Partners experience consequences, too: A comparison of the sexual, relational, and psychological adjustment of women with sexual interest/arousal disorder and their partners to control couples

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Abstract

Background. Women diagnosed with Female Sexual Interest/Arousal Disorder (FSIAD) report lower health-related quality of life, more depressive symptoms, and lower sexual and relationship satisfaction compared to healthy controls. Despite the impact of FSIAD on women's sexuality and the inherently interpersonal nature of the sexual problem, it remains unclear whether the partners of women with FSIAD also face negative consequences, as seen in other sexual dysfunctions.

Aims. The aim of this study was to compare the sexual, relational, and psychological functioning of partners of women with FSIAD (as well as the women themselves) to their control counterparts. We also compared women to their partners within the FSIAD and control groups.

Methods. Woman diagnosed with FSIAD and their partners ($N = 97$) and control couples ($N = 108$) independently completed measures of sexual desire, sexual distress, sexual function, sexual satisfaction, sexual communication, relationship satisfaction, depression, and anxiety.

Main outcome measures: Sexual Desire Inventory-2; Female Sexual Distress Scale; Female Sexual Functioning Index (FSFI); International Index of Erectile Functioning (IIEF), Global Measure of Sexual Satisfaction; Dyadic Sexual Communication Scale; Couple Satisfaction Index; Beck Depression Inventory-II; State-Trait Anxiety Inventory-Short Form.

Results: Partners of women with FSIAD reported lower sexual satisfaction, poorer sexual communication and higher sexual distress compared to control partners. Male partners of women with FSIAD reported more difficulties with orgasmic and erectile functioning, and lower overall satisfaction and intercourse satisfaction on the IIEF compared to control partners. Women with FSIAD reported lower sexual desire and satisfaction, and higher sexual distress and depressive and anxiety symptoms, in comparison to both control women and their own partners, and they

reported poorer sexual communication compared to control women. Women with FSIAD also reported lower sexual desire, arousal, lubrication, satisfaction and greater pain during intercourse on the FSFI compared to control women.

Clinical Implications. The partners of women with FSIAD also experience negative consequences—primarily in the domain of sexuality. Partners should be included in treatment and future research.

Strengths and limitations. This is the first study, to our knowledge, to document consequences for partners of women with FSIAD in comparison to controls. This study is cross-sectional and causation cannot be inferred. Most couples were in mixed-sex relationships and identified as straight and cis-gendered; results may not generalize.

Conclusions: Findings suggest that partners of women with FSIAD experience disruptions to many aspects of their sexual functioning, as well as lower overall sexual satisfaction and heightened sexual distress.

Keywords: sexual interest/arousal disorder, couples, sexual desire, sexual function

Introduction

Both members of a couple benefit when they maintain sexual desire over time in their relationship[1, 2]. Indeed, feeling sexually desirable to a partner and that a partner is motivated to connect sexually is associated with higher sexual desire, arousal and satisfaction, and greater overall relationship quality[2, 3]. In contrast, perceiving a partner as having lower sexual desire or having one's sexual advances rejected by a partner is associated with feeling less satisfied with one's sex life and relationship[4-6]. Yet prior research on clinically low sexual desire and arousal has focused almost exclusively on the implications for the person experiencing these difficulties ([7, 8] for reviews). That is, despite evidence from community samples that lower sexual desire is associated with negative consequences for both partners[1], prior research investigating women coping with Female Sexual Interest/Arousal Disorder (FSIAD) has neglected the partner. The aim of the current study was to compare the sexual, relational, and psychological functioning of partners of women with FSIAD, as well as the women with FSIAD, to a control sample of couples.

Women diagnosed with FSIAD endorse symptoms of absent or reduced sexual interest and/or arousal for at least six months and accompanied by significant distress[9]. In a nationally representative sample, 39% of women reported low sexual desire, 26% of women reported low arousal, and 30% of women with low desire also reported sexual distress[10]. Prevalence estimates, which included the new criteria from the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) that symptoms have persisted for a minimum of six months and occur on all or almost all sexual encounters, have estimated that 0.6% of women meet the criteria for FSIAD[11]. Consistent with biopsychosocial models of sexual response[12, 13], biological, psychological, and social factors are thought to influence the development and maintenance of

clinically low sexual desire and arousal[14, 15]. Yet social factors and the potential role of the partner—including consequences experienced by the partner—have received scant attention.

       Since FSIAD is a relatively new diagnosis, there are few studies characterizing the consequences experienced by women with this diagnosis. Women with FSIAD are likely to look similar to women with the previous diagnoses of Hypoactive Sexual Desire Disorder (HSDD) and Female Sexual Arousal Disorder (FSAD), however recent evidence suggests that they exhibit more severe symptoms than women who meet the previous criteria for HSDD[16]. In the limited studies available, women with FSIAD reported lower health-related quality of life, including more depressive symptoms, and lower sexual and relationship satisfaction compared to healthy controls[7, 17]. Since low sexual desire interferes with relationship quality, women with FSIAD who are partnered are almost five times more likely than unpartnered women to report distress about the sexual relationship[10]. Moreover, interpersonal factors reported by women, such as a partner's sexual difficulties and poor sexual compatibility, play a critical role in women's experience of low desire[18-20]. Indeed, relational factors may better account for women's low desire than do biological disturbances such as low testosterone[20-22]. One critical interpersonal variable that has received limited attention in FSIAD is sexual communication. Sexual communication is a robust predictor of sexual and relationship satisfaction in community and clinical samples[23, 24], and is commonly a core target of treatments for low sexual desire/arousal (e.g.,[25]), yet it is unclear whether sexual communication is especially compromised in this population. Nonetheless, prior findings highlight the importance of interpersonal factors for women with FSIAD, while it remains to be seen whether the partners of affected women also face negative consequences.

A sexual difficulty in one member of a couple is likely to affect the other partner as it interferes with the couples' "sexual equilibrium" (i.e., the psychological balance between partners that exists in their sexual life)[26]. Couples in which a woman is coping with FSIAD are likely to experience a discrepancy in sexual desire. Sexual desire discrepancies are one of the top three sources of conflict between romantic partners[27] and have been linked to both partners reporting lower relationship and sexual satisfaction (see [6] for review). Further, studies of women with genito-pelvic pain/penetration disorder (GPPPD) have found that their partners report lower sexual satisfaction and sexual communication, more depressive symptoms, and greater erectile difficulties compared to partners of women without GPPPD[28-31], although two studies found no differences in psychological distress[32, 33]. Similarly, male sexual dysfunctions including erectile dysfunction and early ejaculation are linked to their female partner's lower sexual desire[34, 35].

Yet despite the impact of FSIAD on women's sexuality and the inherently interpersonal nature of the sexual problem, very few studies to our knowledge have investigated the outcomes of partners of women with FSIAD (or partners of women with the DSM-IV-TR diagnoses of HSDD or FSAD). In a small sample of 20 couples where the woman reported a lack of interest in sex and low partnered sexual frequency (two or fewer times per month) compared to 20 healthy control couples, Trudel and colleagues found that affected women reported lower scores across several indices of dyadic adjustment (cohesion, consensus, satisfaction and affective expression), and partners reported more disagreement related to sex and affection in the relationship[36]. They also found that the low sexual interest couples (examined together as a group) had a more limited sexual repertoire and reported less pleasure during sexual activity and sexual satisfaction compared to the control couples[37, 38]. The conclusions that can be drawn from this early study are limited given the very small sample size, lack of clinical assessment and diagnosis of the women

with HSDD, use of unstandardized measures, and collapsing the affected women and partners together into one group (i.e., it is unclear whether women or partners were driving the effects).

There is a need for controlled research that focuses on the partners of women with FSIAD in order to better understand the consequences they may experience and the interpersonal dynamics of couples coping with this condition. Given that in partnered relationships each member is often conceived of as the focus of the other person's sexual interest, partners may feel rejected or experience enhanced (performance) anxiety due to a woman's low sexual interest and arousal. Model of sexual dysfunction suggest that these negative expectancies may interfere with attending to positive sexual cues (e.g., pleasure, intimacy) while increasing focus on negative cues (e.g., failures in performance, partners' lack of interest) and promote sexual avoidance, resulting in poorer sexual, relational, and psychological adjustment[39, 40]. Moreover, couples therapy is typically considered a first-line treatment for FSIAD, and clinicians frequently include partners and target interpersonal factors in therapy[14, 25], despite a lack of dyadic studies that have included partners. An improved understanding of the consequences experienced by both members of couples coping with FSIAD will inform the development of empirically-based couples interventions.

Aims

The aim of this study was to compare the sexual desire, sexual distress, sexual function, sexual satisfaction, sexual communication, relationship satisfaction, and depressive and anxiety symptoms of both partners in couples where the woman is coping with FSIAD to a community control group of couples experiencing no sexual difficulties or distress. In addition, in the context of FSIAD whereby women experience the low interest/arousal and might feel responsible for any negative impacts on their partner[41, 42], it is plausible that they will report poorer sexual, relational

and psychological well-being than their partners. Thus, a secondary aim was to examine whether there were any differences in these variables between women with FSIAD and their partners. We hypothesized that (1) partners of women with FSIAD would report lower sexual desire, sexual functioning, sexual satisfaction, sexual communication, and relationship satisfaction and higher sexual distress and depressive and anxiety symptoms compared to control partners. The same pattern was expected when comparing women with FSIAD to control women; (2) women with FSIAD would have lower sexual desire, sexual functioning, sexual satisfaction, sexual communication, and relationship satisfaction and higher sexual distress and depressive symptoms compared to their partners. We also compared control women to their partners to test for differences that might exist between partners of couples who are not coping with a sexual dysfunction. Overall, we did not expect differences between control partners except that we thought it was possible that male partners would report higher sexual desire than women given the research documenting gender differences in sexual desire in community samples (see [43] for a review), however, other work has not found consistent gender differences in sexual desire (see [2] for a review).

Methods

Participants and Procedure

Participant and couple characteristics for both samples are reported in Table 1. Couples were recruited from September 2016 to May 2018, separately for the FSIAD and control samples, throughout Canada and the United States via flyers, online and radio advertisements and word-of-mouth. Eighty-eight percent of the FSIAD sample and 73% of the control sample were recruited from Canada. Individuals were required to be 18 years or older, fluent in English and couples were required to be in a committed relationship with each other for at least six

months, with a minimum of four in-person contacts per week during the last month. Participants

were excluded if they were pregnant, breastfeeding or within one year postpartum, undergoing

hormonal therapy (hormonal contraceptives were allowed), did not have any prior sexual

experience, were currently undergoing treatment for low sexual interest/arousal (FSIAD group

only), or if one or both members of the couple reported experiencing any sexual difficulties or

distress related to their sexual relationship (control group only). Interested participants completed

an initial structured telephone-screening interview with a research assistant to assess eligibility,

and confirmed that their partner was also willing to participate. Eligible women and their

partners were sent individual links to an online consent form and were then asked to

independently complete an online survey of the study measures. The surveys were hosted on the

secure online survey platform, Qualtrics. Participants who did not complete the survey within

one week received a reminder phone call from a research assistant and reminder emails two and

three weeks thereafter. The surveys expired four weeks after being sent to participants. The

studies were approved by the authors' institutional research ethics boards.

FSIAD sample. Women who met basic eligibility requirements were then scheduled for

a semi-structured clinical interview by telephone with a clinical psychologist or senior PhD

student in Clinical Psychology to confirm the diagnosis of FSIAD, consistent with DSM-5

criteria. The clinical interview was developed based on models obtained from prior studies of

FSIAD[17, 44] and refined based on the clinical expertise of our team. In addition to the specific

FSIAD symptoms, persistence of at least six months, and presence of distress, the interview

included an assessment of (a) whether the sexual problem was attributed to a medication,

substance use, and/or a medical condition, (b) whether the onset or persistence of the problem

was associated with a specific event or context (e.g., severe relationship distress, trauma,

intimate partner violence), (c) whether the problem reflected a desire discrepancy between partners as the primary issue and (d) whether the low interest/arousal was secondary to genito-pelvic pain.

A total of 215 women completed the initial screening call to determine eligibility, and 174 women were deemed eligible. Of these women, 143 completed the clinical interview (i.e., 31 were no longer interested in participating). After completion of the clinical interview, 25 couples were ineligible because the woman reported symptoms inconsistent with a primary diagnosis of FSIAD. In addition, 21 couples were excluded because one or both members did not complete the questionnaires within four weeks ($n = 6$) or failed attention checks embedded within the questionnaires ($n = 15$). The final sample size was 97 couples (194 individuals). Each member of the couple was compensated $18 CAD in amazon.ca/.com gift cards for their participation in the study and received information on how to access treatment resources.

Control sample. A total of 143 individuals completed the screening call and 119 were deemed eligible. Eleven couples were subsequently excluded for the following reasons: one or both partners did not complete the questionnaires within four weeks ($n = 5$), failed attention checks ($n = 4$), or were missing key measures ($n = 2$). The final control sample size was 108 couples (216 individuals). Each member of the couple was compensated $10 CAD in amazon.ca/.com gift cards for their participation in the study.

Measures

Socio-demographics. Participants reported their sex, gender, sexual orientation, education, ethnicity, and whether or not they had children. Women also reported their relationship status and duration, and household income.

Sexual desire. Sexual desire was assessed with the 14-item Sexual Desire Inventory (SDI-2[45]), which has strong reliability and validity. Participants rated 10 items about the strength of their sexual desire on a 9-point Likert-type scale (e.g., 0 = *no desire* to 8 = *strong desire*). The remaining four items rank ordered the frequency of a sexual thought or behavior (e.g., 0 = *not at all* to 7 = *many times a day*). Based on recent recommendations[46], solitary desire (4 items), partner-focused dyadic desire (7 items), and other-focused dyadic desire (2 items) subscales were computed separately. Other-focused sexual desire refers to sexual interest in a person other than one's primary partner. Higher scores indicate higher levels of sexual desire. Cronbach's alphas for solitary desire subscale were .91 for women with FSIAD and .91 for partners, .94 for control women and .91 for control partners; for the dyadic desire subscale were .79 for women with FSIAD and .85 for partners, .81 for control women and .85 for control partners; for the dyadic-other desire subscale were .90 for women with FSIAD and .91 for partners, .92 for control women and .89 for control partners.

Sexual distress. Sexual distress was assessed with the well-validated 13-item Female Sexual Distress Scale-Revised (FSDS-R;[47]). Using a 5-point Likert scale, participants rated how frequently they experienced distress (e.g., frustration or guilt) related to their sex lives. Total scores can range from 13 to 66, with higher scores indicating higher sexual distress. This measure has recently been validated in men[48]. Cronbach's alphas for the current sample were .92 for women with FSIAD and .92 for partners, .91 for control women and .93 for control partners.

Sexual function. The well-validated 19-item Female Sexual Function Index (FSFI;[49]) evaluates women's sexual functioning over the past four weeks according to six domains: desire, arousal, lubrication, orgasm, satisfaction, and pain. FSFI total scores range from 2 to 36, with higher scores signifying better sexual function. Cronbach's alpha for the current sample was .94

for women with FSIAD and .88 for control women. The International Index of Erectile Function (IIEF;[50]) is a well-validated 15-item measure that evaluates men's sexual functioning over the past four weeks in five domains: erectile function, orgasmic function, sexual desire, intercourse satisfaction, and overall satisfaction. Summed total scores range from 5 to 75, with higher scores indicating better sexual function. Cronbach's alpha for the current sample was .94 for partners of women with FSIAD and .92 for control partners. Only women and men who were sexually active within the preceding four weeks were included in analyses using the FSFI and IIEF[51].

Sexual satisfaction. Sexual satisfaction was assessed with the Global Measure of Sexual Satisfaction (GMSEX;[52]). The well-validated GMSEX consists of five bipolar items (e.g., good-bad, satisfying-unsatisfying) rated on a 7-point Likert scale. Summed scores range from 5 to 35, with higher scores indicating greater sexual satisfaction. Cronbach's alphas were .87 for women with FSIAD and .92 for partners, .91 for control women and .93 for control partners.

Sexual communication. Sexual communication was assessed with the 13-item Dyadic Sexual Communication Scale (DSC;[53]). Items are rated on a 6-point Likert scale and summed to create a total score ranging from 13 to 78. Higher scores indicate higher perceived quality of sexual communication in the couple. The DSC has demonstrated good reliability and validity[53]. Cronbach's alphas were .81 for women with FSIAD and .86 for partners, .82 for control women and .87 for control partners.

Relationship satisfaction. Relationship satisfaction was measured with the 16-item Couples Satisfaction Index (CSI;[54]). Using Likert scales, participants rated the quality of their relationship across several factors (e.g., how happy they are with their relationship, how frequently they disagree with their partner). Responses are summed to create an overall relationship satisfaction ranging from 0 to 80, with higher scores indicating greater relationship

satisfaction. The CSI has been shown to have strong psychometric properties relative to other measures of relationship satisfaction[54]. Cronbach's alphas were .97 for women with FSIAD and .96 for partners, .96 for control women and .95 for control partners.

Depressive symptoms. The Beck Depression Inventory II (BDI-II;[55]) was used to assess depressive symptoms. The well-validated BDI-II consists of 21 grouped statements from which participants select how they had been feeling over the past 2 weeks. At the request of our Ethics Review Board, one item (on suicidal ideation and intent) was removed because we were unable to conduct thorough risk assessments with all participants that endorsed this item. Total scores could therefore range from 0 to 63, with higher scores indicating greater levels of depressive symptoms. Cronbach's alphas were .93 for women with FSIAD and .89 for partners, .90 for control women and .94 for control partners.

Anxiety. Anxiety was assessed using the six-item State-Trait Anxiety Inventory-Short Form (STAI-SF;[56]). Participants rated items on a scale from 1 (*almost never*) to 4 (*almost always*) to indicate their general feelings of anxiety. Total scores range from 6 to 24, with higher scores indicating greater levels of anxiety. This measure has been shown to have both good reliability and validity[56]. Cronbach's alphas were .88 for women with FSIAD and .84 for partners, .84 for control women and .82 for control partners.

Data Analysis

Statistical analyses were conducted with SPSS version 23.0. "Group" differentiated the FSIAD versus the control sample, whereas "Role" differentiated the woman with FSIAD/woman in the control group versus their partner. In the case of same-sex female couples, role (equivalent to the woman with FSIAD) was assigned to the woman who completed the eligibility screening interview. We used a 2 (role) X 2 (group) mixed multivariate analysis of variance (MANOVA)

with role as a within-subjects factor (accounting for interdependence of couples' responses) to compare the groups, followed by univariate analyses of variance (ANOVAs) and mean comparisons (*t*-tests) for any observed group effects. Separate MANOVAs were conducted to compare groups (FSIAD vs. control) on sexual functioning given the lack of equivalency in the measures of female and male sexual functioning. Thus, for the measures of sexual functioning, any female partners of women with FSIAD were excluded, as this group was too small (n = 9) to analyze on their own. Our primary hypotheses centered on the role x group interaction effects. Although we also examined and reported the main effects of group, the main effect of role was not interpretable given our inclusion of same-sex couples in the study (i.e., we could not examine gender differences nor was this of primary interest). Effect size estimates were made using partial eta squared (η_p^2). Chi-square tests (χ^2) were used to measure differences in the categorical demographic variables between the two groups, including relationship type, parenthood status, ethnicity, and annual income. Student's *t*-tests were used to compare age, years of education, and relationship duration between groups. Given the many comparisons made in this study, a Bonferroni-Holm correction was applied to all significance tests. The Bonferroni-Holm procedure demonstrates increased power in comparison to the standard Bonferroni, which has been criticized for being overly conservative when outcomes are positively correlated[57, 58].

Results

There were no differences between the FSIAD sample and the control sample in their age, level of education, relationship duration, relationship type, parenthood status, ethnicity, or annual income (see Table 1), therefore none of these variables were included as covariates. The means and standard deviations for all study variables are reported separately for the FSIAD and control samples (Table 2), and also by role in the couple (Table 3).

There was a significant multivariate effect for group, $F(9,195) = 59.04$, $p < .001$, $\eta_p^2 = .73$, role, $F(9,195) = 18.39$, $p < .001$, $\eta_p^2 = .46$, and for the group by role interaction, $F(9,195) = 29.62$, $p < .001$, $\eta_p^2 = .58$. Results for the follow-up ANOVA for the group effect showed that, overall, couples affected by FSIAD reported lower sexual desire (solitary and partner-focused, but not other-focused), sexual satisfaction, sexual communication, and relationship satisfaction, and higher sexual distress, depressive symptoms, and anxiety, compared to control couples (see Table 2). The follow-up ANOVA for the role by group interaction effect was significant for all of the dependent variables with the exception of relationship satisfaction ($F(1,203) = 2.32$, $p = .13$, $\eta_p^2 = .01$): solitary desire $F(1,203) = 19.33$, $p < .001$, $\eta_p^2 = .09$, partner-focused desire $F(1,203) = 199.33$, $p < .001$, $\eta_p^2 = .50$, other-focused desire $F(1,203) = 7.36$, $p < .01$, $\eta_p^2 = .04$, sexual satisfaction $F(1,203) = 18.48$, $p < .001$, $\eta_p^2 = .08$, sexual communication $F(1,203) = 7.92$, $p < .01$, $\eta_p^2 = .04$, sexual distress $F(1,203) = 78.98$, $p < .001$, $\eta_p^2 = .28$, depressive symptoms $F(1,203) = 10.87$, $p < .01$, $\eta_p^2 = .05$, and anxiety $F(1,203) = 10.61$, $p < .01$, $\eta_p^2 = .05$ (see Table 3).

Pairwise mean comparisons revealed that partners of women with FSIAD reported lower sexual satisfaction $t(203) = 10.23$, $p < .001$, Cohen's $d = 1.44$; higher sexual distress $t(203) = 8.18$, $p < .001$, Cohen's $d = 1.15$; and poorer sexual communication $t(203) = 5.10$, $p < .001$, Cohen's $d = 0.72$ when compared to control partners. Partners of women with FSIAD did not differ from control partners on solitary, partner-focused, or other-focused sexual desire, depressive symptoms, or anxiety.

Compared to control women, women with FSIAD reported lower solitary desire $t(203) = 6.09$, $p < .001$, Cohen's $d = 0.86$; partner-focused sexual desire $t(203) = 20.44$, $p < .001$, Cohen's $d = 2.87$; other-focused desire $t(203) = 2.29$, $p < .05$, Cohen's $d = 0.32$; sexual satisfaction $t(203)$

= 16.75, $p < .001$, Cohen's $d = 2.53$; sexual communication $t(203) = 8.91$, $p < .001$, Cohen's $d =$ 1.25; and higher sexual distress $t(203) = 20.04$, $p < .001$, Cohen's $d = 2.82$; more depressive symptoms $t(203) = 4.43$, $p < .001$, Cohen's $d = 0.62$; and higher anxiety $t(203) = 5.46$, $p < .001$, Cohen's $d = 0.77$.

Because different measures were used to assess women's and men's sexual functioning, we ran separate MANOVAs to compare those affected by FSIAD to their control counterparts. For men's sexual functioning as assessed by the IIEF, there was a significant multivariate effect for group, $F(5,182) = 22.69$, $p < .001$, $\eta_p^2 = .34$. The follow-up ANOVA for the group effect was significant for orgasmic functioning, erectile functioning, overall satisfaction, and intercourse satisfaction (see Table 4). Pairwise mean comparisons revealed that male partners of women with FSIAD reported more difficulties with orgasmic functioning, $t(186) = 3.58$, $p < .001$, Cohen's $d = 0.57$, and erectile functioning $t(186) = 4.16$, $p < .001$, Cohen's $d = 0.61$, and lower overall satisfaction, $t(186) = 10.60$, $p < .001$, Cohen's $d = 1.56$, and intercourse satisfaction, $t(186) = 7.59$, $p < .001$, Cohen's $d = 1.11$, compared to control partners. However, there were no differences in the sexual desire subscale of the IIEF between male partners of women with FSIAD and male control partners.

In terms of sexual functioning as measured by the FSFI, there was a significant multivariate effect for group, $F(6,197) = 91.20$, $p < .001$, $\eta_p^2 = .74$. The follow-up ANOVA for the group effect was significant for each aspect of women's sexual functioning (see Table 5). Pairwise mean comparisons revealed that women with FSIAD reported lower sexual desire, $t(202) = 20.72$, $p < .001$, Cohen's $d = 2.91$, arousal, $t(203) = 14.39$, $p < .001$, Cohen's $d = 2.02$, lubrication, $t(203) = 12.66$, $p < .001$, Cohen's $d = 1.77$, orgasmic capacity, $t(203) = 9.92$, $p < .001$, Cohen's $d = 1.40$, and satisfaction, $t(203) = 13.70$, $p < .001$, Cohen's $d = 1.93$, and

greater pain during intercourse, $t(203) = 7.75$, $p < .001$, Cohen's $d = 1.09$, compared to control women.

As seen in Table 3, women with FSIAD also reported lower solitary sexual desire $t(192) = 8.10$, $p < .001$, Cohen's $d = 1.17$, partner-focused desire $t(192) = 14.43$, $p < .001$, Cohen's $d = 2.08$, other-focused desire $t(192) = 6.30$, $p < .001$, Cohen's $d = 0.91$, and sexual satisfaction $t(192) = 3.42$, $p < .001$, Cohen's $d = 0.43$, and higher sexual distress $t(192) = 8.23$, $p < .001$, Cohen's $d = 1.19$, depressive symptoms $t(192) = 3.25$, $p < .01$, Cohen's $d = 0.47$, and anxiety $t(192) = 4.40$, $p < .001$, Cohen's $d = 0.64$ compared to their own partners. There were no differences between women with FSIAD and their partners on sexual communication.

There were no differences between control women and their partners on sexual satisfaction, sexual distress, depressive symptoms or anxiety. However, control women reported lower solitary $t(214) = 2.12$, $p < .001$, Cohen's $d = 0.29$, and other-focused sexual desire $t(214) = 2.45$, $p < .001$, Cohen's $d = 0.34$, but higher partner-focused desire $t(214) = 4.61$, $p < .001$, Cohen's $d = 0.63$, and sexual communication compared to their partners $t(214) = 2.90$, $p < .001$, Cohen's $d = 0.40$.

Discussion

The current study compared the sexual, relational and psychological well-being of women diagnosed with FSIAD and their partners to a control sample of couples with no sexual difficulties. Findings indicated that partners of women with FSIAD reported lower sexual and relationship well-being compared to control partners, with the exception of sexual desire. The lack of difference in partner sexual desire highlights that couples affected by FSIAD are likely experiencing a starker discrepancy in sexual interest; a dynamic that has negative implications for couples[6]. Moreover, women with FSIAD reported lower sexual, relational and psychological

well-being in comparison to both control women and their own partners. This study is the first, to our knowledge, to demonstrate negative consequences experienced by partners of women with clinically low sexual desire and arousal. However, the results are consistent with prior studies documenting sexual repercussions for partners of individuals with other sexual dysfunctions[28-31, 34, 35].

As hypothesized, women with FSIAD reported lower sexual functioning across all domains, and higher sexual distress compared to control women with no sexual difficulties. Such findings are not surprising given that the diagnostic criteria includes deficiencies in sexual interest/arousal in addition to sexual distress, and since co-morbidities in female sexual dysfunction are high[11]. More importantly, partners of women with FSIAD reported higher sexual distress and more difficulties with their orgasmic and erectile functioning compared to partners of women with no sexual problems. These results can be understood in light of Barlow's cognitive-behavioral model of sexual dysfunction[39] as well as the Dual Control Model of sexual response[13]. Partners may become preoccupied with potential signals of the woman's lack of interest and arousal during sex, drawing their attention away from pleasurable sensations and cognitions, enhancing their own anxiety, and leading to problems in sexual functioning and greater distress about the sexual relationship. Indeed cognitive distraction and performance anxiety are known contributors to male sexual difficulties[59, 60].

Women with FSIAD and their partners were also less sexually satisfied—that is, their overall subjective evaluation of the positive versus negative aspects of the sexual relationship was poorer—than control couples. In line with the Interpersonal Exchange Model of Sexual Satisfaction[61], affected couples may experience fewer sexual rewards (e.g., intimacy, pleasure), more sexual costs (e.g., disappointment, guilt, lower sexual frequency) and a less favorable

balance of sexual rewards to sexual costs, than do control couples, resulting in lower sexual satisfaction. Some individuals remain sexually satisfied despite the presence of sexual problems[62, 63], suggesting that there may be protective factors for satisfaction that could be targeted in therapy. Identification of such factors—such as intimacy and sexual communal strength[64, 65]—in couples coping with FSIAD is an important future direction.

Similar to findings of couples coping with GPPPD[28, 29], both women with FSIAD and their partners reported lower sexual communication than their control counterparts. Discussions of sexual issues are considered to be one of the most difficult topics for couples as they provoke greater feelings of anxiety and vulnerability[66]. In this context, couples coping with FSIAD, compared to couples without a sexual dysfunction, may be even more avoidant of talking about their sexual relationship as a means of regulating difficult emotions such as feelings of rejection, embarrassment, guilt or shame. Indeed women coping with low desire report feelings of frustration, hopelessness, anger and poor self-esteem, as well as fears of losing their partner[41, 42]. Partners of women with FSIAD may also be reluctant to initiate sexual discussions out of concern for their partner (i.e., to appear supportive) or to not appear to be putting pressure on their partner for sex. Unfortunately, such solicitous responses—that is, excessive expressions of attention and sympathy—may inadvertently reinforce avoidance and negative cognitive-affective appraisals of the sexual problem (e.g., catastrophizing), and be linked to poorer outcomes as a result[67]. The poorer sexual communication observed in couples coping with FSIAD suggests a potential target for psychological interventions. In fact, among a community sample of women, enhanced communication featured most prominently in response to a question about what participants did to get their desire "back on track" when they felt they were out of sync with their partner[68]. More research is needed to better understand what aspects of sexual communication

couples coping with FSIAD find to be difficult and potential patterns of sexual communication (e.g., demand-withdrawal, mutual avoidance, emotional disclosure) that might interfere with or promote adjustment to the sexual problem.

Women with FSIAD and their partners reported lower overall relationship satisfaction, compared to controls, and there were no differences between members of the couple in this respect. Such findings are consistent with the interdependence of sexual and relationship satisfaction[69] and highlight that there are wider reaching implications of the sexual problem for the overall evaluation of the relationship. Indeed, women with low desire have reported fears of losing their partner, less connectedness, and a negative toll to their overall relationship[42], and the current results suggest that partners' experience relational strain as well. Future research should examine the specific ways that couples' relationships are affected by FSIAD (e.g., intimacy, expressions of affection) to inform more targeted interventions.

Although this study documented some important sexual and relational consequences for partners of women with FSIAD, it is important to note that women's impairments were more severe than their partners, as indicated by their lower sexual satisfaction and higher sexual distress, depressive symptoms, and anxiety compared to their own partners. The women and partners in the control sample did not differ in these aspects of their well-being. Further, women with FSIAD reported greater depressive symptoms and anxiety compared to controls—a difference that was not observed in comparing their partners to controls. Thus, women with FSIAD appear to experience the heavier burden of this difficulty on their sexual and psychological adjustment.

The findings of the current study are correlational and we cannot infer causation. It will be important to conduct longitudinal studies to better address the temporal order of FSIAD and

partners' sexual difficulties. The samples were relatively young, mainly in mixed-sex

relationships, identified as straight and cis-gendered, North American, and white, limiting the

generalizability of the results to more diverse samples. Still our samples over-represented

couples in same-sex relationships (8% to 9%) and those identifying as non-heterosexual (16% to

35%) relative to population-based estimates[70], which is a clear strength. Couples were recruited

over the Internet and the screening and diagnostic interviews were conducted by telephone;

participants may differ from couples who seek help clinically. However, the enhanced anonymity

and ability to reach larger and more diverse samples makes these methodologies important in sex

research, especially when discussing sensitive topics[71]. We required both members of the couple

to agree to participate, which may have introduced a selection bias. Couples who are more

distressed may be less willing to participate in research, especially since our protocol required

that they not be currently engaging in treatment for FSIAD. Finally, the diagnostic interview

focused specifically on the DSM-5 criteria and as such it cannot be considered a complete

clinical assessment involving a thorough psychosexual, developmental, relationship, and medical

history. We also cannot know whether, for some women, the problem was primarily one of low

sexual interest or low sexual arousal, and whether partner consequences may differ in such cases.

Conclusions

The present study sheds light on the interpersonal dynamics of couples coping with

FSIAD by documenting important consequences experienced by both affected women and their

partners in comparison to couples reporting no sexual difficulties or sexual distress. This was the

first study, to our knowledge, to find sexual impairments for the partners of women with FSIAD

using standardized measures across various domains of their sexual well-being. Women were

diagnosed with FSIAD via a semi-structured clinical interview over the phone, which represents

a methodological improvement over previous work in the area that has relied on clinical cutoffs on self-report measures only. Given the relevance of interpersonal factors for low sexual desire[10, 19], findings may reflect interdependence between members of affected couples and underscore the importance of including both members of the couple in treatment and research with this population. Future dyadic research should examine how relevant factors—assessed from the perspective of women with FSIAD and their partners—influences both their own and their partners' impairments (e.g., based on the Actor-Partner Interdependence Model[72]).

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Table 1
Sample characteristics

	FSIAD	Controls	
	$N = 97$	$N = 108$	$^{\dagger}p$
Age (years), mean (*SD*), range (years)			
Women	31.15 (8.27)	29.79 (8.31)	.29
	19.07 - 57.48	19.24 - 61.37	
Partners	32.30 (9.65)	31.71 (9.77)	.74
	19.07 - 70.34	19.15 - 64.29	
Partner's gender, *n* (%)			.54
Male	88 (90.70)	99 (91.67)	
Female	8 (8.30)	6 (5.55)	
Non-binary	1 (1.00)	3 (2.78)	
Self-identified sexual orientation, *n* (%)			
Women			.77
Straight/Heterosexual	68 (70.10)	70 (64.80)	
Bisexual	15 (15.50)	18 (16.70)	
Other[+]	14 (14.40)	20 (18.50)	
Partners			.26
Straight/Heterosexual	82 (84.50)	84 (77.80)	
Bisexual	6 (6.20)	11 (10.20)	
Other[+]	9 (9.30)	13 (12.00)	
Education (years), mean (*SD*)			

Women	16.50 (2.73)	16.44 (2.76)	.76
Partners	16.12 (3.21)	15.44 (3.25)	.11
Couples with children, *n* (%)	30 (30.93)	32 (29.63)	.97
Ethnicity, *n* (%)			
Women			.60
Caucasian/White	70 (72.16)	77 (71.30)	
Asian American/Asian	8 (8.25)	5 (4.63)	
Other^	19 (19.59)	26 (24.07)	
Partners			.44
Caucasian/White	74 (76.29)	75 (69.44)	
Asian American/Asian	10 (10.31)	5 (4.63)	
Other^	13 (13.40)	28 (25.93)	
Combined annual income, *n* (%)			.73
$0-39,999	29 (29.90)	42 (38.89)	
$40,000-79,999	35 (36.08)	37 (34.26)	
>$80,000	33 (34.02)	29 (26.85)	
Relationship type, *n* (%)			.10
Dating	10 (10.31)	23 (21.30)	
Cohabitating	26 (26.80)	27 (25.00)	
Engaged	7 (7.22)	4 (3.70)	
Married/Common-law	54 (55.67)	52 (48.20)	
Other	–	2 (1.90)	
Relationship Duration (years), mean (*SD*)	7.48 (7.05)	6.13 (6.94)	.16

Note. SD = standard deviation. [+]*Other* self-identified sexual orientations included the following:

lesbian, asexual, pansexual, queer, demi-sexual, hetero-flexible, bi-curious, and confused. [^]*Other*

ethnicities included the following: African American/Black, East Indian, Hispanic/Latino/Latina,

Middle Eastern/Central Asian, Biracial/Multiracial, Portuguese, Ashkenazi.

[†]Student's *t*-test or chi-square test

Table 2

Mean, standard deviations for measures of sexual, relational, and psychological adjustment for couples affected by FSIAD and control couples.

Variable	Group	*M*	*SD*	*F*	η_p^2
Partner-focused desire	FSIAD	26.07	5.33	269.97**	.57
	Control	38.72	5.65		
Other-focused desire	FSIAD	6.88	2.83	0.19	.00
	Control	7.08	3.52		
Solitary desire	FSIAD	11.62	5.47	20.65**	.09
	Control	15.43	6.42		
Sexual distress	FSIAD	23.71	7.87	302.88**	.60
	Control	6.66	6.12		
Sexual satisfaction	FSIAD	22.35	4.94	240.04**	.54
	Control	31.47	3.42		
Sexual communication	FSIAD	55.28	9.65	66.62**	.25
	Control	66.01	9.17		
Relationship satisfaction	FSIAD	59.05	12.52	32.16**	.14
	Control	68.17	10.50		
Depression	FSIAD	12.44	7.61	11.14*	.05
	Control	9.06	6.90		
Anxiety	FSIAD	13.47	3.15	21.93**	.10
	Control	11.47	2.96		

Note. *N* = 97 couples with FSIAD and 108 control couples.

* *p* < .02 (as per Bonferroni-Holm correction). ** *p* < .001.

Table 3

Mean, standard deviations, follow-up ANOVAs, and simple effects analysis for measures of sexual, relational, and psychological adjustment for couples affected by FSIAD and control couples.

Variable/Group	Women		Partners		Follow-up ANOVA	
	M	*SD*	*M*	*SD*	*F*	η_p^2
Partner-focused Desire						
FSIAD	17.57_{ab}	9.06	34.58_b	7.26	199.33**	.50
Control	41.02_{ac}	7.35	36.42_c	7.31		
Other-focused Desire						
FSIAD	4.93_{ab}	4.00	8.84_b	4.62	7.36*	.03
Control	6.31_{ac}	4.58	7.85_c	4.64		
Solitary Desire						
FSIAD	7.27_{ab}	7.43	15.98_b	7.55	19.32**	.09
Control	14.24_{ac}	8.80	16.62_c	7.65		
Sexual Distress						
FSIAD	29.82_{ab}	10.13	17.59_{bc}	10.52	78.98**	.28
Control	6.18_a	6.55	7.14_c	7.67		
Sexual Satisfaction						
FSIAD	20.91_{ab}	5.46	23.78_{bc}	6.21	18.48**	.08
Control	31.58_a	3.55	31.35_c	4.30		
Sexual Communication						

FSIAD	55.00$_a$	11.63	55.57$_b$	12.04	7.92*	.04
Control	68.07$_{ac}$	9.35	63.94$_{bc}$	11.45		
Relationship Satisfaction						
FSIAD	58.03	15.61	60.07	13.27	2.32	.01
Control	68.49	12.00	67.85	11.44		
Depression						
FSIAD	14.74$_{ab}$	11.59	10.14$_b$	7.71	10.87**	.05
Control	8.70$_a$	7.72	9.42	9.57		
Anxiety						
FSIAD	14.75$_{ab}$	4.38	12.19$_b$	3.69	10.61**	.05
Control	11.65$_a$	3.74	11.29	3.77		

Note. For the outcome variables, means with the *same subscript indicate a significant difference*.

$N = 97$ couples with FSIAD and 108 control couples.

*$p < .02$ (as per Bonferroni-Holm correction). ** $p < .001$.

Table 4

Mean, standard deviations for subscales of the International Index of Erectile Function for male partners of women with FSIAD and male partners of control women.

Variable	Group	M	SD	F	η_p^2
Orgasm	FSIAD	7.79	3.43	12.81**	0.06
	Control	9.19	1.78		
Erectile Function	FSIAD	24.19	8.96	17.26**	0.08
	Control	28.37	4.26		
Overall Satisfaction	FSIAD	5.37	2.21	112.44**	0.38
	Control	8.53	1.87		
Intercourse Satisfaction	FSIAD	8.11	4.28	57.64**	0.24
	Control	12.14	2.94		
Desire	FSIAD	7.46	1.69	3.82	0.02
	Control	7.93	1.59		

Note. $N = 89$ male partners of women with FSIAD and 99 male partners of control women.

** $p < .001$.

Table 5

Mean, standard deviations for subscales of the Female Sexual Function Index for women affected by FSIAD and control women.

Variable	Group	*M*	*SD*	*F*	η_p^2
Desire	FSIAD	1.98	0.78	429.42**	.68
	Control	4.54	0.97		
Arousal	FSIAD	2.35	1.42	330.69**	.62
	Control	5.22	0.76		
Lubrication	FSIAD	3.15	1.70	157.63**	.44
	Control	5.39	0.71		
Orgasm	FSIAD	3.05	1.78	98.44**	.33
	Control	5.09	1.11		
Satisfaction	FSIAD	2.89	1.34	187.80**	.48
	Control	5.10	0.94		
Pain	FSIAD	3.77	2.01	60.06**	.23
	Control	5.47	1.02		

Note. $N = 97$ women with FSIAD and 107 control women.

** $p < .001$.