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Original article

The impact of genital self-image on sexual function in women with pelvic floor disorders



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ABSTRACT

Objective: There is conflicting evidence regarding the impact of urinary incontinence and pelvic organ prolapse on overall sexual function. However, psychological variables thought to be associated with sexual function, have not been fully explored. We assessed the sexual functioning of women with pelvic floor disorders while measuring for psychological factors such as distress and genital self-image.

Study design: In a cross-sectional study, 155 women in an urogynecology outpatient clinic of a tertiary health center completed a demographic questionnaire, the Brief Symptom Index-18 (BSI-18), Pelvic Floor Distress Inventory-20 (PFDI-20), Genital Self-Image Scale-20 (GSIS-20) and the Female Sexual Function Index (FSFI).

Results: Linear regression showed that when controlling for age and depression, GSIS significantly predicted FSFI total score (Beta = 0.38, $p < 0.001$) and the Desire subscale (Beta = 0.55, $p < 0.001$). Due to the low response rate in the GSIS and FSFI questionnaires, a preliminary analysis was conducted to characterize the responders. On univariate logistic regression, response to the GSIS was negatively correlated with age (OR = 0.94, $p = 0.02$) and being in a relationship (OR = 2.3, $p = 0.016$), yet the effect of being in a relationship was diminished in a multivariate model that included age.

Conclusion: The main variable associated with overall sexual function in women with pelvic floor disorders was low genital self-image. This variable is more important than self-reported symptoms, type of specific disorder or other demographic variables. Older women tended not to complete the scales concerning more intimate matters. We suggest that urogynecologists should inquire about genital self-image as well as sexual function in this population.

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Introduction

As the world's older population continues to grow, pelvic floor disorders, mainly urinary incontinence and pelvic organ prolapse are becoming major health problems [1]. Different pelvic floor disorders have similar consequences for women, such as decreased body image and quality of life [2], significant psychological distress, expressed by depression [3], anxiety [4] and poor sexual function [5,6].

Several studies have found an association between pelvic floor disorders and overall poorer sexual function [7,8] with up to 60% of sexually active women attending urogynecology clinics reporting

sexual dysfunction [5]. However, there are conflicting results regarding the different effects of urinary incontinence and pelvic organ prolapse over overall sexual function [6,9].

As to the different effects of different pelvic floor disorders over components of sexual dysfunction, research has suggested that prolapse is more likely than urinary incontinence to result in sexual inactivity [9,10], especially when bulging of genital organs is presented [8]. Other studies report that urinary incontinence is related to infrequent orgasm [11], low libido, vaginal dryness and dyspareunia [12]. These associations were not found for pelvic organ prolapse [8]. On the other hand, infrequent orgasm, decreased arousal, and increased dyspareunia are present in women with all types of pelvic floor disorders [6]. These inconsistencies could be the result of differences in demographic or other psychological factors such as genital self-image.

Although some studies have addressed the issue of sexual function and pelvic floor disorders in terms of body image [13,14]

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and genital body image [15], only one qualitative study focused on incontinence in addition to prolapse [13]. None of the above-mentioned studies addressed other psychological variables such as distress (e.g., depression, anxiety, somatization) that may accompany problems in sexual function of women with pelvic floor disorders [16].

As subjective evaluation of physical symptoms may have low association with actual physical symptoms [17], treatment of pelvic floor disorders may be prompted by patients' perceptions of their symptoms and their desire for an improved quality of life [18]. Therefore we focused on subjective reporting of pelvic floor symptoms rather than on clinically measured symptoms.

The aim of this study was to explore the association of subjective reported pelvic floor symptoms, genital self-image and psychological distress (anxiety, depression and somatization) with overall sexual function in women with pelvic floor disorders (pelvic organ prolapse and urinary incontinence). Thus, we hypothesized that high subjective reported pelvic floor symptoms, low genital self-image and high psychological distress would be associated with lower overall sexual function. Moreover, as there is some debate regarding the possible difference between pelvic prolapse and urinary incontinence in terms of overall sexual function, we sought to study this possible difference.

Materials and methods

This cross-sectional study was part of a larger project [19] conducted in an urogynecology outpatient clinic of a major tertiary medical center between August 2014 and June 2015. On randomly selected clinic days, a research assistant approached the women attending the clinic. Those who were interested were given a detailed explanation of the protocol, signed the consent form, and completed the questionnaires described below, in the order specified. Of the 207 women who were approached, 155 women gave their informed consent and participated. 52 women declined to participate because of lack of time or concerns for their anonymity. All participating women were referred by their primary physician for initial assessment of pelvic floor disorders and were all diagnosed by the urogynecologists in the unit and before treatment for lower urinary tract symptoms and/or pelvic organs prolapse. The diagnosis of lower urinary tract symptoms and pelvic organs prolapse were according to the international continence society recommendations [20]. Women were eligible to participate if they could complete a questionnaire in Hebrew, didn't report any fecal incontinence symptoms, were not pregnant and were aged 18 years or over. The study was approved by the local institutional review board (0667-13-RMC).

Questionnaires

- A standardized demographics questionnaire regarding their age, marital status, number of children and the duration of symptoms.
- Brief Symptom Inventory-18 (BSI-18) [21]. This 18-item inventory assesses psychological distress (somatization, depression, and anxiety) and uses the Global Severity Index (GSI), which is obtained by combining the number and intensity of reported symptoms for a composite measure of psychological distress. Each subscale is scored on a 5-point Likert-type scale, ranging from 0 to 24. These scores are added to give a total score range of 0–72, with the higher scores indicating major psychological distress. The Cronbach α of the original version of the BSI-18 was 0.89 [21] (0.74–0.84 for subscales), compared to 0.91 in our study
- Pelvic Floor Distress Inventory-20 (PFDI-20) [22]. The PFDI-20 is a valid and reliable scale for measuring pelvic floor symptoms in

women. It comprises 20 questions, and uses 3 scales (urinary, pelvic organ prolapse, colorectal-anal). Scores range from 0 to 300 with higher scores indicating more distress. Overall Cronbach α in the original version was 0.88 [22] and in the current study, 0.82.

- Genital Self-Image Scale-20 (GSIS-20) [23]. This scale measures genital body image. Total scores range from 0 to 40, with higher scores indicating better genital self-image dissatisfaction. The GSIS-20 exhibits good to excellent internal consistency reliability (α =0.79 to 0.89 in different sample groups) [23]. In the current study, Cronbach α was 0.85.
- Female Sexual Function Index (FSFI) [24]. This 19-item Likert-type scale questionnaire assesses six domains of sexual function: desire, arousal, lubrication, orgasm, satisfaction, and pain. Scores range from 2 to 36, with a higher total score indicating better sexual function. The FSFI yields a high degree of internal consistency (Cronbach's α values of 0.82 and higher) [24]. Our Cronbach's α for total score was 0.98 and ranged from 0.90 to 0.96 for individual domains. As concerns were raised as to its reliability in measuring sexual function regardless of recent sexual activity (for a detailed discussion, see [25]), and as some of the women in our sample had not been involved in sexual activity near the time of the study, we chose to analyze the FSFI desire subscale in addition to the full scale. This subscale can be applied to women who have not been sexually active in the past four weeks [25]. By comparing the results of the full scale and the desire subscale, we could address the possible confounding variable of being in a relationship or not being sexually active recently [25].

Statistical analysis

Pearson correlation coefficients or independent samples *t*-test were used to test the relationship between demographic and study variables. Hierarchical linear regression was used to predict FSFI scores, and binary logistic regression was used to predict response to the GSIS questionnaire. Significance level was set at 5%. Statistical power analysis for the main research hypothesis shows that a medium effect size can be detected with a probability of 88%.

Results

Of the 155 women studied, type of disorder was either any type of urinary incontinence (urge or stress; $n=72$, 46.5%) or prolapse ($n=83$, 53.5%) as diagnosed by the Urogynecologists in the clinic. Thirty nine of the latter also had incontinence problems as a secondary complaint but as prolapse is usually considered as the main complaint and generally takes priority in a treatment plan, they were classified to the prolapse group. Eighty-seven women (56.1%) were in a relationship compared to 68 (43.9%) who were not.

Response rate

The response rate dropped drastically when the participants reached the GSIS questionnaire (69%). An additional drop was recorded when the final FSFI questionnaire was reached (54%). The number of responders to each questionnaire can be seen in Fig. 1.

Further analysis of the response to the GSIS and FSFI questionnaires showed that all of the participants who responded to the FSFI questionnaire also responded to the GSIS questionnaire. For this reason, we looked into the response to the GSIS, which was relevant to all participants.

The results of the logistic regression model predicting response are presented in Table 1. The multivariate model included only

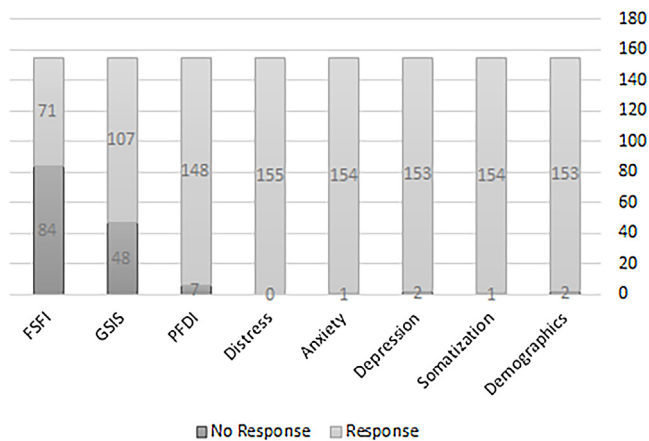


Fig. 1. Number of responders to each questionnaire. Questionnaires appear in the same order as viewed by the participants, from right to left.

Table 1 Univariate and multiple logistic regression analyses predicting response to genital self-image scale (GSIS).

Predictor	Global odds ratio (95%CI)	Adjusted odds ratio (95%CI)
Age	0.94** (0.91–0.97)	0.95** (0.928–0.98)
Being in a Relationship	2.35* (1.17–4.70)	1.91 (0.91–3.98)
BSI: Depression	0.97 (0.89–1.05)	
BSI: Somatization	0.99 (0.92–1.06)	
BSI: Anxiety	0.97 (0.91–1.05)	
BSI: GSI	0.99 (0.96–1.02)	
Type of disorder ^a	1.418 (0.706–2.850)	
PFDI	0.999 (0.991–1.005)	

Note: *p < 0.05, **p < 0.01, GSI=Global Severity Index of the Brief Symptom Inventory, a = Prolapse (baseline) vs. urinary incontinence.

those predictors that were found to have a significant univariate association with the GSIS response. Younger women and women in a relationship were more inclined to respond to the GSIS when tested individually, yet the effect of being in a relationship lost its significance in the multivariate model.

Sexual function

This analysis was performed on women who responded to both FSFI and GSIS questionnaires (n = 71). However in practice, in some analyses the sample size was smaller due to specific missing data. Demographic variables for this sub-sample are presented in

Table 2 Means and standard deviations of demographic and study variables.

	N (%)	Mean	Sd	Range	Total N
FSFI Total		13.9	10.9	0.8–33.7	71
FSFI Desire		2.6	1.3	1.2–6.0	71
Age		59.6	13.1	26.0–80.0	73
Number of Children		2.7	1.3	0–6	73
Duration of Problem (months)		54.6	62.5	1–420	62
Relationship Status					71
In a Relationship	53 (74.6)				
Not in a relationship	18 (25.4)				
Sexual Activity					71
Sexually Active	36 (50.7)				
Not Sexually Active	35 (49.3)				
PFDI		101.2	57.7	0–290.6	73
GSIS		22.8	5.5	0–40	74
BSI Total Score		13.5	12.5	0–57	75
BSI Anxiety		5.3	5.2	0–23	74
BSI Somatization		5	5.2	0–22	74
BSI Depression		3.3	4.1	0–19	73

Table 2. Correlations between total FSFI and desire scores and demographic variables are presented in Table 3.

Relationship status and type of pelvic floor disorder showed no significant effect of these variables on either one of the FSFI scales. Namely, there were no differences in FSFI total or desire scales between women in a relationship and women who were not (F (1,69)=0.69, p=ns and F(1,67)=0.19, p=ns, respectively), or between women with different types of disorders (F(1,68)=0.08, p=ns and F(1,66)=0.39, p=ns, respectively). Correlations between study variables for this sub-sample are presented in Table 4.

Both female sexual function scales were modeled using hierarchical linear regression with 3 forced-entry blocks. Age was entered in the first block as it was the only demographic variable which correlated with FSFI. The second block included the depression subscale (BSI-18), since its correlation with FSFI total scale was close to significant. The third block included genital self-image.

Regression results are presented in Table 5 (total scale) and Table 6 (desire subscale). Exact significance values for standardized Beta coefficients are presented so as to provide information about close to significant results. The first regression, predicting total score showed that older, depressed women with low genital self-image had a lower FSFI score. Genital self-image was the only significant variable associated with sexual function, although age and depression were also significant before the GSIS entrance to the regression model. The second regression, predicting desire score showed that older, depressed women with low genital self-image had lower FSFI desire scores.

Comment

This study shows that low genital self-image is the main variable associated with overall poorer sexual function. We found that genital self-image was more important than depression and age, which were also found to be associated with sexual function. These variables accounted for 25.3% of the variance in overall sexual function and 37.8% of the variance in the desire subscale. In fact, genital self-image was the most important variable and when it was added to the model, all other variables became nonsignificant. Other variables such as reported pelvic floor symptoms, type of disorder (incontinence vs. prolapse) or being in a relationship, were not found to be associated with overall sexual function. The fact that the results were similar for the overall sexual function and the desire subscale make the results valid, though not all the women in the sample were in a relationship (for further discussion of that matter see [25]).

The importance of genital self-image vis-à-vis sexual function in our study is in line with other studies [13–15], although ours is the only study to include a broad perspective of pelvic floor disorders with other different variables. Genital self-image in itself was associated with severity of self-reported symptoms as well as with all measures of distress- depression, anxiety, somatization and overall distress. An important finding of the study was the lack of difference between incontinence and prolapse in terms of sexual

Table 3 Pearson correlation coefficients between female sexual function (FSFI) and demographic variables.

	(1)	(2)	(3)	(4)	(5)
(1) FSFI total score	–				
(2) FSFI desire score	0.60**	–			
(3) Age	–0.23*	–0.33**	–		
(4) Number of Children	–0.09	–0.13	0.34**	–	
(5) Duration of Problem (month)	0.09	–0.05	0.09	0.28*	–

* p < 0.05.
** p < 0.01.

Table 4

Pearson correlation coefficient between female sexual function (FSFI), BSI subscales and total psychological distress (GSI), pelvic floordistress (PFDI) and genital self-image (GSIS).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) FSFI Total score	–							
(2) FSFI Desire scale	0.60**							
(3) BSI Depression	–0.23 (p=0.053)	0.10						
(4) BSI Somatization	–0.10	–0.09	0.45**					
(5) BSI Anxiety	–0.08	0.05	0.75**	0.61**				
(6) BSI GSI	–0.15	0.02	0.81**	0.82**	0.92**			
(7) GSIS	0.42**	0.51**	–0.24*	–0.27*	–0.24*	–0.29*		
(8) PFDI	–0.13	–0.16	0.21	0.52**	0.37**	0.43**	–0.30*	

* p < 0.05.

** p < 0.01.

Table 5

Standardized regression coefficients predicting female sexual function (FSFI) total score (N = 69).

	Beta (sig)	F	Df	R ² change
Step 1 Age	–0.24*	4.3	(1,67)	0.060
Step 2 Age	–0.28*	4.7	(2,66)	0.064
Depression	–0.27*			
Step 3 Age	–0.19	7.4**	(3,65)	0.130**
Depression	–0.20			
GSIS	0.38**			

* p < 0.05.

** p < 0.01.

Table 6

Standardized regression coefficients predicting female sexual function (FSFI) desire subscale (N = 69).

	Beta (sig)	F	Df	R ² change
Step 1 Age	–0.34**	8.6**	(1,67)	0.114**
Step 2 Age	–0.33*	4.4	(2,66)	0.004
Depression	–0.06			
Step 3 Age	–0.19*	13.1**	(3,65)	0.260**
Depression	–0.18*			
GSIS	0.55**			

* p < 0.05.

** p < 0.01.

function. The participants in our study, regardless of having prolapse or incontinence, exhibited impaired sexual function. Their mean FSFI score was 13.9 which is far below the suggested 26.55 cutoff point for sexual dysfunction [24], but similar to other studies of women with pelvic floor disorders [5,26]. This pattern adheres to the lack of difference reported in a recent study [9]. This could be due to the possible similar underlying pathophysiology of prolapse and incontinence [27] and the fact that both pose difficulty with regard to overall sexual function.

In our research, only the depression distress subscale was found to be associated with overall sexual function and not anxiety, somatization or general distress, although depression lost its significance in the final model for the full FSFI scale and became significant for the desire subscale. These results concur with other studies [28], stressing the possible association and bi-directional influence of sexual function and depression on each other.

The association of overall sexual function with age is somewhat complex. An association between sexual dysfunction and older age has previously been reported in women with pelvic floor dysfunction [26], but, the related level of distress may decrease with aging [28]. It is therefore understandable that although age was associated with overall sexual function, as found in other studies [26] this association became insignificant when factors such as genital self-image were included in the model for the total

score of sexual function. It should be noted that when measuring only the desire subscale, age was still associated with low desire.

One interesting result was that the self-rated pelvic floor symptoms did not correlate with overall sexual function, contrary to other studies [14]. It seems that although self-rated pelvic floor symptoms are important for quantification of severity disorder, the subjective severity of disorder may not be associated with overall sexual function. It should be noted that the self-rated pelvic floor symptoms PFDI scores significantly correlated with genital self-image and the total distress score as well as the anxiety and somatization subscales, thus validating the PFDI.

Another interesting result was the steep decline in the participant's cooperation in terms of filling out the questionnaires. When comparing the missing data concerning genital self-image (GSIS-20) and sexual function (FSFI) to the rest of the questionnaires, it can be seen that respectively almost 31% and 45% of the women in our sample chose not to complete them, while all women avoiding the GSIS questionnaire skipped the FSFI. This decline was not thought to be attributed to exhaustion or impatience, because the missing date from the all previous questionnaires was similar and very limited. The steep decline may be connected to the questionnaires on more intimate issues such as sexual function or genital self-image.

Pelvic floor disorders may cause a decline in sexual function [29] and are associated with low genital self-image [15]. We attribute importance to the fact that some women with pelvic floor disorders, especially older ones as was found in our study, refrain from sharing information regarding sexual function and genital self-image (even exclusively for research purposes as in our study) with their physician in the form of a questionnaire filled at the end of the visit to the doctor. It concurs with the general findings that women may hesitate in presenting sexual function symptoms, and expect their gynecologist to initiate discussion regarding sexual matters. Furthermore, women with positive genital self-image feel more comfortable discussing sexual dysfunction while women with incontinence may refrain from seeking help regarding sexual function [26,30].

In the present study, data from women who did not complete these questionnaires were available and we noted that the variable associated with abstention from dealing with these issues was older age. As we do not know the FSFI possible scores of these women, we cannot ascertain the possible association of conflicting issues regarding sexual function and lack of cooperation.

Limitations

One limitation was that we used the more general FSFI questionnaire to measure sexual function rather than the PISQ-12, which is specifically designed for women with pelvic floor disorders [31]. This choice was made as the FSFI is a widely used instrument in various populations and so it allows for possible

comparison of sexual function in different populations. Another possible limitation is the cross-sectional nature of the measurement that did not enable us to determine cause-and-effect regarding the variables associated with sexual function. A final limitation was that the PFDI scores were self-rated (as opposed to clinical measurements), although it must be stated that all of the women in the study group were diagnosed and later treated for pelvic floor disorders by the urogynecologists of the unit. Furthermore, in other studies sexual function was associated with patients' perception and not with actual topographical changes [14]. Future research should take into account both subjective as well as objective evaluations of pelvic floor disorders with relation to genital self-image as well as sexual function.

In conclusion, low genital self-image was the main variable associated with overall sexual function in women with pelvic floor disorders. This variable is more important than the self-reported symptoms of the pelvic disorder as well as the type of specific disorder or other demographic variables. Genital self-image was associated in itself with self-reported symptoms as well as with overall distress, depression, anxiety and somatization. Depression and age were associated with overall sexual function and with the desire subscale but remained significant only in the final model of the desire subscale. These results add to our knowledge of self-reported factors associated with overall sexual function in women with pelvic floor disorders and the prominence of genital self-image. Our data suggest that older women tend not to complete the scales concerning more intimate matters. Taken together, these findings suggest that urogynecologists should inquire and initiate conversation about sexual function and genital self-image in women with pelvic floor disorder. Sexual function is an integral component of quality of life and genital self-image may be a good indicator for possible sexual dysfunction in women with pelvic floor disorders.

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