

The Role of Anxiety in Vaginismus: A Case-Control Study

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ABSTRACT

Introduction. Previous research suggests that anxiety may play a large role in the symptoms of vaginismus.

Aim. We aimed to (i) determine the degree of self-reported general anxiety in women with vaginismus; and (ii) establish whether general anxiety is a consequence of the condition or a predisposing factor.

Main Outcome Measures. Participants reported state and trait anxiety, five-factor personality scores, history of anxiety disorders, and their perceptions of their symptoms and history.

Methods. We compared responses of 244 self-identified women with vaginismus with a control group of 101 women using an online questionnaire.

Results. The women with vaginismus were higher in trait anxiety and neuroticism, and lower in extraversion, than the controls. There was also a trend toward a greater prevalence of diagnosed anxiety disorders in the vaginismus group. Levels of state anxiety were high among the women with vaginismus, particularly when they felt unsupported by their partners or pressured to cure the condition.

Conclusion. Levels of general anxiety are elevated among women with vaginismus and the data suggest that anxiety-proneness may be a predisposing factor for the condition. We conclude that although vaginismus is a multidimensional condition, it may have common predisposing factors with anxiety disorders. **Watts G, and Nettle D. The role of anxiety in vaginismus: A case-control study. J Sex Med **;**:**-**.**

Key Words. Vaginismus; Anxiety; Anxiety Disorders; Sexual Pain; Dyspareunia

Introduction

Vaginismus is defined as the recurrent or persistent involuntary spasm of the musculature of the outer third of the vagina that interferes with vaginal penetration and that causes personal distress [1]. The prevalence of vaginismus among women reporting sexual problems or seeking sex therapy is estimated between 5% and 42% [2–4], but, due to the sensitive nature of the condition, there may be many women affected who never seek clinical attention. Despite its widespread occurrence, vaginismus remains under-researched, with debate ongoing about the factors causing and maintaining it [4–6]. It is, however, clear that any adequate model of vaginismus must acknowledge the roles of emotional aversion, feelings of threat, avoidant behavior, and fear of pain, which may cause muscular spasm [6–8]. These are all facets of

anxiety, and anxiety is generally accepted as etiologically important in vaginismus [9].

However, the question needs to be addressed whether this anxiety is uniquely focused on vaginal penetration, or whether women with vaginismus are anxious in a more general way. Some studies have suggested that women with vaginismus have elevated levels of general anxiety and stress as well as penetration-specific anxiety [10,11]. Nasab and Farnoosh [12] attempted to treat 70 women suffering from vaginismus, but during their study, 13 of their participants were diagnosed with an anxiety disorder and another eight with a specific phobia, suggesting a high level of comorbidity between vaginismus and anxiety disorders.

If general anxiety is a salient feature of vaginismus, this could be a consequence of the condition, or, alternatively, it could be that a temperamental proneness to anxious responses is a predisposing

factor. There are several strategies one might use to test between these possibilities. Psychologists have usefully distinguished between trait anxiety, which is the temporally stable disposition to respond to threatening situations with anxious symptoms, and state anxiety, which refers to current anxious symptoms [13,14]. These can be separately measured using the Spielberger State and Trait Anxiety Inventory (STAI) [15]. If women with vaginismus are elevated in state anxiety only, it seems likely that their anxiety is a consequence of their vaginismus, whereas, if they are elevated in trait anxiety to at least the same extent as state anxiety, this suggests that anxiety proneness may be a predisposing factor.

A second strategy would be to measure broad personality traits such as the “five factors” of extraversion, neuroticism, conscientiousness, agreeableness, and openness to experience [16,17]. These dispositional traits are relatively stable over the lifetime, and are predictive of many types of health and other difficulties [18–21]. Most relevant here are neuroticism, which is a measure of susceptibility to negative affect, and extraversion, which is a measure of proneness to positive affect. The combination of high neuroticism and low extraversion has been found to predict the development of anxious symptoms and several types of anxiety disorder [22–24]. Thus, if women with vaginismus were relatively high in neuroticism and low in extraversion, it would be suggestive of a predisposing temperament. The third strategy is to examine the comorbidity between vaginismus and apparently unrelated anxiety disorders. A high level of comorbidity would suggest a shared diathesis.

Aim

There were two aims to this study. The first was to investigate the levels of general anxiety (as opposed to anxiety specifically regarding penetration) in women with vaginismus. The second was to try to distinguish whether general anxiety in women with vaginismus was a consequence of the condition or a predisposing factor. In furtherance of these aims, we compared the responses of a group of self-identified women with vaginismus with those of a control group on measures of state and trait anxiety and five-factor personality dimensions and compared reported prevalence of other anxiety-related conditions. We also asked women in the vaginismus group a set of questions about the history of their symptoms and their own views

on the factors involved. If anxiety plays a predisposing role in vaginismus, we predict that women in the vaginismus group will have elevated levels of state anxiety, trait anxiety, and neuroticism, and reduced levels of extraversion, compared with women in the control group, but that there will be no difference between the groups in terms of conscientiousness, agreeableness, or openness. We additionally predict that the prevalence of other anxiety disorders will be elevated in the vaginismus group.

Methods

Procedure

We created two versions of an online survey containing the main measures and, in one version, additional questions about vaginismus. Online data collection is widely used in personality research. It produces satisfactory reliability and validity [25], and similar results to those obtained using the same questions presented on paper [26,27]. Indeed, where questions are of a sensitive nature and the need for perceived anonymity and privacy is high, online presentation may be advantageous and leads to greater self-disclosure. Procedures were approved by the Newcastle University Psychology Ethics Committee.

Participants

The vaginismus group was recruited by posting a call for affected volunteers to an online support group for women with vaginismus (116 responses) and a vaginismus awareness web site (128 responses, giving 244 in total). The call consisted of short description of the study as an investigation of the experiences and feelings of women with vaginismus and a link to the web page from which the questionnaire could be launched. For the control group, we felt it was important to also sample individuals who were using the Internet to gain advice and support for an ongoing health condition, but not a condition in which anxiety plays a central role. We thus posted calls for female volunteers to online support groups for sufferers of diabetes, rheumatoid arthritis, and hypothyroidism, directing respondents to the version of the questionnaire without the vaginismus questions (101 responses). These calls directed volunteers to the study web page, and described the study and investigation of women’s experiences and feelings about their health. Vaginismus was not mentioned.

The study design is relatively conservative in terms of the hypotheses under test because the fact that the control women had a chronic medical condition and were seeking advice on the Internet may already make them a relatively anxious group. Any differences in anxiety between the control and vaginismus groups will thus be relatively strong evidence for high levels of general anxiety in vaginismus.

Participation was totally anonymous, and participants received no remuneration. Responses were screened for completeness and multiple submissions from the same IP address were not recorded. After the study was complete, an article describing the results was posted to the web sites from which the participants were recruited, but women did not receive individual feedback.

Main Outcome Measures

Respondents completed the 50-item International Personality Item Pool five-factor personality questionnaire [28]. There are a number of five-factor personality questionnaires available. The one we used is of intermediate length, is freely available, and has been validated against the most common full-length five-factor questionnaire, the NEO-PI-R [29]. Cronbach's α was acceptably high for all dimensions (extraversion, 0.90; neuroticism, 0.89; conscientiousness 0.84; agreeableness 0.81; openness 0.79). A second section contained the STAI [15], a 40-item questionnaire that has been used in a large number of published studies of anxiety [14,30]. Cronbach's α was high for both state anxiety (0.96) and trait anxiety (0.93). The third section asked respondents if they had suffered from an anxiety disorder or were taking any antianxiety medications. The vaginismus version then contained a series of questions about the condition, while in the control version, respondents were asked to describe any health problems that they were experiencing. The vaginismus questions included whether the woman felt herself to be anxious in general and if so, whether she felt that this anxiety preceded the vaginismus or vice versa. We also asked if the respondent felt her partner (if applicable) was supportive with regard to vaginismus (Not at all/Not very/A little/Very), and whether she felt pressure from her partner to cure her vaginismus (None/A little/A lot). Due to the unequal distribution of responses, the results for these items are reported below in terms of dichotomous comparisons of "Very" supportive vs. all other responses, and "A lot" of pressure vs. all

other responses. The full questionnaire (vaginismus version) can be inspected online at <http://tinyurl.com/womansstudy>.

In the results for continuous variables, we test for differences between the two groups by *t*-test. Where differences are significant, we report Cohen's *d*, which is a measure of effect size for a difference between two groups [31]. Within the behavioral sciences, a Cohen's *d* of 0.5 is often described as a medium effect and 0.8 as a large effect, although these criteria are somewhat arbitrary.

Results

Table 1 shows the results for the two groups on the personality and anxiety measures. Women in the vaginismus group have elevated state anxiety and trait anxiety scores compared with the control group, with a larger effect size for trait than state anxiety (state anxiety: $t_{(310)} = 4.25$, $P < 0.01$, $d = 0.53$; trait anxiety: $t_{(318)} = 6.09$, $P < 0.01$, $d = 0.73$). Women in the vaginismus group scored higher on neuroticism and lower on extraversion than controls (neuroticism: $t_{(329)} = 4.73$, $P < 0.01$, $d = 0.55$; extraversion: $t_{(329)} = -3.95$, $P < 0.01$, $d = -0.47$). The two groups did not differ significantly on the other three five-factor dimensions (Table 1).

Sixty of the women in the vaginismus group (24.9%) reported suffering an anxiety disorder, compared with 17 of the women in the control group (16.8%). This represents a near-significant trend toward increased prevalence in the vaginismus group (likelihood ratio $\chi^2 = 2.77$, $P < 0.1$, odds ratio 1.64, 95% confidence interval 0.90–2.98).

Analysis of the additional vaginismus questions showed that 187 of the 244 women with vaginismus (76.6%) considered themselves to be anxious, and of these, 105 (56.1%) felt that their anxiety

Table 1 Comparison by group for state anxiety (means and standard deviations), trait anxiety, and five-factor personality dimensions

	Vaginismus group (SD)	Control group (SD)	<i>d</i>
State anxiety	46.65 (14.00)	39.30 (13.93)	0.53
Trait anxiety	50.18 (10.83)	41.92 (11.74)	0.73
Neuroticism	35.63 (7.59)	31.11 (8.86)	0.55
Extraversion	27.97 (7.99)	31.91 (8.86)	-0.47
Conscientiousness	34.31 (7.39)	35.84 (6.85)	ns ($P = 0.08$)
Agreeableness	41.33 (5.08)	42.01 (5.84)	ns
Openness	38.58 (5.65)	37.94 (6.17)	ns

Cohen's *d* is shown where the difference between the groups is significant at $P < 0.01$ using a *t*-test.
ns = not significant.

Table 2 Mean anxiety scores for women in the vaginismus group who had a partner, according to how supportive the partner was rated, and how much pressure to cure her condition the woman felt

	Partner "very supportive" (SD)	Partner not rated as "very supportive" (SD)	<i>d</i>
State anxiety	44.46 (14.30)	52.56 (12.71)	-0.60
Trait anxiety	48.69 (11.07)	55.28 (10.36)	-0.61
	"A lot" of pressure to cure (SD)	Not "a lot" of pressure to cure (SD)	<i>d</i>
State anxiety	50.89 (14.26)	44.61 (13.70)	0.45
Trait anxiety	55.36 (11.79)	48.19 (10.28)	0.65

Cohen's *d* is shown where the difference between the groups is significant at $P < 0.01$ using a *t*-test.
SD = standard deviation.

had preceded their vaginismus. Only 37 (19.8%) thought that their vaginismus preceded their high anxiety, with the rest unable to say. Fifty-seven of the women in the vaginismus group (23.4%) reported that they had suffered sexual abuse in the past. There was no difference between the women in the vaginismus group who reported abuse and those who did not on either state anxiety ($t_{(212)} = 0.59$, $P > 0.1$) or trait anxiety ($t_{(218)} = 1.66$, $P > 0.1$).

Within the vaginismus group, the women with a partner who was very supportive with regard to vaginismus had significantly lower state and trait anxiety scores than women with a partner who was rated as other than very supportive (Table 2; state anxiety: $t_{(164)} = -3.23$, $P < 0.01$, $d = -0.60$; trait anxiety: $t_{(171)} = 3.44$, $P < 0.01$, $d = -0.61$). Women who felt a lot of pressure to cure their vaginismus from their partner had higher state and trait anxiety scores than women who had a partner but did not report feeling a lot of pressure (Table 2; state anxiety: $t_{(164)} = 6.60$, $P = 0.01$, $d = 0.45$; trait anxiety: $t_{(169)} = 3.91$, $P < 0.01$, $d = 0.65$).

Discussion

Our results highlight the very significant role of anxiety in vaginismus. Most of the women in the vaginismus group self-identified as anxious in general. The STAI measures general anxiety, not anxiety specific to penetration, and the women with vaginismus scored substantially and significantly higher than the controls on both of its subscales. Some of this anxiety may be consequent on past sexual abuse, which was reported by a quarter of our respondents with vaginismus. Previous research has identified an elevated prevalence of past sexual abuse in women with vaginismus com-

pared with the controls [6]. However, most women with vaginismus in our sample did not report sexual abuse, and those who did were no more anxious than those who did not.

As for the question of whether anxiety is a predisposing factor or a consequence of the condition, our results tend to suggest the former, or at least that both processes might occur. Many more women with vaginismus felt that their anxiety preceded their vaginismus than the other way around. The magnitude of the difference between the case and control groups was larger for trait anxiety, which measures dispositional proneness to be anxious, than it was for state anxiety, which measures current anxious symptoms. Women in the vaginismus group were higher in neuroticism and lower in extraversion than controls, but did not differ on the other three five-factor dimensions. This is the specific five-factor personality profile associated with the development of anxious symptoms and several anxiety disorders in previous studies [22–24]. Finally, there was a trend toward a greater prevalence of diagnosed anxiety disorders in the vaginismus group than in the controls. This did not reach conventional statistical significance, but we note the low statistical power of our study in this regard, given that anxiety disorders are relatively rare. The trend does however concur with Nasab and Farnoosh's study, which found a high comorbidity between vaginismus and anxiety disorders [12].

The implication of these findings is that a temperamental proneness to anxious responses may be etiologically significant in vaginismus, and that predisposing factors are shared with other anxiety disorders. However, we do not advocate the reclassification of vaginismus as an anxiety disorder. Rather, it is a multidimensional condition of which anxiety, pain, and sexual dysfunction are all components.

Our results showed especially elevated levels of anxiety among affected women with unsupportive partners or who felt pressure from their partners to cure the condition. Because these differences applied to both state and trait anxiety, we are unable to say decisively whether these social factors cause increased anxiety, or whether women prone to feel anxious are more likely to perceive pressure or lack of support. Either way, though, perceived lack of support and pressure to find a cure clearly contribute to the negative experiences of affected women.

Our study has a number of limitations. The women belonging to both groups were self-identified in terms of their conditions and were

restricted to those who happened to see the recruitment materials and wished to volunteer. We are unable to say how the results might have been if the sample had been recruited in a different way, or if inclusion in the vaginismus group had been based on clinical examination. However, our strategy allowed us to reach a relatively large number of affected women. In addition, we lack the ability to distinguish different profiles or severity of symptoms, and we have no further demographic information on the women who filled in the questionnaire. Our control group does not represent the general population, therefore, we are unable to test directly for differences between population-typical anxiety levels and anxiety levels of women with vaginismus. However, we feel that the control group we chose provided a strong test of the hypotheses because we are able to show that women with vaginismus have higher general anxiety than other women with a chronic health condition who are seeking advice and support on the Internet.

Our findings may have implications for the conceptualization and treatment of vaginismus. Recent trends in treatment, such as the use of botulinum toxin [32–34], focus exclusively on the peripheral physical symptoms. Although such symptoms are important, the psychological issues involved in the origin and maintenance of the condition also need to be addressed. Our results highlight the need for vaginismus to be viewed holistically and support the likely utility of treatments such as cognitive-behavioral techniques and desensitization, which are valuable for anxiety disorders and phobias [7,9,12]. Women presenting with vaginismus may in fact be suffering from anxiety more generally than just with regard to penetration. Therapeutic approaches need to take this into account.

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Statement of Authorship

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