

Sexual Dysfunction is Common in Women with Lower Urinary Tract Symptoms and Urinary Incontinence: Results of a Cross-Sectional Study

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Abstract

Objective: The aim of this study was to determine the prevalence of sexual dysfunctions in women with urinary incontinence and/or lower urinary tract symptoms as compared to a general female population.

Methods: We extensively evaluated 227 consecutive women (mean age 52; age range 19–66) complaining of urinary incontinence (UI) and/or lower urinary tract symptoms (LUTS) with a comprehensive history (including several validated questionnaires), a complete physical examination and a urodynamic multichannel evaluation. Two hundred and sixteen patients were eligible for sexual function investigation because 11 out of 227 (5%) were not interested in dealing with questions regarding their own sexuality and were thus excluded from the final evaluation results. A group of 102 age-matched women (mean age 54; age range 19–63) assessed for a yearly routine gynaecological evaluation and not complaining of urinary symptoms were enrolled as cross-sectional controls and investigated in accordance with the Female Sexual Function Index (FSFI).

Results: Sexual dysfunction was diagnosed in 99 out of 216 patients (46%). Of these, 34 (34%) reported hypoactive sexual desire, 23 (23%) reported sexual arousal disorder; 11 patients (11%) complained of orgasmic deficiency, and 44 (44%) suffered from sexual pain disorder (e.g., dyspareunia or non-coital genital pain). Women reporting low sexual desire commonly suffered from stress incontinence (47%). We found that 60% of the women with sexual arousal disorders and 61% of those with sexual pain disorders also complained of recurrent bacterial cystitis. Forty-six percent of those complaining of orgasmic phase difficulties also reported a troublesome urge incontinence. The FSFI values in both groups scored as follows (patients versus controls; median value; *p* value): desire: 2.0 vs. 3.2 (*p* < 0.01); arousal: 2.8 vs. 3.6 (*p* = n.s.); lubrication: 3.2 vs. 4.4 (*p* = 0.01); orgasm: 4.1 vs. 4.4 (*p* = n.s.); sexual satisfaction: 2.7 vs. 4.0 (*p* < 0.01); sexual pain: 1.8 vs. 4.0 (*p* < 0.001).

Conclusions: Women reporting UI or LUTS also complained of sexual dysfunctions in a significantly higher number than a general, healthy female population not complaining of urinary symptoms. Investigation of female sexuality is suggested for these patients.

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1. Introduction

Urinary incontinence in women is a highly prevalent condition, both in the stress and the urge subtypes [1,2]. Lower urinary tract symptoms are also commonly

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reported by the women population [3,4]. Data found in literature report that women's sexual dysfunction (WSD) is age-related, progressive and extremely common, affecting 30% to 50% of women [5–8]. Abnormalities of sexual function have been associated with urinary incontinence and pelvic organ prolapse [9–11]. Little is known either about the prevalence of WSD in various subsets of patients with micturition disorders or about the potential correlation between those female patients most frequently seen by urologists (i.e., those with UI and/or lower urinary tract symptoms). The aim of this study was to determine the prevalence of sexual dysfunctions in women with urinary incontinence and/or lower urinary tract symptoms as compared to the general female population. This report contains: (a) the results of a urodynamic and clinical study concerning the correlation between urinary disorders and WSD; (b) the results of the comparison between the sexual functions of these patients with micturition disorders (i.e., UI and/or LUTS) and those in a group of healthy women assessed for a yearly routine gynaecological evaluation and not complaining of urinary symptoms.

2. Materials and methods

Between November, 1998, and February, 2002, 227 consecutive caucasian women (mean age 52; age range 19–66) complaining of UI and/or recurrent or persistent LUTS were considered for this study. All these women came from an identical clinical setting (i.e. the urologic clinic). All patients were extensively assessed in terms of medical and sexual history, including the AUA Symptom Score [12] and several general assessment questions (GAQs) specifically designed to guide the investigation of women's sexual function (Appendix A). Moreover, all patients have completed the Female Sexual Function Index (FSFI) [13] to standardize the interview regarding the patient's sexual life. The FSFI is a 19-question, self-report measure of female sexual function, organized in a 6-domain structure, which includes desire, subjective arousal, lubrication, orgasm, satisfaction, and pain. At this time the Italian translation of the FSFI was not linguistically validated. Very recently two papers confirmed the validity of FSFI in investigating women's sexual function [14,15]. All patients were also assessed by a detailed, general and neurological physical exam, including laboratory tests such as urinalysis and a urodynamic, multi-channel evaluation. Urodynamic techniques and measurements, terms, and diagnostic criteria conform to the recommendations of the International Continence Society [16,17]. A urethral calibration by means of *boogies à boule* was also performed when needed to investigate the possible presence of a stricture in either the distal urethra or the urethral meatus. Two hundred and sixteen patients were eligible for sexual function investigation because 11 (5%) out of 227 were not interested in dealing with questions regarding their own sexuality and were thus excluded from the final evaluation results. A group of 140 healthy age-matched women (mean age 54; age range 19–63; $p = 0.61$) assessed in a yearly routine gynaecological evaluation for cancer-prevention and not complaining of urinary symptoms were used as cross-sectional controls. Lastly, due to the fact that

part of these women incompletely filled in the questionnaire, a subgroup of 102 (73%) out of the latter 140 women were enrolled in the present study and investigated with the FSFI. All these healthy women were free of urinary symptoms (i.e. UI and/or LUTS), as determined by both a urologic semi-structured-interview and the results of the AUA symptom score. The Student's *t*-test for impaired data was used to compare data obtained from the 2 groups.

3. Results

One hundred and thirty-six (59%) out of the 227 patients consecutively evaluated reported UI. As determined by both the urodynamic findings and the International Continence Society definitions [16,17], 52 (38%) of these were diagnosed with urge incontinence, showing a manometric finding of detrusor instability. Eighty-four patients (62%) were diagnosed as having stress incontinence [73% (61/84 patients): type I–II incontinence; 27% (23/84 patients): type III incontinence]. Twenty-six patients (11%) suffered from LUTS (i.e., dysuria and urgency-frequency syndrome) with no complaints of recurrent cystitis. On the contrary, 65 patients (29%) reported LUTS with recurrent bacterial cystitis. Table 1(a) and (b) show the characteristics of these two groups.

Ninety (40%) out of 227 women stated being in menopause; of these, 40 cases (44%) were due to iatrogenic causes including hysterectomy, mainly performed to treat a uterine fibroma.

One hundred and sixty-nine women (74%) of the entire population evaluated had a stable, heterosexual relationship and were sexually active; 45 out of these 227 (20%) women were not involved in stable relationships but had active, heterosexual sexual activity. Two women (1%) had a stable, lesbian relationship and were sexually active.

According to the analysis of sexual history and FSFI scores, WSD was diagnosed in 99 (46%) out of the 216

Table 1

(a) Final urological diagnosis in women suffering from bladder outlet obstruction and voiding dysfunction without recurrent bacterial cystitis	
Meatal stenosis	6/26 (23%)
Obstructive cystocele	5/26 (19%)
Atrophic urethritis	2/26 (8%)
Bladder neck fibrosis	1/26 (4%)
Dysfunctional voiding	12/26 (46%)
(b) Final urological diagnosis in women suffering from bladder outlet obstruction and voiding dysfunction with recurrent bacterial cystitis	
Cystocele	16/65 (25%)
Meatal stenosis	11/65 (17%)
Multiple urethral dilations	7/65 (11%)
Urethral diverticulum	4/65 (6%)
Dysfunctional voiding	27/65 (41%)

Table 2

Hypoactive sexual desire in women suffering from UI or voiding dysfunction

	Hypoactive sexual desire
Urinary incontinence	
(a) Stress incontinence	16/34 (47%)
(b) Urge incontinence	7/34 (21%)
Voiding dysfunction	
(a) Without cystitis	5/34 (15%)
(b) With recurrent cystitis	6/34 (17%)
Menopause	
(a) Stress incontinence	10/34 (29%)
(b) Urge incontinence	2/34 (6%)
(c) Voiding dysfunction without cystitis	4/34 (12%)
(d) Voiding dysfunction with recurrent cystitis	5/34 (15%)

patients eligible for the investigation on sexual function. Four subgroups of WSD were identified (namely, sexual desire disorder, sexual arousal disorder, orgasmic disorder and sexual pain disorder), in accordance with the WSD classification proposed by the International Consensus Development Conference on Female Sexual Dysfunction [18].

Thirty-four out of 99 patients (34%) had hypoactive sexual desire (HSDD) (Table 2). Twenty-one (62%) of these were in menopause. Those patients reporting both urge incontinence and HSDD mentioned a disinterest-ness towards sexual intercourse because of a strong increase in the desire to void, with a subsequent frequent leakage of urine during such attempts.

Twenty three patients (23%) had a sexual arousal disorder (FSAD) and complained of either subjective lack of or reduced vaginal sensitivity and lack or severely reduced genital localized pleasure, both during non-coital sex and/or sexual intercourse, associated, at times, with a reduction of vaginal lubrication (Table 3). Seven (30%) of these women were in menopause, but 3 out of 7 (47%) reported that they had poor genital arousal even prior to menopause.

Table 3

Female sexual arousal disorders in women suffering from UI or voiding dysfunction

	Sexual arousal disorders
Urinary incontinence	
(a) Stress incontinence	5/23 (22%)
(b) Urge incontinence	2/23 (9%)
Voiding dysfunction	
(a) Without cystitis	2/23 (9%)
(b) With recurrent cystitis	14/23 (60%)
Menopause	
(a) Stress incontinence	3/23 (13%)
(b) Voiding dysfunction with recurrent cystitis	4/23 (17%)

Table 4

Orgasmic phase disorders in women suffering from UI or voiding dysfunction

	Orgasmic phase disorders
Total number	11/99 (11%)
Urinary incontinence	
(a) Stress incontinence	3/11 (27%)
(b) Urge incontinence	5/11 (46%)
Voiding dysfunction	
(a) Without recurrent cystitis	3/11 (27%)
Menopause	
(a) Stress incontinence	4/11 (36%)
(b) Voiding dysfunction with recurrent cystitis	1/11 (9%)

Eleven patients (11%) had an orgasmic phase disorder, with delayed orgasm in 6 patients and complete anorgasmia in the remaining 5 patients (Table 4). Five of these women (45%) were in menopause.

Forty-four patients (44%) had a history of sexual pain disorders. Thirty-seven (84%) of these women reported recurrent or persistent genital pain following sexual intercourse. We identified all these patients as having dyspareunia, in accordance with the categories described by the Consensus panel on definition of WSD [16]. We did not identify any cases of vaginismus in this series of patients (Table 5). Vulvar Vestibulitis Syndrome (VVS) (19), with sharp, burning/cutting pain highly localized in the vulvar vestibule and elicited primarily via pressure applied to the area, was demonstrated in 7 out of these 44 patients (16%); these women complained of both dyspareunia and non-coital sexual pain, and all of them suffered from recurrent bacterial cystitis.

A total of 21 women complained of more than one SD (Table 6). Sexual pain disorders represented the most frequent concomitant complaint, mostly in women suffering from recurrent bacterial cystitis.

The second part of this cross-sectional study was then dedicated to the direct comparison of the sexual function of the 216 patients as described by the FSFI score with the score of a general, female population that had been routinely assessed for a gynaecological evaluation at the Ob/Gyn department and not complaining of urinary symptoms (as determined by the results of a urologic semi-structured interview and the results of the AUA symptom score). Fig. 1 shows the FSFI scores for both patients and healthy controls. The comparison of the median score of the FSFI demonstrated that patients reported a significantly lower desire, lubrication and sexual satisfaction than controls. On the other hand, they also showed a higher sexual pain rate in comparison with the controls.

Table 5
Sexual pain disorders in women suffering from UI or voiding dysfunction

	Sexual pain disorders	
	Dyspareunia	Non-coital sexual pain
Urinary incontinence		
(a) Stress incontinence	8/44 (18%)	
(b) Urge incontinence	2/44 (5%)	
Voiding dysfunction		
(c) Without recurrent cystitis	3/44 (7%)	4/44 (9%)
(b) With recurrent cystitis	24/44 (54%)	3/44 (7%)
Menopause		
(a) Stress incontinence		2/44 (5%)
(b) Urge incontinence		1/44 (2%)
(c) Voiding dysfunction without cystitis		4/44 (9%)
(d) Voiding dysfunction with recurrent cystitis		6/44 (14%)

We also evaluated the prevalence of any other comorbidity in the patients population who entered this study. Women suffering from low sexual desire also frequently reported stress incontinence (47%). We found that 60% of the women with sexual arousal disorders and 61% of those with sexual pain disorders also complained of recurrent bacterial cystitis. Forty-six percent of those complaining of orgasmic phase difficulties also reported a troublesome urge incontinence.

Medical history showed hypertension in 47/216 patients (22%); all these women were being treated with oral medication. In this series, only two (4%) patients with hypertension reported low sexual desire, with a very low sexual activity initiation frequency and a frequent reluctance to accept sexual advances by their partners. None of them was in menopause. Three

women (6%) with hypertension also suffered from FSAD; one of these 3 patients was also in menopause.

Twenty-seven patients (12,5%) out of the 216 women lastly enrolled suffered from diabetes mellitus (DM) (i.e., 11 patients type I DM and 16 patients type II DM). Seven (26%) out of these diabetic women showed evidence of non-compensated DM with also complaints of voiding dysfunction and recurrent cystitis. Three (43%) out of these latter 7 patients reported FSAD, with the 4 remaining women alluding to both low lubrication and sexual pain disorders.

Thirty women (14%) exhibited symptoms of depression; ten (33%) out of these patients were being treated with selective serotonin re-uptake inhibitors (i.e., sertraline or paroxetine). These patients complained of voiding dysfunction, with incomplete emptying of

Table 6
Demographics of patients with more than one SD

(A) Sexual pain disorders + HSDD	
Total number	15/99 (15%)
(a) Stress incontinence	7/15 (47%)
(b) Urge incontinence	1/15 (7%)
(c) Voiding dysfunction without recurrent cystitis	3/15 (20%)
(d) With recurrent cystitis	4/15 (26%)
Menopause	
(a) Stress incontinence	4/15 (27%)
(b) Voiding dysfunction with recurrent cystitis	1/15 (7%)
(A) Sexual pain disorders + FSAD	
Total number	7/99 (7%)
(a) Stress incontinence	2/7 (29%)
(c) Voiding dysfunction without recurrent cystitis	1/7 (14%)
(d) With recurrent cystitis	4/7 (57%)
Menopause	
(a) Stress incontinence	2/7 (29%)
(d) Voiding dysfunction with recurrent cystitis	1/7 (14%)

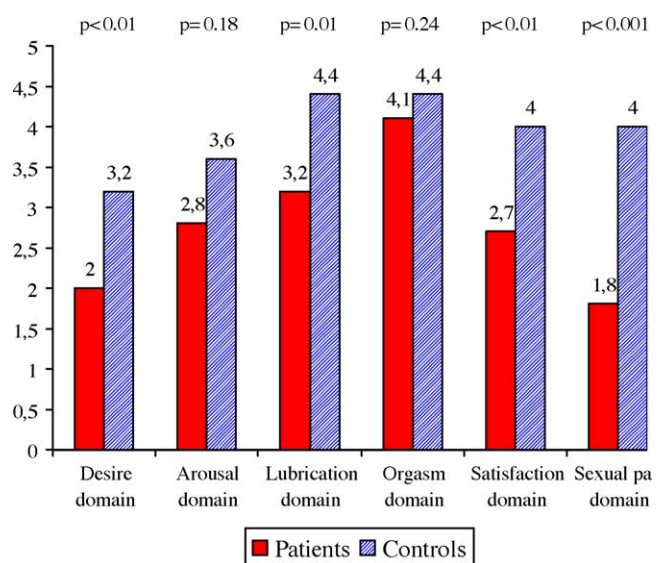


Fig. 1. FSFI score comparison (median) between women suffering from UI or voiding dysfunction and controls (e.g. women seen for routine gynaecological evaluation and not complaining of urinary symptoms).

the bladder. Lack of desire was reported by five women in the previous patient group (5/30; 17%) who, in this instance, complained both of voiding dysfunction and symptoms of depression; these patients were under treatment with paroxetine.

Our survey revealed that 168 (74%) out of the overall 227 patients evaluated had never undergone an interview concerning their sexual life or sexual activity. All 99 patients suffering from SD felt that they needed to verbalize their sexual problems and wished to have them treated.

4. Discussion

The present study shows that WSD is highly prevalent in patients complaining of UI and/or LUTS. Indeed, an analysis of the general assessment questions demonstrated that all categories of sexual dysfunction are represented in the group of patients complaining of micturition disorders. The comparison of the FSFI scores showed that arousal and orgasm were not significantly different between patients and healthy women.

The close descriptive correlation between hypoactive sexual desire and UI and, on the other hand, the association between sexual pain disorders and voiding dysfunction (thus conditioning recurrent bacterial cystitis) were the most significant observations in this series of patients. Indeed, 47% of the women with low sexual desire also complained of a long history of genuine stress incontinence. These patients reported that sexual fantasies were frequently associated with the fear of having an UI episode during intimacy, thus resulting in sexual anxiety. We could, thus, show that motivational-affective unconscious and cognitive aspects of libido could influence women's sexual desire. Ten out of the previous 16 UI patients were also in menopause. Both the age-related reduction of androgens and the loss of oestrogens secondary to menopause could contribute in inhibiting sexual drive and physical receptiveness [19,20]. On the other hand, the data found in literature suggests a significant role of oestrogens in promoting urinary continence. Loss of oestrogens has been associated to a more frequent development of UI [21]. Low sexual desire was also shown by 5 women complaining of LUTS associated with depression. As previously stated, these patients were under treatment with paroxetine. A reduction of sexual interest has been described in 50–90% of both male and female patients complaining of depression, with or without pharmacological treatment [22]. Paroxetine, a selective serotonin re-uptake inhibitor, has

frequently proved to be associated with hypoactive sexual desire [23].

Abnormalities of women's sexual arousal were frequently observed in our patients. Most of the patients (60%) with FSAD also reported a long history of recurrent bacterial cystitis associated with a urodynamic finding of detrusor hypocontractility or bladder outlet obstruction, both conditioning significant post-voidal urine volume and positive urinalysis. On the contrary, only 31% of the UI patients (e.g., both stress and urge incontinence) suffered from FSAD. Data found in literature suggested that a history of LUTS seems to increase seven-fold the likelihood of experiencing both arousal and sexual pain disorders [8,24]. Almost all the peculiar events in the arousal phase arise from an increase in clitoral and vaginal blood flow. Bladder wall resistance to bacteria seem to partially depends also from the amount of local parietal blood flow. We suggest that a lower local blood flow may determine both a reduction of the bladder wall resistance to bacteria and a loss of the genitalia excitability. On the other hand, we believe that a significant proportion of women with both FSAD and cystitis also suffered from a low level of oestrogens in the urogenital tract. Thirty percent of the women with FSAD were in menopause. Lower urinary tract symptoms and genital tract disorders (i.e., vaginal atrophy, dyspareunia, recurrent urinary tract infections and UI symptoms) are more prevalent during menopause, and it has been suggested that reduced blood levels of oestrogens may play a significant role in the development of some of these symptoms [25]. During both menopause transition and menopause, there are lower levels of circulating oestrogens and androgens. This reduction affects sexual desire but also modifies genital sensory thresholds and results in decreased vaginal, clitoral and urethral flow [5,20,21]. Co-morbidity of diabetes mellitus and FSAD was also associated with a lack of localized sensitivity and genital pleasure. This relationship could be due to peripheral polyneuropathy, often associated with poor detrusor contractility in women [3].

Eleven percent of the patients in our series complained of orgasmic disorders, pointing to a significant correlation with a history of urge incontinence (46%); typically, patients reported fear in reaching orgasm due to the risk of having a UI episode during intimacy. Orgasmic disorders may stem from a number of biological, as well as motivational-affective and cognitive causes. Loss or severe reduction of sexual hormones, thereby conditioning secondary libido or arousal difficulties as well as genital problems (e.g., pelvic floor hypertonic conditions causing secondary dyspareunia, vaginismus and post-coital cystitis), may impair the

formation of the so-called ‘orgasmic platform’ with a complete absence (or marked reduction) of sexual satisfaction at climax [26]. We believe that probabilities of orgasmic sexual climax can be significantly reduced by the fear and anxiety of UI episodes during sexual activity, along with the presence of genital pain.

Forty-four percent of the patients reported significant sexual pain disorders. Sixty-one percent of these patients suffered from dyspareunia or non-coital discomfort, showing a significant correlation with a history of recurrent bacterial cystitis. These women reported recurrent or persistent pain at the vulvar vestibule during penetration or vaginal pain during intromission and/or pelvic thrusting or following sexual intercourse. Sexual pain disorders may stem from a number of biological causes. Loss or severe reduction of sexual hormones as well as genital problems (i.e., vaginal atrophy, vulvar vestibulitis syndrome, vaginal candidosis, bacterial vaginitis, HPV infections, etc.) may induce a hypertonic pelvic floor, flogosis at the vestibule level or a reduction of vaginal lubrication which could be associated with genital pain during sexual activity. Recurrent urinary tract infections may be more frequently associated with inflammation of the genitalia and with a reduction in vaginal lubrication during intercourse, thus resulting in a significantly higher number of sexual pain disorders. Preliminary results seem to demonstrate that UTI resolution or recurrence reduction led to significant improvement in both arousal and sexual pain disorders. Thirty percent of the women with pain disorders were in menopause. In this sub-set most patients also suffered from recurrent bacterial cystitis (14%). As already discussed, menopause is associated with a significant reduction in oestrogens at the genitalia level. An

inadequate oestrogen supply may stem from recurrent UTI, chronic urethritis, vestibule and vaginal atrophy and insufficient vaginal lubrication; these disorders are frequently associated with discomfort and pain during sexual activity.

A statistical analysis of the FSFI scores of the two groups of women confirmed all the descriptive previous results, demonstrating that patients complaining of UI or LUTS also suffered from significantly lower desire ($p < 0.01$), vaginal lubrication ($p = 0.01$) and sexual satisfaction ($p < 0.01$), but they reported a higher rate of sexual pain ($p < 0.001$) than controls.

Most of these patients were never investigated with regard to their sexual life and sexual activity. This fact reflects “common” opinion concerning the lack of importance attributed to women’s sexuality, and it also explains the delay in studies regarding women’s sexual function and dysfunction.

5. Conclusions

This study shows that sexual dysfunctions are highly prevalent in women with urinary incontinence and/or lower urinary tract symptoms. Most patients with WSD were pleased to talk about this medical condition and requested treatment. We suggest that sexual function should be investigated when assessing women with urinary symptoms.

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Appendix A. List of general assessment questions (GAQ)

GAQ1. Over the past 4 weeks, have you felt a reduced sexual interest or sexual desire (i.e., fewer sexual fantasies, thoughts and dreams)?	Yes/No
GAQ2. Over the past 4 weeks, have you often initiated sexual activity with your partner?	Yes/No
GAQ3. Over the past 4 weeks, how would you rate your level of sexual arousal during sexual activity or intercourse?	High/Low
GAQ4. Over the past 4 weeks, in general, have you enjoyed penetration and intercourse?	Yes/No
GAQ5. Over the past 4 weeks, have you achieved an orgasm when engaging in sexual activity (e.g. intercourse or non-coital sexual activity)?	Yes/No
GAQ6. Over the past 4 weeks, have you experienced discomfort or pain during or after vaginal penetration?	Yes/No
GAQ7. Over the past 4 weeks, have you experienced pain in your vagina/genital area during or after sexual activity without penetration (e.g. masturbation, oral sex)?	Yes/No
GAQ8. Over the past 4 weeks, were you generally satisfied with your sexual life?	Yes/No
GAQ9. Over the past 4 weeks, did you have a satisfactory sexual relationship with your partner?	Yes/No

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Editorial Comment

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Incontinence and lower urinary tract symptoms are highly prevalent and bothersome disorders in women. The relationship between these problems and complaints of sexual dysfunction in both men and women has been surprisingly overlooked in the past. In part, this may be due to a relative neglect of sexual problems generally, as well as an overly-narrow focus among many specialists. However, this study offers compelling evidence of an association between urinary disorders and sexual problems in a clinic-based sample of Italian women. Sexual pain problems were particularly prevalent in this population, affecting almost half (44%) of the women studied. Problems of lubrication and desire were also increased in the women with urinary incontinence or distress. It is worth noting that we have recently reported increased erection and ejaculatory problems in men

with LUTS [1], in addition to increased pain during ejaculation.

A major question for these studies is the potential mechanism underlying the association. Salonia and colleagues offer some interesting hypotheses to account for these findings, including changes in estrogenization and local blood flow in the women with arousal difficulties. In contrast, sexual pain disorders may be due to long-term effects of recurrent infection and inflammation of the genitalia. Although promising, these hypotheses await further investigation. From a clinical perspective, it is evident that clinicians need to pay special attention to sexual problems in both men and women with urinary complaints.

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