university of groningen / faculty of behavioural and social sciences / research master

Master's thesis

The Impact of Sexual Self-Esteem and Religious Affiliation on Vulvodynia

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Programme: Research Master Behavioural and Social Sciences

Theme: Clinical Psychology

ECs: 30

Date: 07/07/2024

Word count: 7209

Are there deviations of the Master's thesis from the proposed plan?
No

Abstract

Background: The relationship between sexual self-esteem (SSE) and vulvodynia is complex. Low SSE has been associated with various sexual problems, including sexual pain. Religious affiliation can also impact sexual attitudes and behaviors, potentially exacerbating sexual issues. This study aimed to explore the relationship between SSE and sexual pain, and whether religious affiliation moderates this relationship. **Methods:** One hundred and eighty sexually active women aged 18-33 participated in the study. They completed a descriptive questionnaire that included questions about their religious affiliation, SSE, and experiences of sexual pain. SSE was assessed using the Sexual Self-Esteem Inventory for Women – Short Form (SSEI-SF), religious affiliation was determined by assessing whether participants identified as religious or not, and sexual pain was rated on a scale from 1 (always) to 5 (never). **Results:** Participants with low SSE exhibited higher levels of vulvodynia. However, when religious affiliation was included for the moderation analysis, the relationship between SSE and vulvodynia diminished and became nonsignificant. There was no significant main effect of religious affiliation on sexual pain, nor a significant moderation of religious affiliation on the relationship between SSE and vulvodynia. **Conclusion:** Results indicate a significant relationship between SSE and vulvodynia, highlighting the importance of addressing low SSE in clinical treatment. However, this effect diminishing when religious affiliation is considered suggests a lack of clarity in this relationship, potentially due to sampling problems. Further research would be necessary to better understand this relationship.

Keywords: Sexual Self-Esteem, SSEI, Sexual Pain, Religion, Religious Affiliation.

The Impact of Low Sexual Self-Esteem and Religious Affiliation on Vulvodynia

Sexual dysfunctions (SDs) are prevalent sexual problems encompassing disorders of sexual arousal, desire, orgasm, and pain that can significantly impact an individuals' well-being and relationships (Bergeron et al., 2020; Pukall et al., 2016; Borg et al., 2011). These dysfunctions encompass a wide range of conditions that affect various aspects of the sexual experience and functioning. Understanding and addressing them is crucial for promoting sexual health and overall quality of life.

One particularly distressing form of SD is vulvodynia, which is characterized by “pain of the vulva, either spontaneous or upon touch, and can occur during attempted or successful penetration and sexual and/or non-sexual situations” (Bergeron et al., 2020), which affects approximately 8-10% of women of all ages. The onset and persistence of vulvodynia involve a complex interplay of factors, including “peripheral and central pain mechanisms, pelvic floor muscle and autonomic dysfunction, anxiety, depression, childhood maltreatment, as well as cognitive-affective, behavioral, and interpersonal factors” (Bergeron et al., 2020).

Vulvodynia has long been a neglected condition, with epidemiological studies showing lifetime prevalence rates ranging from 10% to 16% (Harlow & Stewart, 2003; Harlow et al., 2014; Arnold et al., 2007; Gomez et al., 2019; Vieira-Baptista et al., 2014). Of these, 45% of women reported some level of impact on their sex life (Arnold et al., 2007). Prevalence rates seem to be highest in younger women, with rates decreasing as age increases (Harlow et al., 2014; Laumann et al., 1999; Reed et al., 2014).

Vulvodynia affects numerous women, with its prevalence likely surpassing recorded figures. It is presumed that only 60% of affected women actively seek help (Harlow et al., 2001; Harlow et al., 2014). Underdiagnosis and underreporting prevail, influenced by factors including

societal stigma, healthcare providers' limited awareness, and women's hesitance to address intimate concerns (Nguyen et al., 2013; Donaldson & Meena, 2011). This makes a difficult situation worse for women suffering from such conditions, further exacerbating the impact of them on their mental health and overall well-being.

Impact of Vulvodynia on Mental Health

While vulvodynia is a condition involving pain of the vulva, the impact of it extends beyond the physical. It has been reported to be associated with reduced sexual desire and arousal, frequency of sexual behavior, and sexual satisfaction, as well as having a negative effect on the relationship of the person (Bergeron et al., 2020). Furthermore, vulvodynia has been considered to carry a “heavier psychological burden” than other pain conditions, due to the sheer impact of its psychological consequences, such as shame, inadequacy, and low self-esteem (Bergeron et al., 2020; Pukall et al., 2016). Finally, women with vulvodynia are more likely to report other chronic pain conditions such as fibromyalgia and IBS that are mediated by anxiety levels, further compromising their physical and mental well-being (Bergeron et al., 2020).

When it comes to the impact of vulvodynia on women’s sexual life and relationship, many studies have found “significantly lower relationship adjustment in women with vulvodynia than controls [i.e., people without vulvodynia]” (Brauer et al., 2009; Gates & Galask, 20021; Masheb et al., 2002; as cited in Pukall et al., 2016). Additionally, the partner’s responsiveness could be affected by the condition. Emotional and negative responding lead to worse sexual function for both the woman and the partner, whereas adaptive coping of the situation can lead to improved sexual functioning for both (Pukall et al., 2016). This negative response method could lead to an unhealthy cycle of maladaptive coping and communication. This, in turn, could cause lowered sexual functioning, satisfaction, and desire, which leads to further maladaptive coping

and communication, thus creating a cycle of unhealthy behavior. It is crucial to not only understand the potential causes and impact of vulvodynia, but also to be aware of reinforcing factors that can further worsen this condition. Additionally, many women suffering from vulvodynia continue to maintain sexual behavior despite the pain it causes them physically (Carter et al., 2019), continuing the cycle of painful sex and its impact on their mental health and well-being.

Factors Maintaining Sexual Pain and Unhealthy Sexual Behavior

Understanding the reasons underlying the continuation of sexual intercourse despite pain is essential for effective treatment and support. Carter et al. (2019) explored variables influencing sexual pain and unhealthy sexual behavior. Their findings shed light on factors such as the normalization of painful sex, gendered interactional pressures, and the prioritization of partner pleasure over one's own needs. These variables can significantly impact individuals' experiences of pain during sex and their willingness to disclose this to their partners. Among the participants in the aforementioned study reporting pain during sex, only 51.0% disclosed their pain to their partners (Carter et al., 2019).

One of the key themes identified by Carter et al. (2019) was the normalization of painful sex. This acceptance of pain may result from societal expectations or cultural attitudes that portray pain as an expected part of sexual experiences. Some women even described their pain as effectively inconsequential, leading them to believe it was not worth mentioning to their partners. Such attitudes may hinder open communication about pain during sex, potentially exacerbating the problem and affecting women's overall sexual well-being.

Furthermore, gendered interactional pressures emerged as another important theme. Women reported continuing sexual activity despite experiencing pain in order to prioritize their

partner's pleasure over their own needs. This was particularly evident in heterosexual encounters, where women felt their partner prioritized male pleasure, which reinforced their own subordination in sexual interactions (Carter et al., 2019). They also found that some women continued to have sex despite pain because they wanted the experience to be over quickly, did not want to interrupt or spoil their partner's enjoyment, or to avoid making the situation awkward/uncomfortable for their partner. This highlights the emotional labor women may undertake to manage not only the quality of sex but also the emotions and the overall quality of the relationship (Carter et al., 2019).

Lately, there has been a growing focus on exploring the factors that perpetuate unhealthy and painful sexual behaviors. However, one aspect that remains underreported, particularly in its connection to vulvodynia, is the influence of women's self-esteem on their sexuality. This could potentially serve as the underlying issue, prompting women to overlook their pain in order to preserve relationship stability, ensure their partner's happiness, and avoid uncomfortable situations.

Sexual Self-Esteem (SSE)

To further explore the complex interplay of factors influencing vulvodynia and harmful sexual behavior, the present thesis, among its two primary emphases, will examine the relationship between a person's Sexual Self-Esteem (SSE) and the experience of vulvodynia. SSE, as defined by Mayers et al. (2003) is an individual's perception of themselves as a sexual being. It encompasses dimensions of sexual appeal, competence, and acceptance, playing a crucial role in mental well-being and shaping one's sexual experiences. Mayers et al. (2003) themselves discuss the impact of a damaged SSE on an individual’s mental health, stating that “damage to SSE can be [...] disabling and can significantly detract from the individual’s self-

view, satisfaction with life, capability to experience pleasure, willingness to interact with others and ability to develop relationships" (Mayers et al., 2003).

This sentiment is reiterated in additional literature within the field. Certainly, Syme et al. (2013) and Heidari et al. (2016) offer valuable insights into the correlation between SSE and its mental health consequences. In a study conducted by Syme et al. (2013) among male veteran cancer survivors, those with lower levels of SSE exhibited significantly higher rates of depression compared to those with higher SSE levels. This is echoed in a study by Heidari et al. (2016), who found that decreased SSE levels among menopausal women correlated with elevated levels of depression, anxiety, and stress. Conversely, higher SSE levels were associated with reduced psychological distress. Khamseh & Nodargahfard (2020) found that SSE not only impacts the individual's well-being, but also their personal relationships. The latter uncovered a significant correlation between SSE and individuals' self-perception, overall life satisfaction, and interpersonal dynamics. Furthermore, their study revealed that low SSE was associated with challenges in sexual and marital relationships.

More in alignment with the present thesis, Glowacka et al. (2018) explored the connection between contingent self-worth (CSW) and vestibulodynia, a pain disorder akin to vulvodynia. CSW refers to the significance an individual places on a specific domain, such as their sexual life, within their self-esteem. The authors found that women with high CSW, meaning women who put high emphasis on their self-esteem based on the success or failure of their sex life, perceived sexual difficulties as personal failures. This perception had a significant impact on their overall well-being. Women who suffered from vestibulodynia and exhibited high CSW suffered from more sexual distress resulting in greater challenges in their relationships and sexual experiences, perpetuating a cycle of negativity.

The findings from the aforementioned literature highlight a consistent trend: SSE is related to women's overall sexual well-being. Moreover, if we regard CSW as a somewhat comparable concept to SSE, it becomes evident given the literature that a low level of SSE (i.e., high CSW) is associated with pre-existing pain disorders in women. However, limited research has examined the direct impact of SSE on vulvodynia. Building on the background literature, the first aim of the present study is to investigate how a woman's SSE relates to the experience of vulvodynia. Moreover, this thesis will also explore the potential interaction effect of religious affiliation on this relationship, by examining how an individual's level of SSE and vulvodynia may change for different levels of religious affiliation.

The Relationship Between Religious Affiliation and Vulvodynia

Another dimension that warrants consideration in the relationship between SSE and vulvodynia is the impact of religious affiliation in women's lives. In human sexuality, the interplay between religiousness, pain disorders and women's sexual health reveals a complex relationship that has been widely researched (Borg et al., 2011; Cowden & Bradshaw, 2007; Nobre & Pinto-Gouveia, 2003), and religious affiliation - described as "the religious or spiritual beliefs and practices to which a person adheres or the religious group to which a person belongs" (NHS) - can play an important role in this cycle.

The Hite Report, a comprehensive investigation into women's sexuality and the many factors that can affect one's sexual health, emphasizes the role that religion has to play in sexual well-being. Hite (2003) highlights the influence of condemnation of non-reproductive sexual behavior based on historical Judeo-Christian codes. These norms, which are now ingrained in societal and legal frameworks, lead to feelings of shame and guilt from women who have felt that their sexuality is at odds with their desires. Personal testimonies from the report corroborate

such views, with women making statements relating to hindered sexual desires, hesitancy to masturbate, and avoiding sexual encounters due to a dormant sense of shame and guilt to participate in sexual behaviors, causing this sense of shame and guilt surrounding sex to be the norm (Hite, 2003).

These narratives reveal a pattern of internal conflict, wherein women grapple with finding balance between their religious affiliation and their sexual needs, potentially creating internal tension that may make them vulnerable to sexual dysfunctions. Likewise, Abbot et al. (2016) fittingly investigated the link between religious affiliation and SSE. They found that women with high religious commitment were "less likely to view sex as congruent with their moral values" (Abbot et al., 2016), and suffered from decreased sexual activity, poor sexual satisfaction, sexual guilt, and lower SSE. Furthermore, women with high religious commitment who perceived God as having negative views toward sexual behavior had lower levels of SSE than less religiously committed counterparts.

Borg et al.'s (2011) study shed further light on the intertwining of conservative values, often rooted in religious teaching, with the onset and persistence of conditions like vulvodynia. The study examined how adherence to religious conservative values, which can stem from religious affiliation, might lead to avoidance of sexual behavior, potentially exacerbating negative cycles. This avoidance could weaken sexual arousal and trigger pelvic floor muscle contractions during subsequent intercourse attempts, contributing to pain during penetrative intercourse. In the study, the authors define conservative values according to the Schwartz Value Survey (SVS; Schwartz, Bilsky, 1987), and differentiate between 'conservative' and 'liberal' values. Thus, *conservative values* were defined as "limiting actions and impulses or general difficulty with transgression (wrongdoing) that may play a negative role in sexual behavior. If

this is transferred to moral values, specifically toward sex, sexual experiences might be very restricted" (Borg et al., 2011). The researchers found that the group of women suffering from painful intercourse showed notably lower willingness to participate in sexual scenarios. Moreover, this group also showed higher scores on conservative values compared to the controls, indicating higher rigidity in sexual experiences and a higher likelihood to experience negative emotions in sexual contexts (Borg et al., 2011). The researchers thus suggest a possible correlation between adherence to conservative moral codes, potentially reinforced by religious affiliation, and the likelihood of experiencing sexual pain.

Collectively, these studies underscore the relationship between religious affiliation and sexual attitudes, behaviors, and dysfunction. Internal conflicts arising from rigid sexual beliefs, reinforced by religious affiliation, can amplify the discomfort associated with sexual experiences that deviate from prescribed norms. While research on how religious affiliation affects conditions such as vulvodynia do exist, there is a gap in research regarding the effect that religious affiliation has in moderating preexisting relationships of sexual well-being. The present study aims to fill this gap by investigating the interaction effect of religious affiliation on the relationship between SSE and vulvodynia.

The Present Research

Building on the background information, the present paper aims to answer two main questions related to SSE and vulvodynia in women, these being 'Does a lower level of SSE predict frequency of vulvodynia?', and 'Does religious affiliation moderate the relationship between SSE and vulvodynia?'. The relevance of this research lies in its potential to deepen our understanding of the interplay between individuals' SSE, the experience of vulvodynia, and the influence of religious affiliation on one's sexual well-being. By shedding light on how these factors converge,

this study aims to provide insights into the psychological and relational dynamics underpinning sexual health and well-being in women. Based on the previous research on this relationship, the hypothesis related to the first research question posits that the lower a person's SSE, the more likely they are to experience vulvodynia. Furthermore, in relation to the second research question, the hypothesis posits the relationship between SSE and vulvodynia will be moderated by religious affiliation. Specifically, we expect this relationship to be stronger for individuals who have religious affiliation. This will be tested by doing a multiple regression analysis with an interaction term.

Methods

The data analyzed in this study is part of a broader PhD project at the University of Groningen. For the purpose of this master's thesis, we have focused on a specific subset of this dataset to address our research questions.

Participants

Participant recruitment was carried out through advertising in the SONA participant pool at the University of Groningen. A total of $N = 279$ participants took part in this experiment between April and October 2023. During data cleaning, $n = 99$ of these participants were removed, either due to not consenting to participating in the study ($n = 7$) or due to not completing the questions relating to religious affiliation ($n = 22$), vulvodynia ($n = 1$), and SSEI ($n = 68$) variables for analysis, and one removal due to inserting their age as 10 years old ($n = 1$), leading to a final sample of $N = 180$ for the present analysis. This experiment met the requirements of the Ethics Committee of the Psychology department at the University of Groningen and was given approval to be carried out (PSY-2223-0118). Due to the aims of the study, inclusion criteria encompassed a) being above 18, and b) being sexually active, in order to participate in the experiment.

Participants ranged from the ages of 18 to 33. For a full list of participant characteristics, see Table 1 (note that for relationship status, participants could select more than one option, making the total number of responses in this question $n = 195$). The sample size was determined a-priori through the use of G*Power (Faul et al., 2007). Power was set at 0.80 and α at .05. As suggested by Cohen, the minimum desired effect size was set at $d = 0.2$ (Cohen, 1992). The minimum sample size required for the analysis was 159, which was within the number of participants in the final sample. Data was collected through the use of Qualtrics© Questionnaire software (https://www.qualtrics.com), and all data was stored anonymously and without any identifiable participant information.

Table 1

Participant Characteristics

Variable	M (SD)	range	*N*
Age (in years)	20.11 (2.23)	18-33	180
Sexual Orientation	*N* (%)		*n*
Predominantly Heterosexual	73.2		132
Predominantly Homosexual	2.2		4
Bisexual	21.8		39
Other	2.8		5
With whom do you engage in sexual relations with			
Men	82.7		149
Women	2.8		5
Non-binary individuals	.56		1
Men and Women	7.8		14

Table 1 (continued).

All of the above	6.2	11
Relationship status		
Married	0	0
Committed long-term relationship	34.9	63
New relationship	14.9	27
Dating multiple partners	3.8	7
Dating one person	16.6	30
Not dating/single	37.6	68
Are you religious		
Yes	23.8	42
No	76.2	138

Note. For 'Relationship status', participants were allowed to select more than one answer, thus leading the values not to line up with the final sample size of $N = 180$

Materials

A full questionnaire encompassing multiple measures of painful intercourse, partner communication, and other domains was given to participants to complete. Some categories included in the questionnaire are beyond the scope of this thesis, so the present analysis focused on three primary measures, along with the descriptive information of the participants.

Descriptive Questions

In order to measure participant's descriptive information, a questionnaire relating to information about participant gender, age, education level, child status, sexual orientation, relationship status, living status, religion, and period cycle was given to participants to complete. For a full list of these questions, see Appendix A.

The Sexual Self Esteem Inventory for Women – Short Form (SSEI-SF)

The SSEI-SF (Zeanah, 1992) was used to assess the participants' level of SSE, defined by the author as "affective reactions to subjective appraisals of sexual thoughts, feelings, and behaviors" (Zeanah & Schwarts, 1996). The questionnaire consists of five subscales measuring the domains of skill & experience, attractiveness, control, moral judgement, and adaptiveness. For each subscale, a statement pertaining to each sexual domain is given, for which participants have to score their level of agreement from 1 (strongly disagree) to 6 (strongly agree). Example statements for each subscale can be seen below.

Table 2

SSEI-SF subscales and example questions

Subscale	Example Questions
Skill & Experience	'I feel I am pretty good at sex'
	'I feel that sexual techniques come easily to me'
Attractiveness	'I am pleased with my physical appearance'
	'I hate my body'
Control	'I feel emotionally vulnerable in a sexual encounter'
	'I am afraid of losing control sexually'
Moral Judgment	'I feel guilty about my sexual thoughts and feelings'
	'My sexual behaviors are in line with my moral values'
Adaptiveness	'I feel good about the place of sex in my life'
	'I like what I have learned about myself from my sexual experiences'

Scores for each subscale are calculated through totaling the raw score items of each subscale, and the total questionnaire score is given by averaging the subscale scores. In case of missing items, the mean subscale score can be replaced for the missing item (Zeanah & Schwarts, 1996). Higher scores on the SSEI-SF indicate a higher level of SSE. The SSEI-SF has been validated and has found good reliability for both males (subscales ranging from $\alpha = .73$ (control subscale) to $\alpha = .88$ (skill and attractiveness subscales)) and females (ranging from $\alpha = .80$ (control, adaptiveness, moral judgment subscales) to $\alpha = .88$ (attractiveness subscale)) (Zeanah & Schwarts, 1996). The total reliability of the SSEI for a sample of women was $\alpha = .92$ (Zeanah & Schwarts, 1996), and for the present sample, the reliability was $\alpha = .86$.

Religious Affiliation

Religious affiliation in the present study was assessed by separating participants into those who identify as religious and those who do not. For this purpose, a question stating 'if applicable, please state your religion', followed by the options of Christianity, Judaism, Islam, Hinduism, Buddhism, 'Other', and 'Not applicable/Atheism/Agnostic' was asked to participants. For the purpose of creating the groups, all religions (including 'other') made up the 'religious' group, and the 'not applicable/ atheism/ agnostic' option made up the 'non-religious' group.

Post Hoc Analysis. For post-hoc analyses, a second descriptive question asked 'On a scale from 0 (none at all) to 10 (a great deal), how would you describe the role Religion plays in your life?' followed by a Likert scale as described. This question was used as a follow-up analysis to investigate the relationship between the impact of religion on someone's daily life and the degree to which they suffer from vulvodynia.

Vulvodynia

In the questionnaire given to participants, a question originally coined by Carter et al.

(2019) was asked, in which participants were asked 'do you experience physical discomfort or pain when you attempt [penetrative] intercourse with your partner?'. Responses ranged from 'yes, always', 'yes, most of the time', 'yes, more than half the time', 'yes, sometimes', to 'no'. For the present analysis, answers were coded from a scale of 1-5, with 1 representing 'yes always', decreasing in level of pain until 5 ('never'). Thus, due to the nature of the coding, lower scores in this scale indicated higher levels of vulvodynia. Due to the five categories of the question, responses were treated as a continuous Likert scale.

Procedure

Upon being informed of the study via social media or the SONA participant pool, participants signed up to the study and were able to complete it online via Qualtrics (Qualtrics, 2014). First, participants were presented with the study and participant information page followed by the informed consent form. Once informed consent was given, participants were asked to watch the 'vulvodynia pilot' video (an informational video for the participants to know what the study entailed), and the survey began automatically once this video ended. Upon completing the questionnaire, participants' scores were automatically saved to Qualtrics.

Data analysis

The present study aimed to assess two main questions: whether a lower SSE is related to the experience of vulvodynia; and whether religious affiliation has a moderating effect on the aforementioned relationship. Prior to any data analyses, assumption checks were carried out on JASP software. The normality assumption was checked through observation of histograms and Q-Q plots. Homoscedasticity was assessed through observations of residual plots. Multicollinearity was assessed through observation of correlation matrices.

In order to investigate the first research question relating to the relationship between SSE

and the level of sexual pain, a simple regression analysis was carried out between the SSEI–SF scores and the level of sexual pain. In order to assess the second research question relating to whether religious affiliation moderates this relationship, a multiple regression analysis with an interaction effect was carried out. The moderation analysis was done according to the Aiken & West (1991) method, by which SSE-SF-I scores were centered and an interaction effect of SSEI*Religious Affiliation was created. Additionally, bivariate analyses between each of the variables were carried out to assess the independent relationship between SSE, religious affiliation, and vulvodynia.

Results

Assumption Check

Assumption checks for the analysis were carried out prior to data analysis. Residual plots and VIF values of VIF = 1 showed no violation of the homoscedasticity nor of the multicollinearity assumptions. Independence is not violated given the study design and data collection method. Histograms and QQ-plots showed a violation of the normality assumption, however due to outcome transformations often creating biased results and previous research showing that violations of the normality assumption do not carry a heavy impact in large sample sizes (Schmidt & Finan, 2018; Kief & Forstmeier, 2021), the multiple regression analysis was carried out as planned.

Bivariate Analyses

To alleviate effects of restriction of range in the moderator and dependent variables, nonparametric correlations analyses were carried out between the variables SSE, Vulvodynia, and Impact of religion on daily life, as the binomial variable of religious vs not religious is not suitable for a correlation analysis.

Table 3

Kendall's Tau Correlations for SSEI-SF, Vulvodynia, and Religion Impact

		Vulvodynia	Religion Impact
Religion Impact	Kendall's Tau	.022	-
	p-value	.729	-
SSEI	Kendall's Tau	.156*	-.078
	p-value	.008	.166

Note. * For p<0.05.

Correlations showed a significant association between SSE and vulvodynia in participants ($\tau = .156$, $p = .008$). Furthermore, the correlations between SSE and religion impact, and for vulvodynia and religion impact showed no relationship.

Sexual Self-Esteem on Vulvodynia

The present study hypothesized that lower levels of SSE, measured in this study by low scores on the SSEI-SF, would lead to higher levels of vulvodynia. Therefore, a regression analysis on the total SSEI-I-SF scores on the level of sexual pain participants felt was carried out. It is worthy to mention that pain was categorized as 1 = always, onward until 5 = never, meaning that higher scores in the pain variable indicated lower levels of pain. As hypothesized, results showed that a positive correlation between SSE and vulvodynia, in that people with lower levels of SSE tended to have higher levels of sexual pain (see table 4).

Table 4

Regression analysis: SSEI-SF scores on Vulvodynia

			95% Confidence Interval			
	β	*SE*	Lower	Upper	*t*	*p*
Intercept	3.99	.374	2.36	3.83	8.30	< .001
SSEI score	.029	.012	.005	.053	2.42	.017*

Note. * For $p < 0.05$. $R^2 = .03$

In other words, the lower SSE the participants had, the higher the level of sexual pain they experienced ($p = .017$). It is of note however that while significant, the slope of this analysis is quite small, and the explained variance of the model is also small ($R^2 = .03$).

The Influence of Religious Affiliation on the Relationship Between Sexual Self-Esteem and Vulvodynia

To assess the hypothesis that the relationship between SSE and vulvodynia is moderated by one's religious affiliation, a multiple regression analysis with an interaction term of religious affiliation (assessed in the present study by participants identifying as religious vs not) and SSE was carried out. The moderation analysis followed the Aiken & West (1991) method, and total SSEI-I-SF scores were centered prior to the analysis. Results are shown below.

Table 5

Regression Analysis: Religious Affiliation as a moderator between SSEI-SF scores and Vulvodynia

			95% Confidence Interval			
	β	*SE*	Lower	Upper	*t*	*p*
Intercept	4.01	.071	3.87	4.15	56.37	< .001

Table 5. (continued)

SSEI-Centered	.019	.015	-.009	.048	1.324	.187
Religious Affiliation	-.031	.142	-.311	.250	-.215	.830
SSEI*Religion Affiliation	.037	.029	-.020	.094	1.271	.205

Note. * For $p < 0.05$. $R^2 = .04$

While the initial simple regression analysis revealed that the main effect of SSE on vulvodynia was significant, this effect was diminished in the multiple regression analysis (p = .187) when considering the potential influence of religious affiliation on the relationship. Additionally, the main effect of religious affiliation (p = .830) was not significant. Finally, the interaction effect of religious affiliation and SSE on vulvodynia also yielded nonsignificant results (p = .205), indicating that the relationship between SSE and Vulvodynia is not moderated by religious affiliation.

Table 6

Regression analysis of religion impact on vulvodynia

			95% Confidence Interval			
	β	*SE*	Lower	Upper	*t*	*p*
Intercept	3.97	.074	3.82	4.11	53.47	< .001
SSEI-Centered	.033	.015	.005	.063	2.279	.024*
Religion Impact	.019	.032	-.043	.082	.608	.544

Table 6 (continued).

SSEI*Rel.Impact	-.003	.007	-.018	.011	-.451	.652

Note. * For $p < 0.05$. $R^2 = .04$

To cover all bases, an exploratory analysis doing a multiple regression using the religion impact on daily life on SSE an interaction term instead was carried out, in order to check for any other potential moderators. Results showed a similar pattern to the original analysis: while the impact of the SSEI scores on vulvodynia was significant ($p = .024$) as in the simple regression analysis, the main effect of religion impact on the relationship vulvodynia was again nonsignificant ($p = .544$). Additionally, the interaction effect was also nonsignificant ($p = .652$), indicating no moderating effect of religion impact on the relationship between SSE and vulvodynia.

Discussion

The present study aimed to investigate the relationship between a person's SSE and vulvodynia, and the potential moderating influence of religious affiliation on this relationship. Main findings can be summarized as follows: results showed a significant positive correlation between SSE and vulvodynia. However, this relationship was diminished once religious affiliation and the interaction term were added to the analysis. Furthermore, no significant effects of religious affiliation on vulvodynia, nor of the interaction effect, were found.

Relationship Between Low Sexual Self-Esteem and Vulvodynia

The first hypothesis of this study concerned the relationship between SSE and vulvodynia, in that people with a low level of SSE would experience higher levels of vulvodynia. Our findings supported this hypothesis, echoing similar patterns found in previous research (Abbot et al., 2016; Glowacka et al., 2018; Khamseh & Nodargahfard 2020). This result

contributes to a growing body of evidence linking multiple dimensions of psychological functioning (i.e. SSE, communication issues, CSW levels, general self-esteem) to the experiencing of sexual pain (Cole, 1997; Heiden et al., 2016; Syme et al., 2013; Glowacka et al., 2018). Indeed, the concept of SSE in this study underscores the significant role of psychological well-being in shaping women's physical experiences of sexual health. However, given the small effect size of this relationship, and the restricted sample (mostly Western women), further research would be necessary to make any implications on this relationship.

It is plausible that women with a low SSE may be more likely to experience vulvodynia than those with higher SSE. For instance, some women with vulvodynia have reported feelings of inadequacy in their roles as partners due to their inability to engage in penetrative sex (Ayling & Ussher, 2008). These feelings of inadequacy could potentially decrease their SSE further when faced with the pressures of sexual performance. This may lead to a negative cycle where pain exacerbates low SSE, which in turn could lead to more psychological challenges and potentially intensify the experience of pain. Thus, addressing SSE might be beneficial in the treatment of women’s pain disorders or sexual dysfunctions, as it may help alleviate or prevent the worsening of symptoms. This has been found in several studies, which have shown that improving general self-esteem can enhance sexual well-being (Harvard Health, 2019), and treating SSE can improve sexual function, body image, orgasms, and pain (Wu & Zheng, 2021), as well as urinary incontinence (Moradinasab et al., 2023). However, it is important to approach these findings with caution and to acknowledge that more comprehensive studies are needed to fully understand these relationships.

The Influence of Religious Affiliation on Sexual Self-Esteem and Vulvodynia

Our second hypothesis postulated that religious affiliation would have a moderating effect on the relationship between SSE and vulvodynia. Specifically, we hypothesized that lower levels of sexual self-esteem (as indicated by lower SSE scores) would be associated with higher levels of vulvodynia (as indicated by lower scores on the vulvodynia scale), and this relationship would be stronger for individuals who have religious affiliation. Religious doctrines and cultural norms associated with religion can significantly impact sexual attitudes and behaviors. For example, some religious teachings emphasize modesty, chastity, and guilt associated with sexual expression outside certain prescribed contexts (Hite, 2003). These teachings can lead to lower SSE in individuals who internalize these values (Abbot et al., 2016), potentially exacerbating experiences of vulvodynia. We hypothesized that religious individuals might experience a stronger impact of low SSE on vulvodynia, with the pressure to adhere to religious teachings potentially amplifying the negative consequences and resulting in higher levels of vulvodynia. Contrary to expectations, this hypothesis was not supported by our research findings. This indicates that religious affiliation does not moderate the relationship between SSE and vulvodynia. In other words, the relationship between SSE and vulvodynia appears to be consistent regardless of whether participants had religious affiliation or not.

There are several potential theories for the unexpected results found in our research. Firstly, it's important to note that our sample predominantly comprised women from Western-educated backgrounds, particularly from the younger generation. These individuals likely received more comprehensive sexual education compared to women from cultures where sexuality, especially non-reproductive sexual behavior, is stigmatized. Additionally, it is worth considering that contemporary Western women, particularly those from Generation Z, have widespread access to dating apps like Tinder and Bumble, which may contribute to a

normalization of casual dating and hookup culture, thus making religious affiliation a less relevant factor in their sexual life. However, in societies where sexual behavior carries heavy stigma, women may encounter heightened feelings of religious guilt, potentially impacting their overall sexual well-being. It is, however, speculative to suggest that these factors directly correlate without further empirical investigation. Secondly, the fact that the religious participants stated that religion did not have a very large impact on their life indicates that the sample in the present study included women who do not feel as constrained by their religion as women from a more conservative or religious-heavy culture. This suggests a restriction of range in the present sample (which will be further discussed in the limitations section), and brings into question whether such an impact of religious affiliation on SSE and sexual pain would have been found in women from more conservative and religion-heavy upbringings. Finally, the non-significance of our findings opens avenues to explore other potential moderators. Variables such as cultural background, socio-economic status, or even personality traits such as neuroticism or conscientiousness might interact with SSE and vulvodynia, providing a more extensive understanding of the factors influencing vulvodynia and SSE.

Previous research has consistently shown that religious affiliation *can* significantly influence an individual's sexual well-being. For instance, Cowden and Bradshaw (2007) delved into the relationship between religiosity and sexual concerns, shedding light on how religious belief may influence individuals' perceptions of sexual activity. Additionally, studies comparing women from East Asian vs Caucasian countries have highlighted the continuous stigma surrounding virginity and sexuality in these more conservative cultural contexts, leading to higher levels of sexual guilt and lower level of sexual desire (Woo et al., 2010). This pattern has been further investigated and mirrored in numerous other cultures, revealing elevated levels of

sexual guilt in societies with stricter sexual norms and taboos (Brotto et al., 2011; Laumann et al., 2005). One study even found that this is the case within a single population, in that less westernized Chinese women suffered from more sexual guilt and less sexual desire than did more westernized Chinese women (Woo et al., 2011). It would be particularly intriguing to investigate whether women from these cultures experience a higher frequency of sexual pain compared to those from more westernized societies, such as the sample in the present study. Such research could shed light on the interplay between religion, culture, and sexual guilt, which has been shown to impact sexual well-being.

Strengths, Limitations, and Further Research

The current study benefits from the use of widely standardized and validated questionnaires, which provide robust measures of constructs related to sexual well-being and increase the reliability of the study. Additionally, this research represents a gap in the literature in investigating the relationship between SSE, religious affiliation, and vulvodynia. The joining of SSE and religious affiliation as potential factors influencing vulvodynia in women introduces the concept of a more comprehensive approach to understanding the complex mechanisms underlying sexual experiences.

However, limitations in this research should also be acknowledged. Firstly, the study's reliance on online data collection may have introduced some methodological challenges. Participants may have lacked the opportunity to ask for clarification on unclear questionnaire items, potentially leading to misinterpretations or incomplete responses. Additionally, the lack of a private setting for the completion of the questionnaire may have influenced participants' responses, in that they may have rushed through completing if they feared their computer screens being seen, or due to having other appointments to attend. These methodological challenges may

have compromised the quality of the responses. On the other hand, the potential strengths of online survey methods lie in the flexibility offered to the participant, as well as the fact that it is significantly less time demanding than on-site surveys would be. Additionally, other methods of data collection may trigger concerns relating to being in an in-person study. For one, participants may feel pressure to respond in a particular way in order to benefit the researcher, or may feel less comfortable answering sensitive questions in a lab setting as they would in the comfort of their own home.

A second challenge to our research involves the sample in this study. Our sample was made up of highly educated, westernized, and young-generation women who likely received better sexual education than those in past generations. Additionally, the present study had a low representation of strongly religious women, with many of them reporting a minimal impact of religion on their lives. This limited sample may show a restriction of range, particularly regarding religious affiliation. With only 42 out of 180 participants identifying as religious, the variability in religious affiliation is limited. This lack of variability could have led to an underestimation of the relationship between religious affiliation and sexual pain. As a result, the study's findings may not fully reflect the true relationships present in a more diverse population. Future research should aim to include a more balanced representation of religious and non-religious individuals to address this limitation and provide a more comprehensive understanding of how religious affiliation may be related to sexual well-being.

Clinical Implications and Future Directions

While the findings of this study are preliminary, they may have some clinical implications for the assessment and management of vulvodynia. Integrating assessments of SSE into clinical evaluations of women with vulvodynia might provide additional insights into

psychological factors affecting their sexual well-being. Clinicians could consider incorporating validated measures of SSE into assessments to better understand the impact of self-esteem on patients' experiences of pain and sexual functioning. Patient education could also play a role in empowering individuals with vulvodynia to actively participate in their treatment and self-care practices. Providing information about SSE-related strategies, such as open communication in relationships, boundary setting, and avoiding painful intercourse to prioritize mutual comfort, might help patients navigate sexual relationships more effectively (Carter et al., 2019). Finally, long-term follow-up care is essential for psychological treatments, as it can help monitor changes in SSE and improve overall management and treatment outcomes, ultimately enhancing the quality of care and life for individuals with vulvodynia.

In terms of religious affiliation moderating the relationship between SSE and sexual pain, while this study did not yield significant results, existing literature in the field does show a pattern of religious affiliation on sexual well-being. Given that our sample was highly educated and predominantly Western, the influence of cultural norms and religious beliefs might be less pronounced. However, it remains essential for clinicians to recognize and consider these factors in more diverse populations where religious beliefs may play a more significant role. By acknowledging the potential impact of religion on sexuality, clinicians can better understand the patient’s experiences and tailor interventions according to the participant’s culture and social norms. A more culturally sensitive approach to treatment can foster better trust and rapport with patients, as a mismatch in cultural norms has been shown to hinder patient trust, rapport, and treatment progress (Ullrich, 2019).

Overall, taking cultural norms, SSE, and religious affiliation into consideration when setting a treatment plan should be a more common practice when providing multidimensional patient-centered care to individuals with vulvodynia. By acknowledging patients' cultural and religious backgrounds, clinicians can enhance the relevance and effectiveness of interventions, ultimately improving treatment outcomes and sexual well-being.

Conclusion

In conclusion, this study aimed to investigate the relationship between a person's SSE and vulvodynia, and the potential moderating influence of religious affiliation in this relationship. While a positive relationship between SSE and vulvodynia was found, no moderating influence of religious affiliation was found in this study, perhaps due to the limited sample of the present research. The introduction of the interrelationship between these three factors into psychological research shows a significant advancement into the way we define sexual well-being, by integrating multiple dimensions of sexuality into one comprehensive framework. Future research is needed to explore the full capability of both religious cultural norms as well as subjective feelings of SSE in the experience of sexual pain, and how well they can be integrated into future treatment and intervention plans.

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Appendix A

Demographic Questions

1. Please indicate your gender identity
    - Female
    - Male
    - Non-binary
2. How old are you?
3. What is your highest completed education? (Check one option)
    - No education
    - Primary education
    - Primary vocational education
    - Pre-secondary vocational education (VMBO) o Secondary vocational education (MAVO)
    - Intermediate vocational education (MBO)
    - Higher secondary education (HAVO, VWO)
    - Higher vocational education (HBO)
    - University education (WO)
    - Other
4. Do you have children?
    - Yes
    - No
5. How would you define your sexual orientation?
    - Predominantly heterosexual

- Predominantly homosexual
- Bisexual
- Other

6. With whom do you engage in sexual interactions with?
    - Men
    - Women
    - Non-binary individuals
    - Men and women
    - All of the above
7. How would you describe your current relationship status? (Multiple options possible)
    - Married
    - In a committed long-term relationship
    - In a new relationship
    - Dating multiple partners simultaneously
    - Dating one person
    - Not dating/single
8. What is the gender identity of your partner?
    - Male
    - Female
    - Non-binary
9. For how much time have you been dating/in a relationship with your current (sexual) partner?
    - For less than 3 months

- For 3 - 6 months
- For 6 months - 1 year
- For 1 - 3 years
- For 3 - 5 years
- For 5 - 10 years

10. How are you currently living?
    - Alone
    - With my partner
    - other
11. If applicable, please indicate your religion
    - Christianity
    - Judaism
    - Islam
    - Hinduism
    - Buddhism
    - Other
    - Not applicable/Atheism/Agnosic
12. On a scale of 0 (none at all) to 10 (a great deal), how would you describe the role Religion plays in your life?
13. Plase indicate when was the first day of your last period?
14. How long is your average cycle (in days)?