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### Original experimental

# Coping with pain in intimate situations: Applying the avoidance-endurance model to women with vulvovaginal pain

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### HIGHLIGHTS

- There are few studies about the mechanisms involved in vulvovaginal pain.
- This longitudinal study explored the links between catastrophizing, coping and pain.
- Avoidance and endurance of sexual activities were explored as coping behaviors.
- Avoidance emerged as a mediator of the link between catastrophizing and pain.
- This indicates that reactions as well as coping are central for pain in this group.

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### ABSTRACT

**Background and aims:** Chronic vulvovaginal pain is strikingly common and has a serious impact on women's lives. Nevertheless, there are few longitudinal studies focusing on mechanisms involved in the pain development. One area of interest is how women cope with sexual activities and how this affects their pain. In this study, avoidance and endurance coping behaviors were explored as possible mediators of the relation between catastrophizing and pain, cross-sectionally and longitudinally.

**Methods:** 251 women (18–35 years old) with vulvovaginal pain were recruited in university settings and filled out questionnaires about their pain, catastrophizing and coping behaviors at two occasions, with five months in between. Multiple mediation models were tested, exploring avoidance and endurance as mediators of the relation between catastrophizing and pain.

**Results:** The results showed that avoidance was an influential mediator of the link between catastrophizing and pain. Using multiple mediation models we found that although the indirect effects of both avoidance and endurance were significant cross-sectionally, only avoidance was a significant mediator in the combined model exploring associations over time.

**Conclusions:** This study indicates that the strategies women with vulvovaginal pain use for coping with sexual activities are important for the course of pain. Avoidance and, to a lesser degree, endurance strategies were identified as important mediators of the effects of catastrophizing on pain. When exploring the links over time, only avoidance emerged as a significant mediator.

**Implications:** In this longitudinal study, catastrophizing was linked to vulvovaginal pain, via avoidance and endurance of sexual activities. Hence, targeting catastrophizing early on in treatment, as well as addressing coping, may be important in clinical interventions.

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### 1. Introduction

Chronic vulvovaginal pain and other types of gynecological pain are widespread problems, reported by 8–21% of premenopausal women (e.g. [1,2]). The pain has a serious impact on women's lives, affecting daily activities [3] and quality of life [4] as well as sexual activities and satisfaction [5] since vaginal penetration often is very painful. Yet, there are few longitudinal studies focusing on this pain group.

One topic of interest is how these women cope with sexual activities. In other pain populations, fear-related avoidance has emerged as a central coping strategy [6], which may seem functional in the short run but is associated with worse outcome over time because of increased pain and disability. The fear-avoidance model of pain [7] was developed to illustrate this vicious circle, and has been endorsed by substantial empirical support, mainly in people suffering from musculoskeletal pain (see e.g. [6,8]). While fear-avoidance tendencies are acknowledged as maladaptive also in women with vulvovaginal pain (for a review, see [9]), there is limited support for the impact over time. To our knowledge, there is only one prospective study exploring this topic [10]. In that study, changes in fear-avoidance variables over a two-year period were not associated with outcomes. Endurance is another frequently used coping behavior in women with vulvovaginal pain (e.g. [11]), but longitudinal data of its influence is lacking.

In line with the fear-avoidance model of pain, avoidance behavior mediates the link between pain catastrophizing (i.e. exaggerated negative cognitions around pain) and pain-related outcomes [7]. An alternative possibility is that women with vulvovaginal pain instead of avoiding rather endure sexual activities, because they catastrophize around other topics than the pain itself (e.g. losing the partner). This hypothesis is supported by evidence that these women more often have intercourse because of mate guarding and duty or pressure motives than women without vulvovaginal pain [12,13]. Endurance behavior may however result in a lack of arousal, insufficient lubrication and an increase in nociceptor sensitization [14]. Hence, an alternative model is that endurance mediates the relationship between catastrophizing and pain-related outcomes. Consequently, there are two possible mediation models to be tested, cross-sectionally, of a descriptive purpose, and longitudinally. Examining mediation in this context is important, as it may help to understand the link between catastrophizing and pain. It may also provide a direction for interventions early on in the pain development. The aim of this study is to explore whether avoidance and/or endurance of sexual activities, when triggered by catastrophizing, might influence vulvovaginal pain over time.

### 2. Methods

### 2.1. Design

This longitudinal study is based on a subsample from a larger data set (Sex and Pain, SAP) including women with and without vulvovaginal pain who filled out a number of self-report inventories and were followed over time, in order to study the development of vulvovaginal pain. The current study used data from the first and second measurement points, with five months in between.

#### 2.2. Recruitment

Women between 18 and 35 years were recruited at two universities in two middle sized cities in Sweden. The university setting was chosen to maximize the chances of getting the women to respond on several occasions, which in turn enables analyses of

Age (years)	
Mean (SD)	23.08 (3.3)
Relationship	
Yes (n, %)	198 (79%)
No ( <i>n</i> , %)	47 (19%)
Other ( <i>n</i> , %)	6 (2%)
Relationship length (years)	
Mean (SD)	3.1 (2.7)
Gender of partner	
Male (n, %)	196 (96%)
Female (n, %)	6 (3%)
Other ( <i>n</i> , %)	2 (1%)
Children	
Yes (n, %)	25 (10%)
No ( <i>n</i> , %)	223 (90%)
Pain subscale FSFI (1–6)	
Mean (SD)	2.84 (1.3)

how mechanisms influence vulvovaginal pain over time. All women in 66 classes were invited to remain in the classroom after lectures to get information about the study. The purpose of the study was described as: "...to increase the understanding of sexual pain in women, with the main focus on psychological and relational factors linked to pain, but also to explore sexual habits more broadly." If the women agreed to participate, they filled out informed consents, picked questionnaires from an open box in the classroom, completed the questionnaires, and put them in blank envelopes in a closed box in the classroom. If they preferred to fill out the questionnaires at home, they got the possibility to bring them and hand them in later, in a closed box at the research center. The participants were provided coffee coupons as incentives. Five months later, all participants were sent an identical questionnaire to their home address together with written information about the study and a pre-paid envelope. Non-responders were sent e-mail reminders after two and four weeks. After returning the questionnaire, responders were sent cinema tickets as incentives. The study was approved by the Regional Ethical Review Board in Uppsala, Sweden (D Number 2014-407).

### 2.3. Participants

Inclusion criteria were: (1) 18-35 years old, (2) vulvovaginal pain during the last 6 months ("Have you experienced recurrent pain during sexual intercourse/touch/contact with the vulva during the last 6 months?") and (3) sexually active during the last month. 1034 women completed the questionnaire at the first occasion. 12 women were excluded because informed consents were lacking. Out of the remaining 1022 women, 296 (29%) reported vulvovaginal pain. Of these women 39 were excluded because they were not sexually active and additionally 6 women had too many missing values (>20% or more than 1 missing value/subscale) on the measures used in the analyses. The remaining 251 women constitute the sample of the current study. At the second measurement point, 140 of the 251 women (56%) filled out the questionnaire; of these 2 women had too many missing values on the variables used in the study, resulting in 138 women included in the analyses at time point 2. At the second measurement point, 100 women (72%) reported vulvovaginal pain. Table 1 displays baseline characteristics of the sample. As can be seen, the mean age was 23, nearly 80% were is a relationship and 10% had children. The mean level of pain intensity was 2.84 (out of 10). A non-response analysis between responders at time point 1 only (N = 111) and responders answering the questionnaire at both time points (N = 138) was executed on the variables age, pain catastrophizing, avoidance, endurance and pain intensity, showing no significant differences between non-responders and responders

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