

## Observational Studies

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# Chronic vulvar pain in gynecological outpatients

<https://doi.org/10.1515/sjpain-2021-0223>

Received December 15, 2021; accepted May 18, 2022;

published online July 11, 2022

### Abstract

**Objectives:** Chronic vulvar pain (CVP) is pain in the vulvar area exceeding three months of duration. Previous studies have reported a prevalence of 7–8% in the general population and observed an association between CVP and other chronic pain, affective disorders and early life stressors. The aim of this study was to estimate the prevalence of CVP among gynecological outpatients and to explore its association with child sexual abuse, comorbid fibromyalgia and mental health.

**Methods:** We conducted a questionnaire-based cross-sectional study among consecutive women attending an unselected general gynecological outpatient clinic at St Olav's University Hospital, Trondheim, Norway, during the period August 1st, 2017, to June 30th, 2018. CVP was defined as having experienced either vulvar burning, sharp pain or allodynia for three months or more within the previous year. Fibromyalgia was defined as widespread pain in the past six months in conjunction with a symptom severity score  $\geq 5$  on the fibromyalgia symptom severity score inventory, an ordinal scale from zero to 12. We collected information on sexual coercion experience and assessed mental health with the mental health inventory

(MHI-5) of the SF-36 health survey, which yields a zero to five scale.

**Results:** Of 1,125 questionnaires distributed, 810 (72%) were returned, and 762 (68%) included in final analyses. Among these, 130 (17.1%) reported CVP within the previous year and 92 (16.7%) were classified as suffering from fibromyalgia. Fibromyalgia was associated with CVP (adjusted OR of 1.8, 95% CI 1.1–3.1). Child sexual abuse was reported by 96 (13.1%) and was associated with CVP (adjusted OR 2.0, 95% CI 1.2–3.3). CVP and fibromyalgia were both associated with lower mental health scores; 0.51 and 0.58 points on the MHI-5 scale, respectively.

**Conclusions:** Chronic vulvar pain is common among women in a gynecological outpatient clinic and associated with child sexual abuse, comorbid fibromyalgia and worse mental health. Ethical committee number: REK Midt No. 2016/2150.

**Keywords:** chronic vulvar pain; fibromyalgia; mental health; prevalence; sexual abuse; vulvodynia.

## Introduction

Longstanding vulvar pain has been recognized as an important condition with impact on both health, sexual function and quality of life [1, 2]. Additionally, chronic vulvar pain (CVP) is associated with a substantial economic burden for the individual and the society [2]. Most studies on prevalence of vulvar pain have been conducted in the USA, with estimates of CVP of 7–8% among women in the general adult population [3–5]. The prevalence of vulvar pain is less well studied in European populations and in clinical settings. Studies from Portugal [6] and Spain [7], however, have estimated a similar population prevalence of 6–7%. To our knowledge, only one study has been conducted in a Nordic country [8]. In a clinical sample of 502 consecutive female attendants at a Norwegian sexual health clinic, the prevalence of longstanding (>3 months) vulvar pain was found to be 23% [8].

Women suffering from CVP are a heterogeneous group, and the condition is regarded as multifactorial. When no clear cause is found, the condition is called vulvodynia.

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Several studies have indicated a link between the development of vulvodynia and actual or precedent genitourinary infections, including yeast infections [9], bacterial vaginosis [10] and urinary tract infections [11, 12], suggesting that inflammatory processes trigger sensitization processes in vulva. In addition, CVP is associated with several other types of pain, including fibromyalgia, irritable bowel and bladder pain syndromes [4, 7, 13]. Thus, it has been hypothesized that concurrent chronic pain conditions could be due to shared sensitization mechanisms [13]. The most well-documented central sensitization mechanisms are prior traumatic life events and stressors and poor mental health [14]. Foremost, sexual abuse has been associated with multiple pain conditions, including chronic pelvic pain [15] and fibromyalgia [16]. Vulvodynia, however, has been studied with conflicting results; some studies report an association between vulvodynia and early life stressors, including sexual abuse [17, 18], others not [19]. On the other hand, many studies have found an association between vulvodynia and mental distress [20–22]. The causal direction is not established, and quite possibly, it is bidirectional. In a retrospective cohort study that looked into the issue [21], antecedent depression and anxiety disorders influenced the risk of vulvodynia acquisition, and vulvodynia increased the risk of both new and recurrent psychopathology.

The aim of this study was to estimate the prevalence of chronic vulvar pain (CVP) among general gynecological outpatients. Additionally, we wanted to assess its association to child sexual abuse, poor mental health and comorbid pain.

## Material and methods

We conducted a cross-sectional study among consecutive women attending the general gynecological outpatient clinic, at the Department of Obstetrics and Gynecology, St. Olavs hospital, Norway, during the period August 1st, 2017, to June 30th, 2018. The only hospital in the region, it receives approximately 130 new referrals for CVP per year [23]. Women aged  $\geq 18$  years, Norwegian speaking and referred electively, were eligible. We excluded women consulting for malignant diseases, termination of pregnancy or infertility treatment. Along with the appointment letter, we enclosed an invitation and the questionnaire. When arriving, they put their questionnaire in a locked container provided at the reception. Those not bringing the questionnaire were offered a new one. The questionnaire was anonymous. Of 1,125 questionnaires distributed, 810 (72%) were returned.

We addressed CVP with three questions on vulvar discomfort: “During *the last year*, did you ever experience any of the following symptoms for *three months or more*?” 1) ... burning pain/sensation in the vulvar area 2) ... periodic stabbing or sharp pain in your vulvar area 3) ... excessive pain on contact to the vulvar area? We classified

women as “CVP last year” cases, if they responded positively to at least one of these, in accordance with previous studies [24].

Questions assessing other pain conditions during the *last six months* included lower abdominal/pelvic, menstrual, bladder, and widespread pain. We also used the fibromyalgia symptom severity score (FSS), which yields an ordinal zero to 12 scale based on presence of fatigue, unrefreshed sleep, thinking problems, depression, abdominal cramping and headache [25]. We classified women as fibromyalgia cases if they reported widespread pain and achieved an FSS score  $\geq 5$  [25].

We assessed mental health with the Mental Health Inventory (MHI-5) which include five items: Nervousness, down, peacefulness, blue/sadness and happiness, measured on a zero-to-five Likert scale. The scale has acceptable reliability and validity regarding mood disorders [26]. The three negatively worded items were reverse-scored, and a mean across all items was calculated, yielding a continuous scale from zero (low) to five (high). The FSS and MHI-5 achieved good internal consistency, with Cronbach’s alpha 0.80 and 0.87, respectively.

We defined recurrent vulvovaginal candidiasis as  $\geq 4$  episodes last year, and recurrent urinary tract infections as  $\geq 3$  episodes last year. We asked whether the woman had “experienced sexual coercion (sexual abuse)”, and whether this experience happened before the age of 18.

Data were analyzed using SPSS version 25. Of 810 returned questionnaires, we excluded one incomplete and three from respondents aged  $< 18$  years. We analyzed patterns of missing data by inspection and Little’s MCAR test, which was non-significant, indicating missing completely at random. Accordingly, we excluded respondents with missing information on age ( $n=16$ ), and/or missing information on all CVP questions ( $n=28$ ), yielding a final sample of 762 respondents. We used list wise deletion in analyses. Comparisons were made by chi square for categorical and student’s t-test for continuous variables. Normality of data distribution was checked by visual inspection of frequency histograms and Kolmogorov–Smirnov test. We used logistic and linear regression to explore the association between the dependent variables, CVP and mental health, and independent variables.

## Results

The final sample constituted 762 women with mean age 45.6 years (SD 15.0, range 18–85), of whom 478 (64%) were currently working and 311 (41%) had a college or university degree. In total, 543 (72%) were married or cohabitants, and their mean parity was 2.0 (SD 1.4). The four most common reasons for appointment were pelvic organ prolapse/urinary incontinence ( $n=182$ , 25%), pain in lower abdomen/pelvis ( $n=145$ , 20%), pelvic mass ( $n=95$ , 13%) and abnormal uterine bleeding ( $n=73$ , 10%). One hundred and thirty women (17%) reported CVP last year. Women who reported CVP, were younger (mean age 40.3 vs. 46.5 years). Accordingly, they also were more likely to be currently studying (17% vs. 5%), had slightly lower BMI (25.1 vs. 26.3) and had fewer children (29% vs.

16% nulliparous) than women not reporting CVP. Having an appointment for pain in the lower abdomen/pelvis was strongly associated with reporting CVP. Table 1 shows patient sociodemographic and background characteristics.

The prevalence of CVP was 17% (n=130), with 10% (n=76) reporting burning pain, 7.2% (n=55) sharp pain and 9.1% (n=69) allodynia. There was modest overlap between the different vulvar pain descriptors, with 16% (n=20) of the CVP patients reporting all three and 24% (n=29) reporting two pain descriptors (Figure 1, Venn diagram).

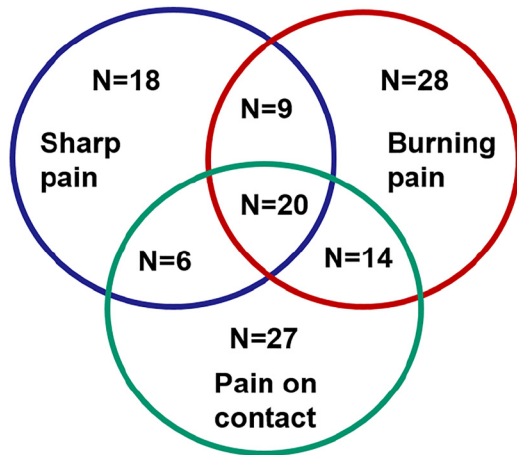
When excluding women whose main reason for appointment was pain in the lower abdomen/pelvis (n=145), the CVP prevalence was 9.8% (n/n=72/733).

Sexual abuse was reported by 136 women (19%), of whom 96 (13%) reported having had such experiences before 18 years of age. Having experienced child sexual abuse was associated with CVP, with an age-adjusted OR (aOR) of 2.0, 95% CI 1.2–3.3. Self-reported abdominal/pelvic pain, bladder pain, and irritable bowel symptoms were all associated with CVP with aORs of 4.0, 95% CI 2.5–6.5, 3.1, 95% CI 2.1–4.6, and 1.7, 95% CI 1.1–2.6,

**Table 1:** Sociodemographic and background characteristics among women with and without chronic vulvar pain in a gynecological outpatient clinic<sup>a</sup>.

	Chronic vulvar pain						p-Value
	Total		Yes		No		
	n=762		n=130		n=632		
	n/M	%/SD	n/M	%/SD	n/M	%/SD	
Age (n=762, range 18–85)	45.6	15.0	40.3	15.3	46.5	14.6	<0.001
Norwegian origin (n=758)	715	94.3	120	92.3	595	94.7	0.274
Work status (n=746)							
Employed	478	64.1	65	51.2	413	66.7	<0.001
Unemployed	25	3.4	6	4.7	19	3.1	
Student	49	6.6	21	16.5	28	4.5	
Retired/welfare	194	26.0	35	27.6	159	25.7	
Educational status (n=758)							
None/primary/secondary school	62	8.2	14	10.9	48	7.7	0.643
High school	201	26.6	37	28.7	164	26.2	
Vocational education	181	24.0	29	22.5	152	24.3	
University degree	311	41.2	49	38.0	262	41.9	
Relationship status (n=755)							
Married/cohabitant	543	71.6	89	68.5	454	72.3	0.204
Regular partner, non-cohabitant	61	8.0	9	6.9	52	8.3	
Single/separated	154	20.3	32	24.6	122	19.4	
Parity (n=762)							
0	135	17.7	37	28.5	98	15.5	0.001
1	109	14.3	21	16.2	88	13.9	
≥2	518	68.0	72	55.4	446	70.6	
Body mass index (n=736)	26.1	4.84	25.1	4.44	26.3	4.90	0.011
Previous vulvar surgery (n=708)							
No	583	82.3	100	80.6	483	82.7	0.585
Yes	125	17.7	24	19.4	101	17.3	
Reason for appointment (n=737)							
Pelvic organ prolapse/urinary incontinence	182	24.7	14	11.0	168	27.5	<0.001
Pain in lower abdomen/pelvis	145	19.7	58	45.7	87	14.3	
Pelvic tumor/mass	95	12.9	9	7.1	86	14.1	
Bleeding disorders	73	9.9	12	9.4	61	10.0	
Cytology, biopsy or other sampling	49	6.6	6	4.7	43	7.0	
Contraception/IUD	38	5.2	3	2.4	35	5.7	
Postmenopausal bleeding	23	3.8	1	0.8	24	3.3	
Pregnancy related conditions	22	3.0	4	3.1	18	3.0	
Other, including outpatient surgery	109	14.8	20	15.7	89	14.6	

<sup>a</sup>Continuous measures reported with means (M) and standard deviations (SD), and categorical with numbers and percentages.



**Figure 1:** Venn-diagram of reported pain descriptors among 122 women with chronic vulvar pain in a gynecological outpatient clinic.

respectively. Almost half of the women reported menstrual pain, which was associated with CVP in the crude analysis, OR 1.7, 95% CI 1.2–2.6, but not in the age-adjusted analysis, aOR 1.2, 95% CI 0.77–1.9. Ninety-two women (17%) reported fibromyalgia, which showed an association with CVP with an aOR of 1.8, 95% CI 1.1–3.1. Recurrent urinary

tract infection, vulvovaginal candidiasis and bacterial vaginosis were all strongly associated with CVP, with aORs of 3.0, 95% CI 1.5–6.1, 3.9, 95% CI 2.1–7.3, and 2.9, 95% CI 1.4–6.5, respectively (Table 2).

Chronic vulvar pain and fibromyalgia were both associated with lower mental health scores, indicating worse mental health (Table 3), with a reduction of 0.51 and 0.58 points on the MHI-5 scale, respectively. The direct effect of child sexual abuse on mental health was not statistically significant, with a p-Value of 0.15. In this model, the collective set of predictors explained 20% ( $R^2$ ) of the variance in change in mental health.

**Table 3:** Predictors of mental health score measured with the mental health inventory scale of the SF-36 health survey (0–5) in women in a gynecological outpatient clinic.

Variable	Coefficient (B)	Standard error	p-Value
(Constant)	3.132	0.131	<0.001
Chronic vulvar pain	−0.508	0.099	<0.001
Age	0.016	0.003	<0.001
Child sexual abuse	−0.168	0.116	0.150
Fibromyalgia	−0.576	0.098	<0.001

**Table 2:** Reported age, history of child sexual abuse, comorbid pain conditions, vulvar surgery and genitourinary infections by chronic vulvar pain (CVP) status among women in a gynecological outpatient clinic<sup>a</sup>.

	CVP				p-Value	Crude		Age-adjusted	
	Yes		No			OR	95% CI	OR	95% CI
	n=130		n=632						
	n/M	%/SD	n/M	%/SD					
Age (n=762)	40.3	15.3	46.5	14.6	<0.001	0.97	0.96–0.98	–	–
Child sexual abuse (n=735)									
Never	97	88.2	542	83.6	0.002	Reference	Reference		
Ever	27	21.8	69	11.3		2.2	1.3–3.6	2.0	1.2–3.3
Other pain conditions (n=719) <sup>b</sup>									
Bladder pain	63	49.6	147	24.8	<0.001	3.0	2.0–4.4	3.1	2.1–4.6
Abdominal or pelvic pain	100	78.7	267	45.1	<0.001	4.5	2.9–7.1	4.0	2.5–6.5
Menstrual pain	70	55.1	245	41.4	0.005	1.7	1.2–2.6	1.2	0.77–1.9
Irritable bowel symptoms	76	61.8	281	47.7	<0.005	1.8	1.2–2.6	1.7	1.1–2.6
Fibromyalgia (n=552)	24	25.5	68	15.9	0.026	1.8	1.1–3.1	1.8	1.1–3.1
Previous vulvar surgery (n=708)									
No	100	80.6	483	82.7	0.585	Reference	Reference		
Yes	24	19.4	101	17.3		1.2	0.70–1.9	1.4	0.82–2.3
Genitourinary infections									
Recurrent urinary tract infection (n=703)	14	12.1	25	4.3	0.001	3.1	1.6–6.1	3.0	1.5–6.1
Recurrent vulvovaginal candida (n=740)	21	17.6	26	4.2	<0.001	4.9	2.7–9.1	3.9	2.1–7.3
Bacterial vaginosis (n=630)	12	10.8	17	3.3	0.001	3.6	1.7–7.7	2.9	1.4–6.5

<sup>a</sup>Expressed in odds ratios (OR) with 95% confidence intervals (CI). Continuous measures reported with means (M) and standard deviations (SD), and categorical with numbers and percentages. <sup>b</sup>More than one category possible.

## Discussion

Chronic vulvar pain was common among women attending our gynecological outpatient clinic, with a prevalence of 17% within the last year. Most women with CVP were not primarily referred for abdominal/pelvic pain, but an appointment for pain in the lower abdomen/pelvis was associated with reporting CVP. A population-based study from Boston of 3,358 women aged 18–64 years, which used the same definition of CVP as in our study, found that 16% of women experience CVP at some time and 7% were currently suffering from CVP [27], with highest incidence before age 25, and decreasing until age 45 years. A subsequent population study from Boston and Minneapolis/Saint Paul with 19,121 respondents, estimated that 7–8% of women would meet vulvodynia criteria before the age of 40 [3]. CVP is less well studied in European populations. Vieira-Baptista et al. [6] found in a cross-sectional study of 1,229 Portuguese women aged 18–66 years, that 6.5% reported CVP.

Our estimated CVP prevalence of 17% in a gynecological outpatient population is higher than in general population-based studies. However, our results are in line with studies from other gynecological populations. Goetsch found that among 210 consecutive women seen in his general gynecological practice in Oregon, 37% had some degree of positive cotton swab testing, and 15% met clinical criteria consistent with vulvodynia [28]. In another clinical study Denbow & Byrne found a prevalence of vulvar pain of 13% among 150 consecutive women attending their genitourinary medicine clinic in London [29]. Our results also replicate findings of a previous Norwegian study from 2002 [8]. In their clinical sample of 502 attendants at a sexual health clinic, the prevalence of vulvar soreness, burning, dryness and fissures lasting for three months or more, was 23%.

We found that recurrent urinary tract and vulvovaginal infections were strongly associated with CVP. In accordance with our findings, recurrent genital candidiasis and a history of bacterial vaginosis were independent risk factors for dyspareunia in the Norwegian study from a sexual health clinic [8]. However, these women were younger (mean age 24 years vs. 45 years in our sample) and had a very high rate of genital infections (e.g., 35% for chlamydia, 30% for genital warts and 30% for bacterial vaginosis). Other studies have also observed an association between vulvodynia and yeast infections [9], bacterial vaginosis [10] and urinary tract infections [11, 12]. However, these are self-report-studies, and vulvodynia is a diagnosis of exclusion. Thus, both detection bias and recall bias may contribute [30]. Even more, patients and physicians might

use treatments for urogenital infections *ex juvantibus* despite the lack of a microbiological diagnosis [9, 31]. Thus, the relationship between infections and vulvodynia could be inflated due to misclassification of symptoms and erroneous anti-infective treatments [30].

We found that child sexual abuse and lower mental health score were associated with CVP. This is in line with other studies confirming a high rate of depressive symptoms and psychological difficulties in women with vulvodynia [20, 32]. In contrast to our study, however, no association was demonstrated between depression or sexual abuse and chronic vulvar pain among women attending the Norwegian sexual health clinic [10]. There are probably many paths to CVP, and the condition may be mediated by both peripheral and central nervous system sensitization mechanisms. Unlike our sample, vulvar pain among the younger sexual health clinic attendants was probably largely driven by infections.

We found that other pain conditions, including fibromyalgia were associated with CVP. Our results are in line with previous studies that consistently report associations between symptoms of vulvodynia and the diagnoses of IBS [22] and other pain conditions [5, 22]. The reasons for the co-occurrence of these conditions are not well studied, but adverse life events and psychosocial factors are known to play an important role in the development and maintenance of chronic pain and could be a mediator [33]. We found a clear association with previous sexual coercion experience and worse mental health, which points in this direction. Possibly, adverse life events and psychosocial stress are risk factors for chronicity of pain regardless of the site of pain. Fibromyalgia, in turn, could represent an end stage after longstanding biological, mental and social stressors [34]. The development of fibromyalgia is also thought to be moderated by risk factors such as child sexual abuse [33, 35].

There are limitations to our study. With a response rate of 72%, some selection bias may have occurred. Women without pain or vulvar symptoms might be less interested in participating in a vulvar pain prevalence study. This may have inflated our prevalence estimate. For sake of brevity, we did not use the widespread pain index, but asked whether the respondent had experienced widespread pain/fibromyalgia in the last six months. This may have weakened the validity of the fibromyalgia construct, and inflated the prevalence in our sample, but this approach has been used in previous fibromyalgia studies [36].

Self-report is susceptible to respondents' memory and understanding. Respondents with more pain might recall and report more symptoms and complains explaining their pain (recall bias). This may have inflated the strength of



association between CVP and presented variables. We have collected responses from one hospital area only, and that hospital has regional tertiary care function for women with complex vulvar conditions. However, it is also the only local hospital in that region, and the number of cases referred for vulvar pain from other hospitals or private specialists, is quite low, and the specialized vulva team at St Olavs hospital treats approximately 20 new cases of refractory vulvodynia yearly [23]. Thus, it should have limited impact on the generalizability of our findings. A national sample from several gynecological outpatient clinics would have been preferable. This would have increased generalizability and contributed with nuances in the data regarding possible effects of local patient and practice variances, giving a more robust prevalence-estimate of CVP and strength of associated factors.

## Conclusions

CVP seems to be common among gynecological outpatients. The multifactorial nature, the high rate of comorbid pain, the link to child sexual abuse and worse mental health among women suffering from CVP, underscores the need of a holistic and multidisciplinary approach to these women. More studies are needed to examine how chronicity of pain is influenced by adverse life events and psychosocial stress. Understanding risk factors and underlying mediators might identify preventive strategies.

**Research funding:** We acknowledge financial support from Norwegian Women's Public Health Association, and material support from St. Olavs hospital, Department of Obstetrics and Gynecology.

**Author contributions:** All authors have accepted responsibility for the entire content of this manuscript and approved its submission. All authors have made substantial contributions to the following [1]: the inception and design of the study (PKT, CTH, EAF, ES, RLH, BS) [2], drafting the protocol (PKT, CTH, EAF, ES, RLH, BS) [3], data acquisition (PKT, CTH, ES) [4], data analyses and data interpretation (PKT, CTH, EAF, ES, BS) [5], drafting of the manuscript (PKT, CTH, EAF, ES, RLH, BS).

**Competing interests:** Authors state no conflict of interest.

**Informed consent:** Informed consent has been obtained from all individuals included in this study.

**Ethical approval:** Research involving human subjects complied with all relevant national regulations, institutional policies and is in accordance with the tenets of the Helsinki Declaration (as amended in 2013) and has been approved by the Regional Ethics Committee in Mid-Norway (REK Midt No. 2016/2150).

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