B, Schei B. Women's experiences of the gynaecologic examination – factors associated with discomfort. Acta Obstet Gynecol Scand, 2003; 82(11):1030-36.

III. Hilden M, Schei B, Swahnberg K, Halmesmäki E et al. A History of sexual abuse and health: A Nordic multicentre study. BJOG, 2004; 111(10):1121-7.

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Also special thanks to the doctors, nurses and secretaries at Glostrup who assisted in the inclusion of patients to the Nordic KK-NorVold Study, and to all the members of the Nordic KK-NorVold research group.
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And finally I want to apologize to my daughter, *Cirkeline*, for the late hours spend at work – as she said: " Mama, I don't want to become a doctor". I asked: "Why not?" She replied cleverly: "My child don't want me to, because otherwise I would be working all the time" (Cirkeline, 6 years old).

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1. Summaries

1.1 Summary in English

The PhD-thesis consists of three original papers and one review. The overall aims of this study were to provide knowledge of the health consequences of sexual abuse and to add to the understanding of physical findings in a legal perspective. We wanted to assess the impact of factors related to the assault as to the risk of inflicting genitoanal injury in women examined shortly after an acute assault. In women with a past history of sexual abuse the aim was to assess associations between sexual abuse history and later poor health. We specifically wanted to determine if characteristics such as invasiveness, recentness, age, additional physical or emotional abuse, and relation to the abuser determines the impact the assault has on health. Finally, we sought to describe women's experiences with the gynaecological examination, both in women with and without a history of sexual abuse.

The thesis present results from two different studies; one in sexually assaulted women examined at The Centre for Victims of Sexual Assault and one in gynaecological patients visiting gynaecological departments in five Nordic countries (The KK-NorVold Study).

Data on genitoanal injury in 249 sexually assaulted women were reviewed. Genitoanal injury was associated with sexual assault on women without prior sexual intercourse experience and in women exposed to anal penetration. Genitoanal injury was not associated with the severity of the assault.

In 3,539 Nordic gynaecological patients we found that a sexual abuse history, with prevalence of 21 %, was associated to chronic pelvic pain and an overall poor general health status. Several specific characteristics of the abuse seemed to influence the negative effect on health.

The gynaecological examination was generally well tolerated. However, we found that severe discomfort during the examination was associated with several specific factors such as young age, a negative emotional contact with the gynaecologist, and a history of sexual abuse.

In conclusion, the results confirm that sexual abuse victimization affects health both in the short term and in the long term.

Gynaecologists must recognize the importance of this issue, and consider incorporating questions on abuse when taking a history in selected, if not all, patients.

1.2 Summary in Danish

Ph.d.-afhandlingen inkluderer tre originale arbejder samt en oversigt. Det overordnede formål var at opnå indsigt i de helbredsmæssige konsekvenser af seksuelle overgreb, samt at diskutere fysiske fund i relation til retslige forhold. Blandt kvinder undersøgt umiddelbart efter et overgreb, ønskede vi at vurdere sammenhængen mellem forskellige forhold vedrørende det seksuelle overgreb og risikoen for at pådrage sig anogenitale skader. Blandt gynækologiske patienter med et seksuelt overgreb i anamnesen, var formålet at vurdere en eventuel sammenhæng mellem det seksuelle overgreb og nuværende helbred. Vi ønskede at klarlægge om forhold vedrørende overgrebet, som fx hvorvidt indtrængning havde fundet sted, om tid fra overgreb til deltagelse i undersøgelsen, alder ved overgrebet, om ofret kendte gerningsmanden, og om der havde været yderligere fysisk eller psykisk vold, influerede på i hvilken grad overgrebet var associeret med dårligt helbred. Endelig ønskede vi at undersøge gynækologiske patienters oplevelser af den gynækologiske undersøgelse.

Afhandlingen indeholder resultater fra to forskellige studier; et studie blandt kvinder undersøgt på Center for Voldtægtsofre og et andet studie blandt gynækologiske patienter i fem nordiske lande (The NorVold KK-Study).

Oplysninger fra 249 sager vedrørende seksuelle overgreb blev gennemgået. Anogenitale skader var associeret til overgreb på kvinder der ikke tidligere havde haft samleje samt til overgreb som involverede anal indtrængning. Forekomsten af skader var ikke associeret til alvorligheden af overgrebet.

Blandt 3.539 nordiske, gynækologiske patienter havde 21 % været udsat for et seksuelt overgreb på et tidspunkt i deres liv. Kvinder der havde været udsat for et seksuelt overgreb rapporterede hyppigere kroniske underlivssmerter samt generelt dårligere helbred, end kvinder der ikke havde været udsat for at seksuelt overgreb. Flere specifikke forhold vedrørende det seksuelle overgreb viste sig at være særligt associeret med dårligt helbred.

De fleste gynækologiske patienter oplevede kun lidt ubehag under den gynækologiske undersøgelse. En lille andel beskrev kraftigt ubehag, hvilket var associeret til bl.a. ung alder, negativ kontakt med gynækologen, og tidligere seksuelle overgreb. Resultaterne konfirmerer at seksuelle overgreb har både akutte og kroniske helbredskonsekvenser. Det er vigtigt at gynækologer er opmærksomme på denne sammenhæng, og der bør ved anamneseoptagelse spørges til tidligere overgreb, om ikke blandt alle patienter, da blandt udvalgte patientkategorier.

2. Introduction

2.1 Background

During the last three decades there has been an increasing attention towards sexual and physical violence against women (1-5). Worldwide, in almost any society, this is a serious problem affecting not only the integrity of women both also their health. Traditionally the expression "sexual abuse" has been used in connection with sexual exploitation of children, and often implies more than one incident, whereas "sexual assault" indicates a single episode often identical to the term "rape". In the present context sexual abuse is used as an overall term including all kinds of sex crimes.

When is a sexual encounter considered abusive? It can be viewed as any unwanted sexual act posed upon a person. However, cultural, individual and legal aspects influence how we interpret a given situation: two persons experiencing the same event might not agree on whether to consider it as abuse or not. In some societies the age difference between victim and perpetrator is important in legal terms, and in other countries sexual coercion within marriage is not considered abuse. Besides, sexually abused women constitute a heterogeneous group because of differences e.g. as to their age when the abuse occurred, as to whether it occurred once or more than once, as to the duration of abuse, and as to the type of abuse (contact versus non-contact).

The prevalence of sexual abuse of women has been estimated in several studies, both in clinical samples and in samples from the general population. Most of the studies have focused only on child sexual abuse and have reported prevalence in the general population ranging from 7-27 % (6-15). Studies measuring the lifetime prevalence of sexual abuse have not recorded higher frequencies, 5,1-29 % (16-19). In clinical studies from gynaecologic, gastroenteric, psychiatric and emergency departments, and from general practice the prevalence has been somewhat higher, with 13.7 %-39 % of all women reporting child sexual abuse (20-24) or with 15.2-41.4 % reporting any lifetime sexual abuse (25-27). This large variation in results are explained by non-uniform definitions of sexual abuse and by different scientific methods used to collect the data.

2.2 Physical health consequences of sexual abuse

A sexual assault causes physical injury and pain due to violence and coercion, which is easily comprehended as an acute bodily reaction to an acute bodily harm. However, we believe that, for some victims, symptoms may persist or develop years after the abuse has taken place. It has been suggested that there is an increased use of health care services (28-31) and longer periods of absence from work due to sickness (32) among women with a history of sexual abuse than among women without such a history.
In the early days of research in this field, researchers primarily focused on the long-term *mental* health problems following abuse. A variety of psychiatric conditions have been clinically associated particularly with child sexual abuse: depression; borderline personality disorder; somatisation disorder; dissociative identity disorders, anxiety, anorexia/bulimia nervosa, and in particular post traumatic stress disorder, PTSD (33-36). Only recently the focus has also included long-term *physical* health consequences. A distinct separation of mental health problems from physical health problems is of course highly academic as it is very likely that both the psyche and the soma are involved in many health related problems. But it is a fact that even though many of the symptoms have a prevailing psychological component patients seek help in the *somatic* health care system.

Immediate physical health consequences

The *immediate physical* health consequences in terms of bodily injuries are no doubt dependent on the degree of force used by the assailant and the degree of resistance made by the victim. In fig.1 an overview of the literature from 1985 until today on immediate physical injuries after sexual assault is given. The percentage of non-genital injury seems to be fairly stable. Approximately half of the victims had one or more types of physical injury. Genitoanal injuries were documented in 20-50 % of the victims. This variation is probably partly explained by the use of different methods (colposcope or dye) used to visualise the injuries, but the frequency of genitoanal injuries documented is also dependent on the type of lesions included (swelling, redness, tears). Very few of the studies give information on whether anal injury was registered or even if it was included in the percentage with genital injury. In the annual rapport, 2002, from the

Fig.1. Overview of studies from 1985 until today on sexual assault characteristics, including the immediate physical injuries. Studies are listed chronologically with the most recent first. The different expressions from the papers are used.

Study	N sex	Police involvement	Violence reported	Non-genital injury	Genitoanal injury
Grossin et al 2003 (37)3)	382 F/M	Police reported	"Blows most common" Serious injury req. hospitalisation > 8 days in 5 cases. 13 % threatened with weapon	"General body trauma" 39.1 % (exam. <72 hours after assault). Most commonly bruises, scratches, abrasions, cuts, bites	35.7 % (< 72h) 6.3 % (> 72h) (hymeneal clefts 25.5 %, anal 11.8 %, gross visualization)
Schei et al 2003 (38)4)	156 F	Police/non-police reported cases	Restrained 25.6 % "Severe violence" 30.8 %	60.3 % any (swellings, bruises, abrasions, lacerations, fractures)	19.2 % any (anal lesions included, otherwise not specified, gross visualisation)
McGregor et al 2002 (39)5)	462 F/M	Police reported	No information	65.2 % "had bruises" 18.6 %/ 1.5 % lacerations/fractures	41.8 % (anal lesions included, not specified, in 10 % a colposcope were used)
Eckert et al 2002 (40)6)	819 F	Police reported (?)	Hit 22.5 % Weapon use 20 %	52 % "had body trauma" (not specified)	26 % (not specified, gross visualization)
Riggs et al 2000 (41)7)	1076 F/M	Police reported	Physical force 79.6 % (e.g. hit, bit, kicked, restrained). Weapon use 27.1 %	64 % "general body trauma" (lacerations, abrasions, contusions)	52.7 % (external genital, hymeneal, vaginal, rectal or cervical trauma) (F) (gross visualization)
McGregor 1999 (42)8)	95 F/M	Police reported	17 % Weapon use	59 % "moderate injury"(e.g. bruises) 3 % "severe injury"(e.g. strangul.)	24 % (not specified, anal lesions included, colposcope used)
Holmes et al 1998 (43)9)	389 F	Police reported	Physical force 76.6 % Weapon use 26.7 %	39.6 % „non-genital trauma" (not specified)	17 % (gross visualization?)
Slaughter et al 1996 (44)0)	311 F	Police reported	No information	57 % "non-genital trauma" (not specified)	68 % (tears, ecchymoses, abrasions, redness, swelling, colposcope used, anal lesions included)
Schei et al 1995 (45)1)	141 F/M	Police/non-police reported	"Severe physical violence" 24 % (hit 16 %, attempt. strangulation 4 %) Restrained 29 %,	35 % (superficial wounds/contusions 29 %)	13 % (tears/wounds (n=10), swelling/redness (n=8), gross visualization)
Cartwright et al 1987 (46)2)	405 F	Police reported	No information	40 % (not specified)	16 % (vulvar contusions and hymeneal and vaginal lacerations, gross visualization)

Centre for Victims of Sexual Assault in Copenhagen 77 % of the female victims reported some kind of physical violence, most often restraint. The number includes 8 % who reported attempted strangulation. In approximately 50 % of the victims non-genital injury was documented (47). Sexually transmitted diseases (STD) and unwanted pregnancies are sometimes the result of sexual abuse. The reported sexual assault-related pregnancy rate ranges from 1-5 % and outside the Nordic countries gonorrhoea and chlamydia are reported in about 5 % of the female sexual assault population (48;49).

Long-term physical health consequences

It has been suggested that serious acute injury increases the risk of developing long-term health problems, especially pain (50).

A number of medical conditions have been identified as being associated with sexual abuse. These include gastrointestinal disorders, gynaecologic complaints, neurological conditions, and many of "the new syndromes" such as chronic fatigue and fibromyalgia (7;51-67).

In fig.2 extracts of the most important studies on long-term physical health consequences of sexual abuse within the last 20 years are listed. The dominant symptom is pain such as; stomach pain, pelvic pain, chest pain, back pain, headache, dyspareunia, and muscular pain. Some of these studies included only selected health variables in their inquiries, e.g. gastro-intestinal and gynaecologic, while others included a wider range of medical problems. An association between chronic pelvic pain and sexual abuse has been found in several studies (68-70), however, two studies found no such association (71;72). In the latter this was partly explained by different methods and definitions used. A study on 826 women that were 50 years or older reported that a history of sexual abuse was associated with an increased frequency of breast cancer and arthritis (73). Thus the spectrum of health problems associated with sexual victimisation is wide.

The majority are cross-sectional studies; hence causal relations cannot be established. Moreover, the order of events is not always clear, that is whether the health problems were present before the abuse or whether they developed after the abusive event. But it is assumed that the symptoms develop or persist for several years after the abuse. Because of the delicacy of the matter and due to ethical concerns it is hardly possible to

make prospective studies, where victims seen at a centre, are contacted having their health status evaluated repeatedly several years after the sexual abuse. It is indeed doubtful whether scientific boards would approve of such studies, primarily because it would be difficult to obtain a valid consent from the victim during the acute phase after an assault, and secondly because it could be considered too intrusive and stigmatising to confront women years after an assault. There might also be an important difference between being identified as a victim through a questionnaire given to a random sample of women, where a woman herself decides whether she wants to disclose anything, and being identified because researchers have become aware of an earlier abuse history.
In related research areas some efforts have been made to design prospective studies where admissions to hospital are used as measures of health. A Swedish study from the late eighties (74), "followed-up" on 117 battered women that had attended an emergency department. The data was obtained from a central register of contacts with the health care system 10 years before and 5 years after the index event. The authors concluded that battered women had a significantly higher use of somatic hospital care during a 15-year period compared with a matched control group of women. In particular gynaecological admissions were frequent. A recent Danish register study showed that women whose hospital contacts were recorded as caused by domestic violence, had significantly more health problems than a matched control group in a subsequent period of three years measured by hospital contacts due to any disease. The rate of contacts on account of gynaecological diseases and mental illness was significantly higher among the victims during the first year following the identified violence (75). It is possible that parallels can be drawn to women exposed to sexual abuse.
Still, little is known of the pathway from abuse to poor health, and of what factors of the individual and of the abusive event that plays important roles.

2.3 The gynaecological patient with a history of sexual abuse

In the USA, and also in some of the Nordic countries, gynaecologists are responsible for the forensic examinations of victims immediately after a sexual assault. Both with regard to the medico-legal aspect and especially to gynaecologically related problems such as treating and preventing injury, pregnancy, and sexual transmitted infections

Fig.2. Overview of studies from 1985 until today on *physical* long-term health consequences of sexual abuse. Listed chronologically.

Study	Country	N (M/F)	I/Q	Participants recruited from	Response Rate	Definitions of sexual abuse used	Prevalence of abuse	Significant associations between sexual abuse history and physical health variables
Kovac et al (76)	USA 2003	3000 (F)	Q	7 ambulatory gynaecologic and obstetric sites	83 %	"in the last year……anyone forced you to have an unwanted sexual acts"	4% (sexual or phys. abuse)	PMS, irregular menstruations, miscarriage, stomach pain, headaches, dizziness, palpitations, shortness of breath, chest pain
Diaz et al (77)	USA 2002	3015 (F)	Q	Schoolgirls (5. through 12. grade) Nationally representative	84 %	"have you ever been sexually abused?"	10 %	More likely to report fair or poor health, psychiatric symptoms and health risk behaviours: smoking, drugs and alcohol.
Cloutier et al (78)	USA 2002	2109 (F)	I	Random household telephone survey	96 %	"has anyone ever forced or tried to force you to engage in unwanted sexual activity?"	19 %	With forced intercourse: more likely to have hypertension, high cholesterol, obesity
Romans et al (79)	N.Zea-land 2002	354 (F)	I	Community sample – 50 % with child sexual abuse, 50 % without	80 %	? Child sexual abuse<16 years Adult sexual abuse>16 years	-	Asthma, "heart trouble", headache, diabetes. Pelvic pain ass. with adult sexual abuse but not child sexual abuse.
Golding et al (80)	USA 2000	42 (F)	I	Women seeking help for severe PMS	55 %	"sexual contact against the women's will at any time during her life"	95.2 %	Ass. between PMS and sexual abuse independent of depression
Risberg et al (81)	Swe-den 1999	175 (F)	Q	Random sample of women from a primary care district	70 %	Adult: forced or threatened to have inter-course or other sexual acts. Child<18: were you sexually abused or molested by an adult	7 % (Child) 7.5 % (Adult)	32 % of abused (8/25) thought that it had affected their health: headache, muscle tension, psychiatric symptoms
Golding et al (82)	USA 1998	1428/ 1703/ 963 (F)	I	3 surveys, general populations	86/94/ 88 %	"children: sexual contacts < 18 that were unwanted and those occurring < 13 that involved another person at least 5 years older. Adults:unwanted sexual experiences"	17.9/ 5.1/ 29.0 %	Menstrual pain, excessive bleeding and sexual dysfunction were ass. with a history of sexual abuse. Increasing number of symptoms increasing proportion had a sexual abuse history
Leserman et al (83)	USA 1998	239 (F)	I & Q	Clinical (gastroent.) Interview + questionnaires every	33 %	Sexual touching or anal/vaginal intercourse Adults:+ "a clear threat of harm or force Children: "unwanted incidents"	50.6 % (physical + sex. abuse)	Pelvic pain, dyspareunia, headache, sleeping disturb. >health care visits. (Severity (penet./ injury/threats) better predictor than +/- abu)
McCauley	USA	1931	Q	Primary care internal	66 %	"were you ever sexually abused before age	7.2 % (only	Pelvic pain, back pain, headache, various

et al (84)	1997	(F)		medicine practices		18?"	CSEXUAL ABUSE)	psycholog. problems, abdominal pain, dis-charge (also physical abuse).
Leserman et al (85)	USA 1996	239 (F)	I & Q	Clinical (gastroent.) Interview	33 %	Sexual touching or anal/vaginal intercourse Adults:+ "a clear threat of harm or force Children: "unwanted incidents"	41.4 %	Abdominal pain, non-GI medical symptoms, lifetime surgery
Plichta et al (86)	USA 1996	1599 (F)	I	Sociodemographically representative	56 %	"do you think you were sexually abused as a child?"	12.4 % (only child)	Only gynaecological health: urinary tract infections, STD, menstrual problems
Bendixen et al (87)	Nor-way 1994	510 (F) 486 (M)	Q	College and university students	79/72 %	"events in which you were forced, coerced or tricked into sexual acts against your will or acts which adults ought not to do with children"	19.4 % F 3.5 % M	Pain/symptoms of infection in the genital area, headache, abdominal/muscular pain, psychiatric problems as eating disturbances, depression.
Lechner et al (88)	USA 1993	523 (F)	Q	General family practice	78 %	"as a child < 16 years were you ever a victim of sexual abuse? (a victim in any kind of sexually related acts with a person more than two years older than you)	26 %	STD, PID, had surgical evaluation of pelvic pain, respiratory, gastrointestinal, muskuloskeletal and neurological problems
Kirkenge n et al (89)	Nor-way 1993	85 (F)	I	General practice (women consulting for a gyn. Exam.)	73 %	"as a child were you ever approached against your will in a way you felt had sexual meaning in a wider sense"	28 % (only child)	Pelvic pain, gyn. surgery, PMS, sexual problems
Moeller et al (90)	USA 1992	668 (F)	Q	A gynaecologic practice	60 %	"any non-voluntary sexual activity with an individual at least 5 years older" (the term abuse not used)	19.7 % (child) 7 % (adult)	Severe PMS, frequent gynaecologic problems incl. infections, stomach ache, headache (also physical and emotional abuse)
Briere et al (7)	USA 1985	278 (F)	Q	Non-clinical population, university students	100 %?	"Sexual contact between a girl under 15 years of age and an individual at least 5 years older"	14.7 % (only child sexual abuse)	Somatisation (defined as "distress arising from perceptions of bodily dysfunction" and as "somatic equivalents of anxiety" and "a preoccupation with bodily processes and their vulnerability to decrease or dysfunction"

gynaecologists are considered apt to attend these patients, the majority of whom are female. Historically, forensic pathologists or medical officers performed all the examinations of victims of sexual assault in Denmark. Only recently, with the establishment of centres for victims of sexual assault, the examinations are done by gynaecologists alone or in collaboration with forensic pathologists. With this change the victim is offered an immediate gynaecological evaluation and her worries are addressed shortly after the assault. This might add to a faster recovery and might reduce the development of chronic conditions.

Based on the prevalence studies and the clinical gynaecological studies it seems reasonable to assume that among women who seek help in a gynaecologic department a substantial number have had experiences of sexual abuse in their past. How does this affect their encounter with the clinic and the gynaecologist? Is it important for the gynaecologist to know about these experiences?

Studies have shown that the gynaecologic examination can be a stressful situation (91;92), but for the patient with severe psychological aftermath of sexual abuse, such as PTSD, it may be associated with anxiety, promoting unwanted flashbacks of the original trauma (93;94). It has been described that abused patients often misunderstand information so that they risk ending up in conflict with the staff becoming "the burdensome patient", who over and again seeks help (94). The majority of victims of sexual abuse do not bring up the issue spontaneously, when they attend a gynaecological department. This underlines that the abuse will probably not be disclosed unless the gynaecologist asks, which very few do (95-97). Hence, the potential cause or contributing factor to the patient's complaints remains hidden. The patients may even run a risk of being "retraumatised" during their visit to the department.

2.4 The aims

The overall aims were to provide knowledge of the health consequences of sexual abuse in the Nordic countries in order to improve the quality of the health care system, and to add to the understanding of physical findings in a legal perspective.

The following research questions were asked:

1. Do characteristics of the sexual assault as well as characteristics of the victim contribute to the risk of inflicting genitoanal injury? (paper I).

2. Are women who experience discomfort during the gynaecological examination more likely to report a sexual abuse history than women who do not experience discomfort? (paper II).

3. Is a history of sexual abuse associated with poor health, in particular chronic pelvic pain? (paper III).

4. Do characteristics, such as invasiveness, recentness, age, additional physical or emotional abuse, and the relation to the abuser, of the sexually abusive experience(s) contribute or add to the impact on health? (paper III).

3. Material and methods

3.1 Design

The ideal design of a study assessing both the immediate and the long-term physical health consequences of sexual abuse would be to identify a cohort of women immediately after they had been exposed to sexual abuse, and at the same time to identify a control cohort of women not exposed to abuse. The immediate physical health consequences as well as predictive factors of sustaining injuries could then be assessed at recruitment (T_0) within the exposed group. The long-term physical health consequences would then be assessed after a follow up period in a longitudinal design. At the first follow up (T_1), the experience with the gynaecological examination should be assessed, and at the second follow up (T_2) health status of both cohorts should be recorded.

However, since there are both practical and ethical obstacles to conduct follow up of victims of sexual abuse, the actual design differs. In Fig. 3 the ideal and the actual designs are outlined.

Fig.3. The Ideal and The Actual Designs

Time and topic to study	*The Ideal design*	*The Actual designs*
T_0 Immediate health consequences	A cohort of sexually assaulted victims A control cohort from the same base population	PAPER I Victims with and without genitoanal injuries were identified among victims of sexual assault attending a centre for victims of sexual assault and compared as to predictive factors of sustaining injuries in a cross-sectional design
T_1 Experience with the gynaecological examination	Both cohorts assessed as to their experience with the gynaecological examination	PAPER II (Danish part of The KK-NorVold Study) Women with and without reporting of discomfort during the gynaecological examination were identified among consecutive patients attending a gynaecological

		outpatient department in Copenhagen and compared as to sexual abuse history in a cross-sectional design.
T_2 Long-term health consequences	Both cohorts assessed as to their general health	PAPER III (The KK-NorVold Study) Women with and without past sexual abuse history were identified among consecutive patients attending a gynaecological outpatient department in five Nordic countries and compared as to their general health in a cross-sectional design.

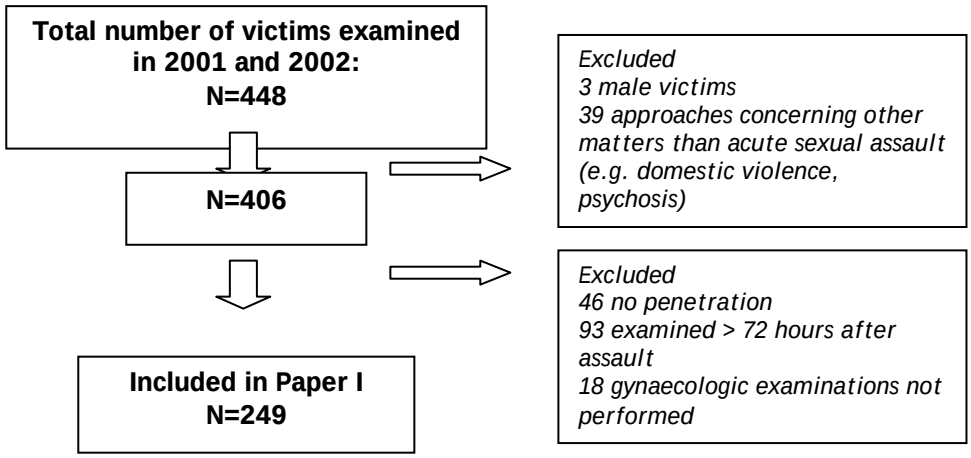
3.2 Subjects

Paper I

All women attending the Centre for Victims of Sexual Assault, Copenhagen, Denmark, in 2001 and 2002, who were exposed to a penetrative assault and were examined within 72 hours after the assault were included (fig.4). Based on information from the physical examination, women with and without genitoanal injuries were identified.

The centre is open 24 hours a day for female and male victims of sexual assaults from age 12 years, regardless of police reporting, and serves the eastern part of Denmark (Zealand and Bornholm), with a catchment population of approximately 2.5 million (http://www.danmarksstatistik.dk/040709).

Fig.4. Flowchart of included victims from the Centre for Victims of Sexual Assault, Copenhagen



Paper II

Gynaecological patients were consecutively recruited at Glostrup University Hospital from October 1999 to January 2000, with a short break around Christmas and New Year. On arrival at the clinic, patients were invited orally by the reception staff to join the study, and if they agreed they were given a letter of information, and after two weeks they received a self-administered questionnaire. A total of 1156 patients were eligible, 145 declined and 1011 gave their written, informed consent to participate. A total of 809 returned the questionnaire completed (response rate 80 %).

Paper III

Gynaecology patients from five, Nordic university clinics: Glostrup (DK), Helsinki (F), Linköping (S), Reykjavik (I), and Trondheim (N). Consecutive patients were invited to participate, and received a self-administered questionnaire developed for The KK-Norvold Study, The NorVold Abuse Questionnaire (NorAQ). Inclusion criteria were female gender, age 18 years or older, and understanding the written national language. Recruitment continued until approximately 1,000 patients in each country (700 in Finland) had agreed to participate.

In Iceland, Norway and Sweden the questionnaires were sent to everyone who did not decline to participate. In Denmark and Finland, local ethics committees required that written informed consent be given. 1-2 weeks after the index visits, an information letter and the NorAQ were sent out.

3.3 Data sources

Paper I

At the Centre for Victims of Sexual Assault in Copenhagen, Katrine Sidenius and myself constructed a registration form consisting of 19 sections (exhibit B) that covered relevant information on the assault, as well as the patients' medical history. Furthermore, the results of the forensic examination, including all objective signs of violence were recorded. Finally, the follow-up visits and possible referral to other institutions were registered. The registration form have been revised and improved twice during the period from 2001 to 2004, and the sections on sociopsychological issues have been looked through and improved by the team of psychologists and social workers.

The information from the registration forms have been continuously transferred to a database created in SPSS (statistical software). The clinical data used in paper I was drawn from this database.

Paper II & III

The NorAQ was initially developed by Barbro Wijma and Berit Schei, and later approved and translated into the other Nordic languages and English by the whole KK-NorVold Study group (exhibit A).

The questionnaire had eight parts and consisted of 80 questions. Part I included general questions about age, education, occupation, and civil status. In part II, experiences of pregnancies, deliveries and contact with gynaecologists were addressed. In part III, 14 questions on self-estimated health and medical history were listed followed by four parts (part IV-VII) with questions on four kinds of abuse; physical, emotional, sexual, and abuse within the health care system. The content ranged from mild to severe abuse, and allowed a classification by degree of severity of the abusive act. If a woman had experienced abuse she was asked to answer more detailed questions such as whom the perpetrator was, and when the abused occurred. Part VIII included general questions about all types of abuse, such as ever having reported abuse to the police or the presence of fear of becoming a victim of abuse.

The data was recorded anonymously. No information was obtained from medical records.

Several publications from The KK-Norvold Study, besides the papers included in this thesis, are available (98-102).

Ethical consideration

In paper I information were obtained from a database. The database contains medical information collected at the Centre for Victims of Sexual Assault, and is anonymous. The database has been approved and registered by The Danish Data Protection Agency. Research by means of the register is allowed without obtaining permission from the patients.

The local scientific ethics committee in each country approved The KK-NorVold Study. In a letter attached to the questionnaire, directions were given on how to contact the researchers if answering the questions caused distress. Only a few women in Denmark

contacted us accordingly, and were offered a consultation. No patients needed further referral.
At the end of the questionnaire the responder was given an option to comment on how she felt about answering the questions. Many women commented positively, appreciating the importance of the study.

Non- participation
No systematic recording was made of those patients who declined to enter The KK-NorVold Study. However, we did record the percentage that declined in Denmark, and the non-participation rate was 12.6 % (145/1156). In Denmark the patients were not told about the actual aim of the study when they arrived at the reception, they were only informed that the study concerned women's health, whereas e.g. in Sweden they were informed that the study, among other topics, was asking about abuse history.
We achieved a response rate on an average of 77 % (N =3,641).

3.4 Measures

Paper I
The registration form is used both as an instrument of research and as the medical record used in the clinic. Gynaecologists examine the victims, in police-reported cases in collaboration with forensic pathologists. The gynaecologists are responsible for completing the registration forms. All women were examined in the supine position on a gynaecological bed, signs of external genitoanal injuries were recorded, and with a speculum - and if relevant an anoscope - internal lesions were viewed. When the victims were very young or reported no prior sexual experience, a colposcope was used and the examination was videotaped. Findings were sketched out in a predrawn figure (exhibit C) and were filed in the medical records together with copies of photos (if taken).
If all information was not available (asked to) at the first consultation the information was obtained at subsequent follow-up visits.
The medical records of all victims, who were identified through the database to have genitoanal injury, were reviewed on a second time. The recorded injuries were classified as to their location: labia majora, labia minora, hymen/hymeneal brim, posterior fourchette, vestibulum, perineum and anal/perianal, and as to type: tears,

ecchymoses and abrasions. We excluded women where only diffuse physical findings, such as unspecific hyperaemia or oedema were recorded (n=13) from the group of women with specific genitoanal injury.
From the database background information, possible risk factors related to the assault, physical findings, and legal status were drawn (fig.5).
Type of sexual coercion, type of violence, and documentation of non-genital injuries were used to estimate the degree of severity of the assault.

Paper II
The outcome measure was discomfort during the gynaecological examination. All women were asked to indicate on a Likert-type scale the degree of discomfort during the gynaecological examination at the index visit (T_1). Zero indicated "no discomfort at all", and ten "strong discomfort". This variable was later dichotomised into "No discomfort" (0-5 on the scale) and "Discomfort" (6-10), based on the 75 percentile.
From the questionnaire data on sexual abuse exposure and other possible predictors or risk factors for experiencing discomfort were drawn (fig.5).

Paper III
The outcome measures were indicators of general health status: self-estimated health, psychosomatic complaints, lifetime surgery, number of health care visits, and days on sick leave, and reason for the encounter at the clinic at the index visit, including chronic pelvic pain. The main exposure was a sexual abuse history. Four questions were used to identify past sexual abuse history (exhibit A) and the answers were later categorised into mild (exposure, non-genital contact), moderate (genital contact, but no penetration) and severe (penetration). In the analyses (paper II & III) only women reporting moderate or severe experiences were defined as having a history of sexual abuse.
In sub-analyses the group of women with an abuse history were divided as to characteristics of their abusive experiences, in order to explore possible risk factors of poor health within the abused group (fig.5).

Fig.5. Exposure, risk factors, confounders, and outcome measures in paper I, II & III.

Paper	Main exposure, risk factors and potential confounders	Outcome measures
Paper I: *"Genitoanal injury in adult female victims of sexual assault"*	*Background* • Age • Occupation • Prior sexual intercourse experience • Parity *Reported assault related factors* • Time from assault to examination • Time of the day of the assault • Scene of the crime • Relationship between assailant and victim • Number of assailants • Anal/vaginal penetration • Physical violence • Alcohol consumption *Physical findings and legal status* • Observed non-genital injuries • Reporting to the police	• Documented genitoanal injury at intake
Paper II: *"Women's experiences of the gynaecologic examination: factors associated with discomfort"*	*Main exposure* • Sexual abuse *Other risk factors of discomfort and potential confounders* • Age • Education • Occupation • Parity • Partner status • Quality rating of sexual life • Gender of examiner • Emotional contact with examiner • Pelvic pain as presenting problem • Anxiety • Sadness • Insomnia	• Discomfort during the gynaecologic examination
Paper III: *"History of sexual abuse, and health: A Nordic multicentre study"*	*Main exposure* • Sexual abuse *Risk factors within abused* • Time since sexual abuse • History of other types of abuse • Relation between assailant and victims • Penetration *Other risk factors and potential confounders* • Age • Education • Occupation • Partner status • Country of residence	• Reason for encounter • Chronic pelvic pain • Self-estimated health • Psychosomatic complaints • Number of health care visits • Number of days on sick leave • Lifetime surgery

3.5 Statistics

Categorical variables were in general presented in frequency tables as numbers and percentages. Chi-square tests were used for comparing frequencies, using a level of statistical significance of $p \leq 0.05$ (paper I & II) and $p \leq 0.01$ (paper III). To reduce the risk of mass-significance a lower significance level was chosen for the larger samples with multiple comparisons. For data with the expected minimum count below 5, Fisher's exact test was used. Logistic regression analyses were performed to estimate the effect of probable confounding factors. All analyses were performed in SPSS version 11.0 statistical software.

3.6 Definition of sexual abuse and penal codes

In fig.6 the questions from NorAQ on sexual abuse are listed and correlated with the maximum sentences according to the Danish legislation (103;104). It is noteworthy that 14.5 % of the women in The KK-NorVold Study reported having experienced what corresponds to the most serious sex crime in Denmark, rape, half of them even before the age of 18, where the maximum penalty is 12 years of prison. In the NorAQ we asked if police reporting were ever done, but did not specify as to which type of abuse (physical, emotional, sexual, in health care) had lead to the reporting. Out of the 731 women, who reported sexual abuse (defined as moderate or severe sexual abuse), 518 women reported severe sexual abuse (with penetration), and out of these, 109 women reported no other type of abuse and only short 4 % of them had ever reported an assault to the police. Among the remaining 409 (518-109) women who reported severe sexual abuse, and who also had experienced physical or emotional abuse; short 25 % had ever made a report to the police (19 % once, 6 % several times).

Fig.6. The NorAQ and corresponding paragraphs in the Danish Penal Legislation

Questions in NorAQ on sexual abuse experiences (Q. 63-66)	**Paragraph in the Danish penal legislation**	**Maximum sentence**	**Percentage*** KK-NorVold Study (N= 3539)
Q.: Has anybody against your will touched parts of your body other than the genitals in a "sexual way" or forced you to touch other parts of his or her body in a "sexual way"?	§232 Sexual harassment	From fine to 4 years of prison	<18: 9 % >18: 6 % both: 2 % total: 17 %
Q.: Have you in any other way been sexually humiliated; e.g. by being forced to watch a porno movie or similar against your will, forced to participate in a porno movie or similar, forced to show your body naked or forced to watch when somebody else showed his/her body naked?	Offence against decency §232 If pornographic pictures has been taken of a child (< 18) §230 In aggravating circumstances (gross violence, if systematic or organized) §216 if forced to have intercourse or similar act as part of a porno movie.	From fine to 4 years of prison 2 years of prison 6 years of prison 8 years of prison	<18: 2,5 % >18: 2 % both: 0,5% total: 5 %
Q.: Has anybody against your will touched your genitals, used your body to satisfy him/herself sexually or forced you to touch anybody else's genitals?	If the act resemblance intercourse (§224) then §216 other wise §232	8 years of prison From fine to 4 years of prison	<18: 11 % >18: 6 % both: 2 % total: 19 %
Q.: Has anybody against your will put his penis into your vagina, mouth or rectum or tried any of this; put in or tried to put an object or other part of the body into your vagina, mouth or rectum?	If the act involves violence, threats of violence or being unable to resist: §216 Rape In aggravating circumstances	8 years of prison 12 years of prison	<18: 6 % >18: 7 % both: 1.5 % total: 14.5%

*The percentage that answered yes to the corresponding questions in the NorAQ in the three categories (less than 18 years when it happened, more than 18 years or both before and after the age of 18) and the total percentage.

4. Results

4.1 Immediate physical health consequences

We found that 32 % of female victims, who were exposed to a penetrative assault, and who were examined within 72 hours after the assault, had documented genitoanal injuries. The majority of the genitoanal injuries were small, single-sited tears at the posterior fourchette, in the vestibulum or around the anus, and no surgical intervention were needed. We found that assaults involving anal penetration and assaults on women (girls) with no prior sexual intercourse experience, were associated with an increased risk of genitoanal injuries, the adjusted OR were 4.0 and 7.4, respectively. We found no association between age or parity and genitoanal injury. However, the group of women above 50 years, who might be expected to be more susceptible to injuries, was small (n=8). We concluded that for the large group of adolescents not ever having had sex before the assault was a better predictor of genitoanal injury than merely their age or whether they had ever given birth to a child. We found no association between genitoanal injury and the severity of the assault, the severity of the non-genital injuries, the number of assailants or whether the victim knew the assailant or not (paper I).
A total of 72 % reported physical violence in addition to the sexual violence; most often they reported having been restrained. Non-genital injury was documented in 59 % at the examination, and the types of non-genital injuries were primarily bruises and excoriations. Eleven percent of the victims experienced life-threatening violence such as attempted strangulation or severe head injury (paper I).

4.2 The gynaecological patients with a history of sexual abuse

Danish women consulting a gynaecological clinic generally tolerated the gynaecological examination well, and the majority (94 %) reported a positive emotional contact with the gynaecologist. Twenty-one percent of the women experienced “discomfort”, defined as a score of 6 or more. Patients with a history of sexual abuse were more likely to report discomfort (OR 1,85) compared with patients without a sexual abuse history. However, other factors were found to be equally or more important, such as young age (18-25 years), OR 2,75; a negative emotional contact with the examiner, OR 8,21; a self

assessed poor sexual life, OR 1,69, and the presence of disabling mental health problems (insomnia, sadness, anxiety), OR 1,91. No association was found between the gender of the examiner and discomfort (paper II).

We found that few patients had shared their experience(s) of sexual abuse with the gynaecologists, only 7.6 % reported having told about the abuse at the index visit or they reported that the gynaecologist already knew. The few who did disclose previous sexual abuse were equally distributed among those who disclosed this spontaneously and those who disclosed because they were asked by the gynaecologist (paper II).

4.3 Long-term physical health consequences

In The KK-NorVold Study 21 % (n=731) reported any lifetime experience of moderate or severe sexual abuse. A total of 5.3 % of the women had experienced sexual abuse within 12 months prior to the study (paper III).

A history of sexual abuse was associated with chronic pelvic pain as reason for the index visit, while no associations were found with several other reasons for attending the clinic such as infertility, irregular or heavy menstruation, and acute pelvic pain. Patients who reported a history of sexual abuse were more likely to ever having undergone laparoscopic surgery than women without such a history, whereas there was no difference in the number who ever had had a laparotomy (caesarean section excluded) (paper III)

There was a highly significant association between a history of sexual abuse and overall poor general health status, measured as poor self-estimated health, psychosomatic symptoms (headache, abdominal pain, muscle-weakness, dizziness) to an extent that affected daily life, frequent health care visits, and frequent periods of absence from work one year prior to the study (paper III).

We divided the group of women into several subgroups with respect to when the abuse occurred, the invasiveness, and other circumstances of the abuse and found that women who were abused both as children (< 18 years) and as adults, women who had also been physically or emotionally abused, and women abused by someone known to them (partner, family, acquaintance) were more likely to report poor overall health.

Women who had experienced abuse involving penetration were more likely to appear at the clinic because of chronic pelvic pain compared to women who experienced sexual abuse without penetration (paper III).

Key-findings:

- ✓ Sexual assaults involving anal penetration and assaults on women (girls) with no prior sexual intercourse experience are associated with an increased risk of genitoanal injuries
- ✓ Presence of genitoanal injury is not associated with the severity of the assault
- ✓ Assaults by strangers are not more likely to cause genitoanal injury
- ✓ Women with a sexual abuse history are more likely to experience discomfort during the gynaecological examination than women without such a history
- ✓ The gender of the examiner has no bearing on whether the women experience discomfort
- ✓ A history of sexual abuse, and in particular penetrative assaults, is associated with chronic pelvic pain
- ✓ A history of sexual abuse is associated with an overall poor health compared with women without such a history
- ✓ Experiencing sexual abuse both as a child and as an adult is associated with an increased risk of an overall poor health
- ✓ When the abuser are within the family the risk of an overall poor health is higher than when the abuser is unknown to the victim

5. Discussion

5.1 Methodological considerations

Study design

Data collection in both studies (The Centre for Victims of Sexual assault and The KK-NorVold Study) was based on cross-sectional designs. This means that causal relationships cannot be established since the time sequence of risk factors and outcome measures are not known. However, in paper I women were examined after an acute assault, and the injuries described can therefore be assumed to have a causal relationship with the exposure. However, there might have been other causal factors for injury, than the assault per se, e.g. increased vulnerability due to factors not identified.

Selection bias

It is estimated that only about one fifth to one third of women exposed to a sexual assault report to the police (Balvig and Kyvsgård, preliminary results from the International Violence Against Women Survey (IVAWS)). At the Centre for Victims of Sexual Assault in Copenhagen about 70 % report to the police (105), thus a substantial number of women exposed to a sexual assault never seek any formalised help. It is unlikely that the association between the risk factors and genitoanal injury would have been different if all victims of sexual assault had attended the centre. However, an injury might have encouraged victims to approach a centre, as a medical examination was wanted.

In the KK-NorVold Study only a small percentage declined to participate in the study, and overall we achieved a fair response rate (77 %). Nevertheless, it is a limitation that we did not systematically record information both on non-participators and non-responders.

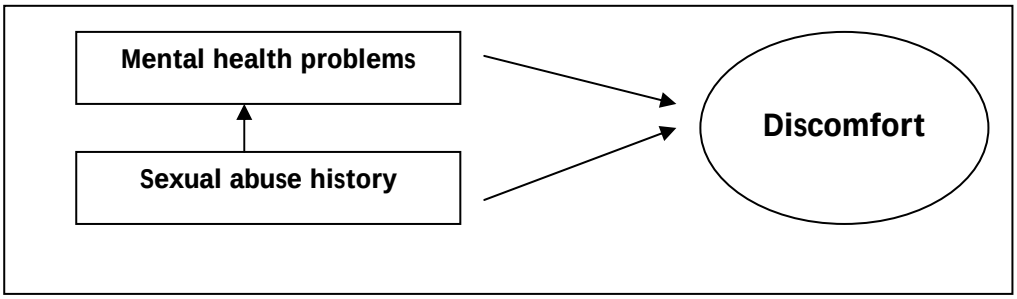
In the analyses we have included those who refrained from answering a specific question on e.g. one of the risk factors (internal missing) in order to learn if this group differed on the outcome examined, and found no significant differences.

Confounding and intermediary factors

A confounding factor is a factor associated independently to both exposure and outcome, whereas an intermediary factor functions as a pathway between exposure and outcome. It is not possible to control for all confounding factors, since many of them are unknown. However, some of them can be assessed through statistical analyses.

An example of this is the association between sexual abuse history and discomfort during the gynaecological examination (paper II). We found that both sexual abuse history and mental health problems were significantly associated with discomfort during the examination. When we analysed both of these variables in a multivariate regression analysis the association between the factors and discomfort diminished, but both remained significant, hence both of them were independently associated with discomfort. We know that sexual abuse have been associated with several mental disorders, thus mental health problems may act both as a confounder and as an intermediary factor (fig.7).

Fig.7. Associations between discomfort, mental health problems, and sexual abuse history



Another example of a confounder is found in paper I, where the association between age and genitoanal injury disappeared when controlling for prior sexual intercourse experience.

Information bias /recall bias

Some factors might cause associations to appear stronger that they actually are, e.g. women with chronic pelvic pain might have a tendency to seek explanations in the past and thereby more frequently report a history of sexual abuse, simply because of better recall, than women without pelvic pain. This is a form of differentiated misclassification. It is possible that some women have difficulties disclosing sexual abuse

experiences simply because they might not feel comfortable at revealing private issues. If this underreporting is independent of health status it might lead to a non-differentiated misclassification. The KK-NorVold Study relies on information given anonymously by women, which may encourage them to come forward with sensitive issues that they would not have brought up facing an interviewer or a doctor. On the other hand they had to described situations that could have taken place many years ago, and this may have brought about some inaccuracy. The information gathered from sexually assaulted women shortly after the assault is more accurate, but to some degree affected by what the victim can cope with telling and probably what the victim expects that the police or health personnel want to hear.

Definitions of measures and operationalisation of definitions

In paper I the women were categorised as being victims of sexual assault simply because they approached a centre, in fact one can say that they themselves defined whether or not they were exposed to sexual abuse. This is, however, not the whole truth, as some women had difficulties with labelling themselves as victims of sexual assault, and only attended the centre because of pressure from relatives or police.

In the KK-Norvold Study (paper II & III) sexual abused history was assessed by a validated questionnaire.

In the Swedish validation study (106) participants completed the NorAQ twice with an interval of 5-7 months. At the time of the second completion of the questionnaire participants were also interviewed. Compared with the interview the questions on sexual abuse were found to have high sensitivity, 83 % (CI 74-92), which is the proportion that reported abuse and also in the interview was classified as having experienced abuse. Specificity was 98 % (CI 94-101), which is the proportion that reported no abuse and also was classified as not having been abused according to the interview.

Calculation of the Likelihood Ratio (LR) summarizes the sensitivity and the specificity in one figure expressed in odds. We compared the probability of getting a certain result if the patient truly had experienced abuse with the corresponding probability of the patient not having experienced abuse, and calculated a ratio for this.

The LR was 42 for the questions on sexual abuse, which is considered high. However, it goes without saying that both questionnaires and interviews rely on the women's credibility.

5.2 Discussion of the results and the clinical and legal implications

These studies have shown that sexual victimisation has both immediate and long-term impacts on health. The long-term effect can be measured even many years later. It is also shown that some women are more at risk of both the immediate and the long-term physical health consequences.

Immediate physical health consequences (paper I)

Anal penetration and penetrative assaults in women with no prior sexual intercourse experience were more likely to cause injuries. The localization of injuries was predominantly around the introitus vaginae and the anal region. This is in concordance with previous studies (107-112). The detection of genitoanal injuries detected in victims is dependent on the type of examination used, and the types of injuries included. The frequency of genitoanal injuries is higher in victims examined by colposcope (33-87 %) (113-116) than in those examined only by macroscopic visualization or with dye (6-45%) (117-124). The colposcope is widely used in the examination of sexually abused children, but the use in adult victims is controversial. Most centres examining victims of sexual assault do not have access to a colposcope and it has been contended that the colposcopic examination is an unnecessary stressful invasion (125). The types of injury included differ between the studies mentioned, but there is a tendency towards including redness and swelling as well as micro trauma in studies where a colposcope has been used, explaining some of the disagreement in results.

The relationship between victim and assailant and the number of assailants are two factors that might be related to the frequency of genitoanal injuries. One earlier study found that assaults by strangers caused more injury (126). We could not confirm this on accordance with other studies (127;128), and we found no association between injury and the number of assailants.

Our study emphasizes that genitoanal injuries are not related to any specific type of assault or to the severity of the assault, and hence it underlines that the documentation of genitoanal injuries is a poor guide to determine the severity of the assault.
The question: Why do not all victims exposed to a penetrative assault have injuries? is often asked by the juridical system or the police. We have no answer to that question. Speculations are many: Is the natural lubrication, or the degree of resistance offered by the victim, important? Are some cases false allegations? Or is it merely a question of the size of the penis and not of the violence, as proposed by a defence lawyer in a rape case where the victim had multiple minor genital and anal injuries? But most important: Do the fact that no injury was found affect the credibility of the victim's story? In my experience, it is very traumatising for a victim if she is not believed. And in cases where the charged assailant claims that the sexual relation was voluntary, and where no genitoanal injuries are documented to support the victim's testimony, people might speculate that there was a trifle of willingness or perhaps some sexual arousal to begin with.
It has been shown in several studies that the presence of injury (genital *and* non-genital) is associated with a higher frequency of charge laying, legal prosecution, and conviction (129-134). This probably reflects that the prosecutor has a stronger case when there is medical evidence of recent intercourse and trauma that corroborates the victim's testimony. The increased prosecution and conviction rate also reflect, that the court requires proof beyond reasonable doubt that a sexual assault has taken place, and in that sense genital findings contribute to the balance of probabilities. We did not use a colposcope or dye to visualize injuries, but relied on gross visualisation. In the literature there is - as mentioned above - an ongoing debate on whether or not a colposcopic examination should be a standard procedure in the examination of all rape victims. However, it seems plausible that the smaller lesions that are detected the higher is the chance that similar lesions will be found in women after consensual intercourse. Smaller lesions might enable us to predict recent intercourse, but will not determine the voluntariness and assailants might not deny having had sex with the woman. Therefore, it might be that the only question in court is whether the woman consented to the intercourse or not, rather than whether an intercourse has taken place or not.

There was no association between genitoanal injury and the severity of the assault, in terms of violence reported or non-genital injuries documented. Therefore, we have no reason to believe that cases without documented injuries should be taken less serious or be taken to indicate that the allegation is false. Our findings emphasize the importance of examining and documenting injuries also in victims who report little or no physical violence and in victims where no bruises or other signs of violence are found on the body.

The patient with a sexual abuse history in gynaecology (paper II)

The association between a sexual abuse history and discomfort during the examination was not as strong as we had expected, though significant. In Denmark, as well as in many other countries, there is an ongoing discussion on whether or not to screen all patients for prior or present abuse, both sexual and physical. Many health care workers are reluctant to confront patients with intimate questions such as a sexual abuse history, partly because they are afraid that the question will seem awkward in the given situation and partly because they do not know how to deal with a positive answer. An American study found that in fact women valued the attention, and even when the answer was no, they appreciated that the gynaecologists had asked them (95). Whatever gynaecologists decide to ask all patients or only those expected to be in high risk, it is probably important that questions are put in an open manner not using words like abuse, rape, sexual assault, victim, et cetera. Some ways to ask are: "Have you ever been in a situation were you had unwanted sex?" "Did any of these experiences happen to you when you were a child?"

Our results suggest that the emotional contact between the patient and the examiner to a large extent determine how well the examination is tolerated.

Younger women tended to score a higher degree of discomfort compared with older women. This could be due to less experience with the examination, and maybe a more pronounced tendency to shyness with regard to exposing the genitals.

Among the other factors we found positively associated with discomfort, were a poor sexual life and mental health problems. One can only speculate on the reasons for these associations, but both are conditions that the gynaecologists only rarely realise.

Most people go through several more or less unpleasant health examinations during their life. This could be regarded as a "reasonable price" for obtaining a diagnosis and to

receive subsequent treatment. However, one of the tasks of the modern health care system is to optimise the clinical pathway for patients, and that includes among other factors to reduce distress, pain, and other discomfort.

Since the gynaecologic examination is an essential part of both gynaecology and obstetrics it is of great importance that the circumstances in which the examination is done are optimal. The examination is a simple and low cost way to discover many pathological conditions such as sexually transmitted diseases, abnormal cytology of the cervix, and problems in pregnancy. It is unfortunate if fear of the examination refrains women from consulting a gynaecologist. Therefore, as gynaecologists, we must use all efforts to make the examination as lenient and tolerable as possible. How do we do that? One way to address possible factors is simply to ask the patients just before the examination how they feel about the examination. Most women will respond that they do not like it, but that they can accept it. This will give the examiner an opportunity to sense exactly how difficult the situation is for the patient, and enable taking steps towards alleviating the situation, e.g. by using a sheet to wrap around the pelvis, by ensuring that everything will be done to make the examination as gentle as possible, and by explaining every step during the procedure. In this way the examiner actively addresses the patients' worries and shows respect, creating a confident, positive emotional contact, and the patient might end up with a tolerable examination.

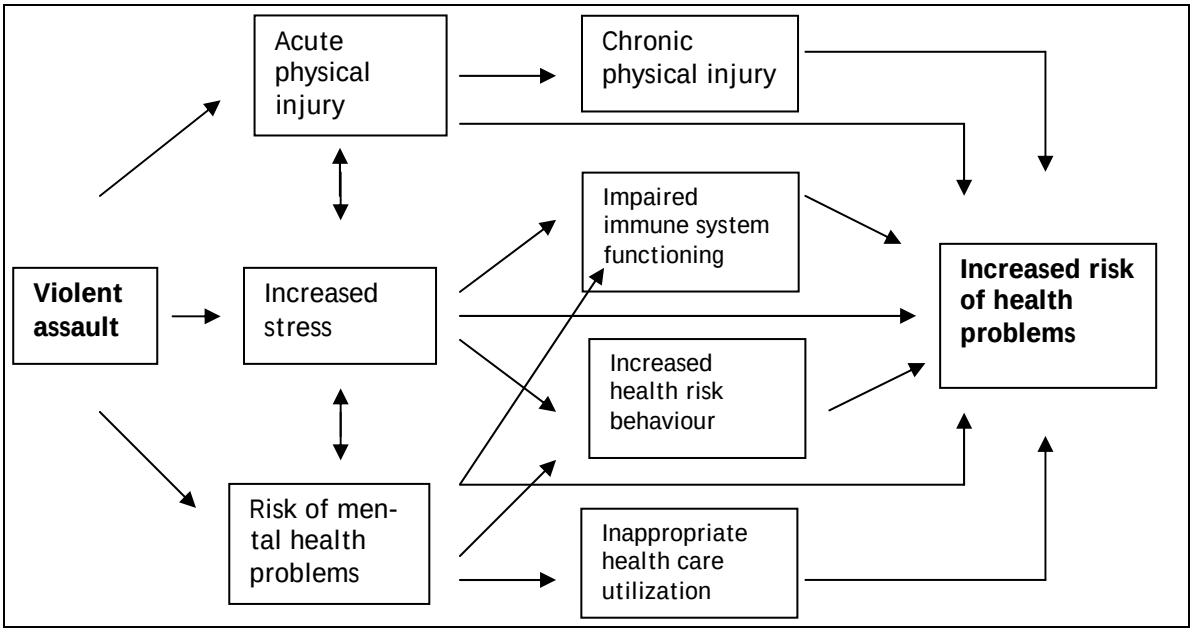
Long-term physical health consequences of sexual abuse (paper III)

Our study showed that a history of sexual abuse was associated with poor overall health in a Nordic sample of gynaecology patients. We found a strong correlation between chronic pelvic pain as reason for the index visit and a sexual abuse history, as well as a strong correlation between sexual abuse history and psychosomatic symptoms and poor self-estimated health. This finding suggests that the medical problems associated with sexual abuse victimisation are of a vague multiorgan and non-specific character, and this is in concordance with several previous studies (7;135-139). We concluded that some subgroups of sexually abused women are more likely to report poor health: Women abused both as children and as adults, women who have also been physically and/or emotionally abused, and women abused by someone known to them.

Theories on how abuse can affect later health

Resnick and co-workers (140) propose a model linking a history of violent assault to physical and mental health problems (fig.8). They suggest that violent assault may result in three acute outcomes: Injury during the assault, increased stress, and increased risk of mental health problems, and that these outcomes can have a direct impact on a victim's risk of future health problems. In addition, each of the three acute sequelae has an impact on each other and on long-term mechanisms.

Fig. 8. Hypothetical model explaining development of violence-related health problems by Resnick and co-workers, Behavioural Medicine 1997 (140).



This model is only a rough outline as many other factors might influence the risk of chronic health problems. Several possible explanations for the pathway between abuse and poor health exist:

- "Chronification" of acute symptoms. Some of the chronic symptoms might have been seen in an acute form during the abuse, e.g. pelvic pain, due to lack of lubrication, ruthlessness, and injury.
- Health risk behaviours. E.g. substance abuse, smoking, eating disturbances, obesity, sexualised behaviour (141-144).

- Transformation of psychological trauma to physical dysfunction (emotional responses perceived as physical disease) (145;146)
- Preoccupation with bodily processes. Increased awareness of and sensitivity to pain or sensations in the sexual regions (7).
- Chronic stress and arousal. It has been proposed that sexual abuse has a negative effect on the autonomic nervous system and the immune system. Cardiovascular reactivity, autonomic reactivity, adrenergic dysregulation, hypothalamic-pituitary-adrenal (HPA) axis alterations have all been shown to be associated with PTSD (post traumatic stress disorder) (147-149). Sexually abused girls studied within 6 months of their disclosure of abuse exhibited an increased morning serial plasma cortisol and a general dysregulation of the HPA axis compared with non-abused matched controls (150). The theory that stress causes changes in the cortisol levels, by alterations of the HPA axis has also been tested by Heim and colleagues (151). They examined 16 patients with chronic pelvic pain (without organic pathology), in whom 11 had a history of sexual abuse, and compared them with a control group (n=14). They found that the women with chronic pelvic pain had adrenocortical hypo responsiveness, and they compared their results with similar results found among patients with chronic fatigue syndrome and fibromyalgia, rheumatoid arthritis, and asthma. The abnormal level of cortisol is, according to this hypothesis, partly responsible for the physical health problems by promoting an increased vulnerability for autoimmune disorders, inflammation, chronic pain, allergies, and asthma.

  The effect of stress on gastric secretion and gastrointestinal motility has been suggested to partly explain irritable bowel syndrome including constipation and abdominal pain (152).
- PTSD. The essential feature of Posttraumatic Stress Disorder according to the DSM IV is the development of characteristic symptoms following exposure to an extreme traumatic stressor involving direct personal experience of an event that involves actual or threatened death or serious injury. The person's response to the event must involve intense fear, helplessness, or horror. The characteristic symptoms include persistent re-experiencing of the traumatic event, persistent avoidance of stimuli associated with the trauma and numbing of general

responsiveness, and persistent symptoms of increased arousal (Diagnostic and Statistical Manual (of Mental Disorders) IV). It has been estimated that following sexual assault, the lifetime prevalence of PTSD varies from 30 to 65 % (153). It has been demonstrated that individuals with PTSD exhibit more negative health symptoms than individuals without PTSD, and it has been suggested that it may not be the traumatic event per se, but rather that associated psychological sequelae, such as PTSD, contribute to the decline in the victim's health (140). Depression, without the presence of PTSD, has also been linked to a variety of health-related issues (154). As mentioned above chronic hyper arousal accompanying PTSD may also be an explanation for the physical health problems.

Association between immediate and long-term health consequences

In my experience, the gynaecological examination performed shortly after the assault is very difficult for most rape victims. Besides the exposure itself, they suffer pain and are also embarrassed that they may be soiled. The recording of genitoanal injuries has predominantly medico legal significance, since the injuries most often are small and rarely require treatment except for a local anaesthetic gel. Having this in mind, the recommendation of using a colposcope or dye to visualise injuries, is hardly reasonable because it might detrimental to the victim. Thus, it is possible that an additional procedure such as colposcopy, that tends to prolong the time of the examination, retraumatises' the victim? One might argue that the attention on this "insignificant" bodily harm to her genitalia has a negative influence on her ability to resume a normal sexual relation with her partner or that it increases her attention towards sensations from her pelvic region. If this is the case "over"-examination might increase her risk of health problems later on, such as sexual dysfunction and chronic pelvic pain. One of the purposes of establishing centres for victims of sexual assault, where immediate gynaecological evaluation and psychosocial help are offered, is indeed to prevent the development of both mental and physical health problems later on.

Whether the health consequences, both physical and mental, are avoided or diminished by means of therapy immediately after the abuse remains unanswered. In the NorAQ, it was shown that only 22 % of the women who had a history of sexual abuse ever applied for help because of abuse-related sufferings. Twenty-five percent did report suffering,

but had no professional help, and about 50 % stated that they had neither suffered nor applied for help because of the abuse.
An American study of female gastroenterological patients with a history of sexual abuse found that women who had been seriously injured (life threatening) during the sexual assault reported averagely more pain, more somatic symptoms, and more days in bed due to disability, more lifetime surgeries, and more functional disability than those who had not been seriously injured (155).

5.3 Future research

Within this area many aspects remain unknown. I summarize a few unsolved questions that have arisen during my work with the PhD-thesis.
1. When discussing the value of genitoanal injury in a legal connection the next question to address is whether genitoanal injuries always indicate that a criminal act was posed upon a woman? There are studies, which suggest that the proportion of women with macroscopically visible genital injuries after consensual intercourse is less compared with that of sexual assault victims. However, results need to be proven in larger studies.
2. As part of an evaluation of the function of centres for victims of sexual assault it would be interesting to know how victims, both at the acute examination and at follow-up, perceive the gynaecological examination. We want to learn whether we traumatise or heal, and hopefully it will also enable us to improve the service offered.
3. It would be valuable if we could somehow evaluate the effect of early intervention. Since a prospective cohort study may not be feasible, due to ethical concerns, a register-based study of contacts to The Danish National Patient Register e.g. 5 and 10 years after attending a centre for victims of sexual assault, compared with a matched control group of victims who received no early intervention, could be carried out. It is also possible within the dataset from The KK-NorVold Study to analyses differences in health status among those who reported that they sought help for sexual abuse related sufferings and among those who did not.

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