



Review

Sexual satisfaction in the elderly female population: A special focus on women with gynecologic pathology

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ABSTRACT

Sexual function in aging women: Sexuality is an integral part of human expressions. Mental health plays a major role in sexuality. Several psychological interventions are proposed to increase the sexual quality of life in older women with diverse gynecologic pathology. A biopsychosocial approach utilizing brief strategies can be easily implemented in clinics to help women of all ages increase their sexual quality of life.

The impact of female pelvic floor disorders on sexual function in older women: Female pelvic floor disorders include urinary incontinence, pelvic organ prolapse, and fecal incontinence. These disorders increase dramatically with increasing age. Urinary incontinence has been demonstrated to have a negative impact on a woman's sexual function. Among sexually active older women with urinary incontinence, 22% report being moderately or extremely worried that sexual activity would cause urine loss. An increased prevalence of sexual distress [9% (6/76) vs. 1.3% (2/216), $p=0.005$] has been reported in sexually active women over 40 years old with urinary incontinence. Treatment of urinary incontinence can improve sexual function in older women. Among sexually active women ($N=53$) who underwent midurethral slings procedures for the correction of urinary incontinence, increased coital frequency, decrease fear of incontinence with coitus, decreased embarrassment due to incontinence was reported six months after surgery. Pelvic organ prolapse, a hernia of the vagina resulting in a visible vaginal bulge, has also been associated with a negative impact on sexual function. Women with advanced pelvic organ prolapse (POP-Q stage III or IV) have been demonstrated to have decreased body image reporting that they are more self-conscious about their appearance [adjusted odds ratio (AOR) 4.7; 95% confidence interval (CI) 2.9, 51], feel less feminine (AOR 4.0; 95% CI 1.2, 15) and less sexually attractive (AOR 4.6; 95% CI 1.4, 17) compared with women who have normal pelvic support. Both vaginal and abdominal approaches to surgical correction of pelvic organ prolapse have been demonstrated to improve sexual function.

Mental health: Mental health plays a major role in older woman's sexuality. Sexual interest and satisfaction is tied to emotional expressivity, women's self-worth, feelings of depression and loneliness as well as cognitive function. Research has shown that both general practitioners and specialists lack training in sexual assessments. Behavioral health specialists, such as a psychologist, can play an integral role in helping to facilitate communication between the patient and the provider. A main focus of communication training is to facilitate open and genuine conversation between the provider and the patient. Providers are encouraged to ask open ended questions while patients are encouraged to discuss symptoms while coping with an internal state of anxiety.

Despite the known prevalence of sexual dysfunction among older women, few studied empirically based interventions have been published with these women. This speaks to the general assumption among medical professionals that having the "sex talk" in older women with gynecological pathology is not important or relevant. A biopsychosocial approach utilizing some of the aforementioned brief strategies can be easily implemented in comprehensive gynecology clinics in order to help women of all ages increase their sexual quality of life.

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1. Sexual function in aging women

Sexuality is an integral part of human expressions regardless of age. Medical and mental health providers need to be aware of the importance of sexuality in this population and the relationship to physical, emotional and social aspects of a woman's life. Most comprehensive studies on sexuality in older adults come from Duke University longitudinal study on aging [1–3], followed by Matthias et al. who explored the relationship between sociopsychological factors, sexual activity, and sexual satisfaction in a sample of 1216 elderly adults with mean age of 77 years. Most recently, Lindau et al. reported on prevalence of sexual activity, behaviors and problems in a cohort of 3005 older adults in the United States [4,5].

The relationship between sexuality, interest, satisfaction and other factors among older people is complex. Matthias et al. summarized findings relating sexual activity to age, marital status, gender, as well as general and mental health status [6]. Age, gender, education, social network, and marital status were all related to sexual activity. Frequency of sexual activity, sexual satisfaction, and interest in sex are positively associated with good health in middle age and later in life.

Older women in any age category are twice as likely as males to not be sexually active. Gender difference in frequency of sexual activity, sexual satisfaction, and interest in sexual activity increased with advancing age. Thirty-nine percent of men compared with 16.8% of women were sexually active (ages 75–85 years old) and 70.9% of men compared with 50.9% of women who were sexually active reported a good quality sex life [6].

Younger women with higher education and stronger social networks are more likely to be sexually active. Those who were married were almost 6 times more sexually active than single women. Diokno et al. reviewing a sample of 744 elderly participants reported that that 56% of married women were sexually active versus 5% of unmarried women [7]. Matthias et al. confirmed this finding and demonstrated that while 31% of unmarried men had intercourse in the last month (compared to 47% of married man), only 2.7% of unmarried women were sexually active (compared to 43% of married women) [6]. Thus, marriage is a good predictor of sexual activity and sexual satisfaction in elderly women. Interestingly, it does not appear to be related to sexual activity and satisfaction in elderly men.

Sexual function in women declines with age [4,5]. In a landmark study of sexuality among community dwelling older adults in the United States, the prevalence of sexual activity declined with age [61.6% age 57–64 (95% CI 56.7, 66.4), 39.5% age 65–74 (95% CI 34.6, 44.4), 16.7% 75–85(95% CI 12.5, 21.0)]. Women were less likely to report sexual activity at any age group compared with men [5].

In one study of adults over the age of 60, 66.6% of the men and 31.7% of the women reported current sexual activity [7]. In the over 70 year old population, 43.6% of the men and 18.9% of the women were sexually active [6]. Sexual dysfunctions, including lack of interest, difficulty with lubrication, anorgasmia and dyspareunia are common in older women. Lack of interest in sex was reported by 38.4–49.3% of women. Difficulty with lubrication was reported by 35.9–43.6% of women and increased with older age. Inability to climax was reported by 32.8–38.2% of women. Pain during intercourse was reported by 11.8–17.8% of women over the age of 57.

Associations between sexual activity and satisfaction in the elderly female population is even more complex. Limited literature exists on the relationship between sexual activity and satisfaction. It appears that sexual satisfaction in older women is directly related to their sexual satisfaction when they were younger [8,9]. Starr-Weiner et al. demonstrated that age may not be the only variable related to sexual satisfaction in women. Seventy-five percent of their responding cohort stated that sexual intercourse was the same as or better than when they were younger. Instead of age, Starr-Weiner and colleagues reported ability for orgasm was related to sexual satisfaction [10].

Health status is a major factor in sexual satisfaction. Croft et al. demonstrated that the two major requirements for enjoyable sexual life in later life are an interested and interesting partner and reasonably good health [11]. Matthias et al. demonstrated that the most important predictors of sexual satisfaction in an older population are continued sexual activity, better functional status, and mental health. While only 1/3 of the sample was sexually active, two thirds were satisfied with current level of activity [6].

Sexual behavior has further been linked to mobility, diabetes, coronary disease, renal dialysis, cancer, incontinence and pulmonary disease [7,12,13]. Women with self-report of very good or excellent overall health were more likely to be sexually active compared with women who reported their overall health as poor or fair [adjusted odds ratio 1.6 (95% CI) MIDUS study] [adjusted odds ratio 2.2 (95% CI) NSHAP study].

2. The impact of female pelvic floor disorders on sexual function in older women

Female pelvic floor disorders include urinary incontinence, pelvic organ prolapse, and fecal incontinence. These disorders are life-altering conditions that have a profound impact on women's lives. Female pelvic floor disorders are common. In the United States, one in four women suffer from symptoms of at least one pelvic floor disorder [14]. Female pelvic floor disorders are

embarrassing conditions; many women do not even discuss this condition with their doctors [15,16].

Female pelvic floor disorders increase dramatically with age. A woman's lifetime risk of undergoing surgery for female pelvic floor disorders is 11% [17]. Surgical procedures for female pelvic floor disorders (urinary incontinence, pelvic organ prolapse, and fecal incontinence) are common among older women with over 150,000 inpatient and 40,000 outpatient procedures performed annually on women greater than 65 years old [18–20]. Between 25% and 50% of women with pelvic floor disorders report sexual dysfunction [21–25].

2.1. Urinary incontinence

Urinary incontinence is the involuntary loss of urine. In population based community studies of older women, 23–55% of women report urinary incontinence [14,26–28]. Incontinence is associated with poor self-rated health and depression in older women [29–32].

Incontinence also has a negative impact on a woman's sexual function. Among sexually active older women with urinary incontinence, 22% report being moderately or extremely worried that sexual activity would cause urine loss [21]. In a study of sexually active women planning surgery for hysterectomy, severe urinary incontinence was significantly associated with decreased libido [AOR 1.96 (1.32, 2.90)], vaginal dryness [2.11 (95% CI 1.45, 3.06)], and dyspareunia [2.04 (95% CI (1.48, 2.81))] after adjusting for age [24]. Knoepp et al. reported an increased prevalence of sexual distress [9% (6/76) vs. 1.3% (2/216), $p = 0.005$] in sexually active women over 40 years old with urinary incontinence presenting for routine gynecologic care [33].

2.2. Impact of treatment of urinary incontinence on sexual function

Treatment of urinary incontinence can involve non-surgical or surgical options. Non-surgical options for the treatment of urinary incontinence include lifestyle changes, behavioral modification, pessaries, and pelvic floor muscle exercises. In a multi-center study of women undergoing non-surgical treatment of urinary incontinence with a combination of pessaries and pelvic floor muscle exercises, successful treatment of urinary incontinence was associated with a significant improvement in sexual function [34]. Women who were successfully treated for urinary incontinence ($N = 203$) reported less incontinence with sexual activity ($p = .0002$), less restriction of sexual activity due to fear of incontinence ($p = 0.008$) compared with women who were not successfully treated ($N = 142$). No differences were noted between the women who were successful treated and those who were not in sexual arousal, libido, and dyspareunia [34]. Increase in pelvic floor muscle strength as a result of pelvic floor muscle exercises was not associated with improved sexual function as measured by the Pelvic Organ Prolapse-Urinary Incontinence Sexual Function Questionnaire-12 (PISQ-12), a disease specific validated sexual function questionnaire [34].

Surgical correction of stress urinary incontinence has not been demonstrated to change libido, arousal, lubrication, orgasm, and sexual satisfaction in women as measured by the Female Sexual Function Index (FSFI) [35]. It should be noted that the FSFI is not a disease specific instrument to measure sexual function in women with prolapse and urinary incontinence and coital leakage as well as fear of coital leakage may be the most important sexual improvement a women undergoing treatment for urinary incontinence should expect [36]. Among sexually active women ($N = 53$) who underwent midurethral slings procedures for the correction of urinary incontinence, increased coital frequency, decrease fear of incontinence with coitus, decreased embarrassment due to

incontinence was reported six months after surgery [37]. No change in the prevalence of dyspareunia or ability to reach orgasm was noted before and after the midurethral sling procedure [37].

A rare complication following the midurethral sling procedure is the erosion or rejection of vaginal mesh which occurs in 0.9–2.7% of women [38,39]. The most common presenting symptoms in women experiencing erosion or rejection of vaginal mesh is vaginal discharge, vaginal spotting (including post-coital spotting), and dyspareunia [40]. Women complaining of post-coital spotting or dyspareunia following midurethral sling procedures should be evaluated for possible mesh erosion.

2.3. Pelvic organ prolapse

Pelvic organ prolapse is a hernia of the vagina resulting in a visible vaginal bulge. Women with advanced pelvic organ prolapse (POP-Q stage III or IV) have been demonstrated to have decreased body image reporting that they are more self-conscious about their appearance [adjusted odds ratio (AOR) 4.7; 95% confidence interval (CI) 2.9, 51], feel less feminine (AOR 4.0; 95% CI 1.2, 15) and less sexually attractive (AOR 4.6; 95% CI 1.4, 17) compared with women who have normal pelvic support [41]. Among women with pelvic organ prolapse 31% (14/45) report that symptoms from pelvic organ prolapse interfere with sexual activity [42]. Women with increasing symptom distress from female pelvic floor disorders are more likely to report decreased libido, decreased arousal, infrequent orgasm, and increased dyspareunia [25].

2.4. Vaginal anatomy

Vaginal anatomy (including total vaginal length, genital hiatus, and vaginal caliber) has not been associated with improved sexual function or increased sexual activity [43,44]. Weber et al. found that neither vaginal caliber nor vaginal length were different in sexually active women compared with women who were not sexually active [44]. Weber et al. also reported that neither vaginal caliber nor vaginal length were significantly different in sexually active women who reported dyspareunia and vaginal dryness compare with sexually active women without these symptoms [44]. In a subsequent study by Schimpf et al. women who were sexually active had a statistically significant difference in total vaginal length (9.1 ± 1.2 cm vs. 8.9 ± 1.3 cm, $p = 0.04$), however this finding is unlikely to represent a clinically meaningful difference [43,45].

2.5. Impact of treatment of pelvic organ prolapse on sexual function

Both vaginal and abdominal approaches to surgical correction of pelvic organ prolapse has been demonstrated to improve sexual function utilizing a condition-specific validated questionnaire, the Pelvic Organ Prolapse Urinary Incontinence Sexual Questionnaire (PISQ) [46]. There has been some debate in the peer-reviewed literature about the impact of posterior repair on sexual function in women [47,48]. Levatorplasty, a surgical technique of placating the levator ani muscles together, was associated with high rates of dyspareunia [47–49]. Due to occurrence of de-novo dyspareunia after these procedures, site-specific defect repair or global defect repair without levator placation was adopted [50,51]. In a study examining the impact of posterior repair without levator placation at the time of surgical correction for pelvic organ prolapse, 57% of women undergoing posterior repair reported postoperative dyspareunia compared with 28% women without posterior repair ($p = .02$) [46]. However, sexual function between women undergoing pelvic organ prolapse repair with and without concomitant posterior repair was similar [52].

2.6. Fecal incontinence

Fecal incontinence is the involuntary loss of stool. Fecal incontinence in women increases with increasing age with 3–22% of community dwelling women reporting experiencing at least monthly symptoms [14,53–55]. Fecal incontinence in women is commonly the result of an anterior laceration in the external anal sphincter following vaginal delivery. Surgical treatment of anatomic defects in the external anal sphincter is an external anal sphincteroplasty. In a case-series of 59 women who underwent external anal sphincteroplasty, 78% (46/59) reported current sexual activity with a median follow-up of 5–6 years after surgery [56]. PISQ-12 scores, reflecting disease specific sexual function, were not statistically different between women who were continent, incontinent to flatus only, and incontinent to stool ($p = .633$) [56]. In a study of women who underwent external anal sphincteroplasty for fecal incontinence ($N = 26$) compared with women who underwent other vaginal surgeries ($N = 26$), sexual activity and function were similar [57]. However, women reporting increased fecal incontinence to solid stool experienced decreased arousal, lubrication, orgasm, and overall sexual function [57].

3. Mental health

Mental health plays a major role in older woman's sexuality. Sexual interest and satisfaction is tied to emotional expressivity, women's self-worth, feelings of depression and loneliness as well as cognitive function [13,58,59]. Psycho-oncology research literature has emphasized the importance of a multidisciplinary assessment and treatment approach sexual impairment in women after gynecological cancer [60–63]. Several psychological interventions have been proposed to increase the sexual quality of life in women with gynecological cancer that can be utilized in women with diverse gynecologic pathology. These variables, communication training [62], addressing avoidance models [63], and sexual dysfunction [64] are clinical treatment areas that are easily addressed by health psychologists and gynecologists. When these variables are addressed by the treatment team, they have a significant and long-lasting impact on the improvement of sexual quality of life in these patients.

3.1. Communication training

Research has shown that both general practitioners and specialists lack training in sexual assessments [65,66]. Despite awareness of sexual concerns, nurses and doctors generally do not initiate discussions about sexuality with their patients [67]. This discussion is even less likely to occur in older women with gynecological pathology, as assumptions are often made determining these women no longer value sexual quality of life. Research has also revealed that female gynecological patients have feelings of embarrassment, shame, and guilt, which get in the way of them communicating sexual impairment to their physicians [67]. Behavioral health specialists, such as a psychologist, can play an integral role in helping to facilitate communication between the patient and the provider. This intervention can occur in multiple different ways: psychologist to provider, psychologist to patient, and/or psychologist with patient and provider together. One studied approach, coping and communication enhancing intervention, focuses on identification of support needs, skillful solicitation of support, values identification, managing reactions to pathology (specifically cancer), problem solving and cognitive restructuring techniques [62]. A main focus of communication training is to facilitate open and genuine

conversation between the provider and the patient. Providers are encouraged to ask open ended questions while patients are encouraged to discuss symptoms while coping with an internal state of anxiety.

3.2. Addressing fears and avoidance behaviors

Another area in which psychologists can intervene with patients is in addressing anticipatory fear and concurrent avoidance behaviors to engagement of intimacy with the partner [10,63]. In an effort to avoid thinking about gynecological pathology, women often avoid sexual intercourse with their partners. Behaviorally, sexual intercourse then becomes generalized to other intimate behaviors including partner masturbation, kissing and petting, and even hand-holding and hugging. Any act of intimacy leads to the fear of an expectation for intercourse, and associated anxious thoughts. A detailed model of behavioral avoidance can be presented to both the patient and her partner and brief interventions using sensate focus techniques can break the avoidance and reduce the fear and anxiety cycle in these women [68,69].

3.3. Sexual dysfunction

Gynecologic pathology, specifically cancer, is associated with significant impairment in physical and psychophysiological sexual arousal [63,68]. These problems can lead to decreased self esteem, depression, and relationship distress. Recent treatments have been developed to specifically address sexual dysfunction in women diagnosed with gynecological cancer and can be easily transferred to other chronic problems as outlined in this paper. Brotto et al. [64] developed and implemented a brief, three session psychoeducational intervention (PED) comprised of arousal-enhancing techniques in addition to strategies to enhance relationship satisfaction, depressive symptoms, and quality of life. The PED is rooted in core principles of cognitive behavioral therapy (CBT) in addition to acceptance and commitment therapy (ACT).

Despite the known prevalence of sexual dysfunction among older women, few studies with empirically based interventions have been published with these women. This speaks to the general assumption among medical professionals that having the "sex talk" in older women with gynecological pathology is not important or relevant. A biopsychosocial approach utilizing some of the aforementioned brief strategies can be easily implemented in comprehensive gynecology clinics in order to help women of all ages increase their sexual quality of life. Gynecologic pathology is prevalent in older women. However, such pathology should not be indicative of the demise of their sexual activities. Non surgical interventions seem to help significantly, and surgical interventions judiciously implemented should be helpful for the enhancement of sexual satisfaction. Communication with the woman before any intervention should be thorough, and sexual issues should be always brought up, with plans for psychosocial consultation implemented.

Contributors

All the authors contributed for writing the manuscript.

Competing interests

There is no competing interest.

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References

- [1] Pfeiffer E, Verwoerd A, Wang HS. The natural history of sexual behavior in a biologically advantaged group of aged individuals. *J Gerontol* 1969;24(2):193–8.
- [2] Verwoerd A, Pfeiffer E, Wang HS. The natural history of sexual behavior in a biologically advantaged group of aged individuals. *J Gerontol* 1969;24(2):193–8.
- [3] Verwoerd A, Pfeiffer E, Wang HS. Sexual behavior in senescence II. Patterns of sexual activity and interest. *Geriatrics* 1969;24(2):137–54.
- [4] Lindau S, Gavrilova N. Sex, health, and years of sexually active life gained due to good health: evidence from two US populations based cross sectional surveys of ageing. *Br Med J* 2010;340.
- [5] Lindau S, Schumm LP, Laumann E, Levinson W, O'Muircheartaigh C, Waite L. A study of sexuality and health among older adults in the United States. *N Engl J Med* 2007;357(8):762–74.
- [6] Matthias R, Lubben J, Atchison K, Schweitzer S. Sexual activity and satisfaction among very old adults: results from a community-dwelling medicare population survey. *Gerontologist* 1997;37(1):6–14.
- [7] Diokno A, Brown M, Herzog A. Sexual function in the elderly. *Arch Intern Med* 1990;150:197–200.
- [8] Adams C, Turner B. Reported change in sexuality from young adulthood to old age. *J Sex Res* 1985;21:126–41.
- [9] Bachman G, Leiblum S. Sexuality in sexagenarian women. *Maturitas* 1991;13:43–50.
- [10] Starr B, Weiner M. The Starr–Weiner report of sex and sexuality in the mature years. Briarcliff Manor, NY: Stein and Day; 1981.
- [11] Croft L. Sexuality in later life: a counseling guide for physicians. John Wright, PSG; 1982.
- [12] LoPiccolo J. Counseling and therapy for sexual problems in the elderly. *Clin Geriatr Med* 1991;7:161–79.
- [13] Mooradian AD. Geriatric sexuality and chronic diseases. *Clin Geriatr Med* 1991;7(1):113–31.
- [14] Nygaard I, Barber M, Burgio K, et al. Prevalence of symptomatic pelvic floor disorders in US women. *JAMA* 2008;300(11):1311.
- [15] Burgio KL, Ives DG, Locher JL, Arena VC, Kuller LH. Treatment seeking for urinary incontinence in older adults. *J Am Geriatr Soc* 1994;42(2):208–12.
- [16] Kinchen K, Burgio K, Diokno A, Fultz N, Bump R, Obenchain R. Factors associated with women's decisions to seek treatment for urinary incontinence. *J Women's Health* 2003;12(7):687–98.
- [17] Olsen, Smith, Bergstrom, Colling, Clark. Epidemiology of surgically managed pelvic organ prolapse and urinary incontinence. *Obstet Gynecol* 1997;89(4):501.
- [18] Shah A, Kohli N, Rajan S, Hoyte L. The age distribution, rates, and types of surgery for stress urinary incontinence in the USA. *Int Urogynecol J Pelvic Floor Dysfunct* 2008;19(1):89.
- [19] Brown J, Waetjen, Subak L, Thom D, Van den Eeden S, Vittinghoff E. Pelvic organ prolapse surgery in the United States, 1997. *Obstet Gynecol* 2002;186(4):712.
- [20] Erekson E, Lopes V, Raker C, Sung V. Ambulatory procedures for female pelvic floor disorders in the United States. *Obstet Gynecol* 2010;203(5):497.
- [21] Barber M, Visco A, Wyman J, Fantl JA, Bump R. Sexual function in women with urinary incontinence and pelvic organ prolapse. *Obstet Gynecol* 2002;99(2):281–9.
- [22] Ellerkmann RM, Cundiff GW, Melick CF, Nihira MA, Leffler K, Bent AE. Correlation of symptoms with location and severity of pelvic organ prolapse. *Obstet Gynecol* 2001;185(6):1332–7.
- [23] Berglund AL, Fugl Meyer KS. Some sexological characteristics of stress incontinent women. *Scand J Urol Nephrol* 1996;30(3):207–12.
- [24] Handa V, Harvey L, Cundiff G, Siddique S, Kjerulff K. Sexual function among women with urinary incontinence and pelvic organ prolapse. *Obstet Gynecol* 2004;191(3):751–6.
- [25] Handa V, Cundiff G, Chang H, Helzlsouer K. Female sexual function and pelvic floor disorders. *Obstet Gynecol* 2008;111(5):1045–52.
- [26] Hannestad, Rortveit, Sandvik, Hunskaar. A community-based epidemiological survey of female urinary incontinence: the norwegian EPINCONT study. Epidemiology of incontinence in the county of nord-trøndelag. *J Clin Epidemiol* 2000;53(11):1150.
- [27] Melville J, Katon W, Delaney K, Newton K. Urinary incontinence in US women: a population-based study. *Arch Intern Med* 2005;165(5):537.
- [28] Jackson RA, Vittinghoff E, Kanaya AM, et al. Urinary incontinence in elderly women: findings from the health, aging, and body composition study. *Obstet Gynecol* 2004;104(2):301–7.
- [29] Johnson TM, Kincade JE, Bernard SL, Busby-Whitehead J, Hertz-Picciotto I, DeFries GH. The association of urinary incontinence with poor self-rated health. *J Am Geriatr Soc* 1998;46(6):693–9.
- [30] Melville J, Delaney K, Newton K, Katon W. Incontinence severity and major depression in incontinent women. *Obstet Gynecol* 2005;106(3):585.
- [31] Dugan E, Cohen SJ, Bland DR, et al. The association of depressive symptoms and urinary incontinence among older adults. *J Am Geriatr Soc* 2000;48(4):413–6.
- [32] Sung V, West D, Hernandez A, Wheeler T, Myers D, Subak L. Association between urinary incontinence and depressive symptoms in overweight and obese women. *Obstet Gynecol* 2009;200(5):557.
- [33] Knoepp L, Shippey S, Chen C, Cundiff G, Derogatis L, Handa V. *J Sex Med* 2010;7:3675–82.
- [34] Handa V, Whitcomb E, Weidner A, et al. Sexual function before and after non-surgical treatment for stress urinary incontinence. *J Pelvic Med Surg* 2011;17(1):30–5.
- [35] Pauls R, Silva WA, Rooney C, et al. Sexual function after vaginal surgery for pelvic organ prolapse and urinary incontinence. *Obstet Gynecol* 2007;197(6):622–7.
- [36] Bekker M, Beck J, Putter H, et al. Sexual function improvement following surgery for stress incontinence: the relevance of coital incontinence. *J Sex Med* 2009;6(11):3208–13.
- [37] Ghezzi F, Serati M, Cromi A, Uccella S, Triacca P, Bolis P. Impact of tension-free vaginal tape on sexual function: results of a prospective study. *Int Urogynecol J Pelvic Floor Dysfunct* 2006;17(1):54–9.
- [38] Richter H, Albo M, Zyczynski H, et al. Retropubic versus transobturator midurethral slings for stress incontinence. *N Engl J Med* 2010;362(22):2066–76.
- [39] Karram M, Segal J, Vassallo B, Kleeman S. Complications and untoward effects of the tension-free vaginal tape procedure. *Obstet Gynecol* 2003;101(5):929–32.
- [40] Wohlrab K, Erekson E, Myers D. Postoperative erosions of the mersilene suburethral sling mesh for antiincontinence surgery. *Int Urogynecol J Pelvic Floor Dysfunct* 2009;20(4):417–20.
- [41] Jelovsek JE, Barber M. Women seeking treatment for advanced pelvic organ prolapse have decreased body image and quality of life. *Obstet Gynecol* 2006;194(5):1455–61.
- [42] Weber AM, Walters MD, Schover LR, Mitchinson A. Sexual function in women with uterovaginal prolapse and urinary incontinence. *Obstet Gynecol* 1995;85(4):483–7.
- [43] Schimpf M, Harvie H, Omotosho T, et al. Does vaginal size impact sexual activity and function? *Int Urogynecol J Pelvic Floor Dysfunct* 2010;21(4):447–52.
- [44] Weber AM, Walters MD, Schover LR, Mitchinson A. Vaginal anatomy and sexual function. *Obstet Gynecol* 1995;86(6):946–9.
- [45] Sentilhes L, Berthier A, Sergent F, Verspyck E, Descamps P, Marpeau L. Sexual function in women before and after transvaginal mesh repair for pelvic organ prolapse. *Int Urogynecol J Pelvic Floor Dysfunct* 2008;19(6):763–72.
- [46] Komesu Y, Rogers R, Kammerer Doak D, Barber M, Olsen A. Posterior repair and sexual function. *Obstet Gynecol* 2007;197(1):101–6.
- [47] Cundiff G, Fenner D. Evaluation and treatment of women with rectocele: focus on associated defecatory and sexual dysfunction. *Obstet Gynecol* 2004;104(6):1403.
- [48] Kahn, Stanton. Posterior colporrhaphy: its effects on bowel and sexual function. *Br J Obstet Gynaecol* 1997;104(1):82.
- [49] Weber AM, Walters MD, Piedmonte MR. Sexual function and vaginal anatomy in women before and after surgery for pelvic organ prolapse and urinary incontinence. *Obstet Gynecol* 2000;182(6):1610–5.
- [50] Porter WE, Steele A, Walsh P, Kohli N, Karram MM. The anatomic and functional outcomes of defect-specific rectocele repairs. *Obstet Gynecol* 1999;181(6):1353 (8 discussion 1358).
- [51] Paraiso MFR, Barber M, Muir T, Walters M. Rectocele repair: a randomized trial of three surgical techniques including graft augmentation. *Obstet Gynecol* 2006;195(6):1762.
- [52] Komesu Y, Rogers R, Kammerer-Doak D, Barber M, Olsen A. Posterior repair and sexual function. *Obstet Gynecol* 2007;197(1):101.
- [53] Varma M, Brown J, Creasman J, et al. Fecal incontinence in females older than aged 40 years: who is at risk? *Dis Colon Rectum* 2006;49(6):841.
- [54] Melville J, Fan M, Newton K, Fenner D. Fecal incontinence in US women: a population-based study. *Obstet Gynecol* 2005;193(6):2071.
- [55] Whitehead W, Borrud L, Goode P, et al. Fecal incontinence in US adults: epidemiology and risk factors. *Gastroenterology* 2009;137(2):512.
- [56] Trowbridge E, Morgan D, Trowbridge M, Delancey JOL, Fenner D. Sexual function, quality of life, and severity of anal incontinence after anal sphincteroplasty. *Obstet Gynecol* 2006;195(6):1753–7.
- [57] Pauls R, Silva WA, Rooney C, et al. Sexual function following anal sphincteroplasty for fecal incontinence. *Obstet Gynecol* 2007;197(6):618–26.
- [58] Marsiglio W, Donnelly D. Sexual relations in later life: a national study of married persons. *J Gerontol* 1991;46(6):338–44.
- [59] Labby DH. Aging's effects on sexual function expected changes and treatable dysfunction. *Postgrad Med* 1985;78(7):32–43.
- [60] Juraskova I, Butow P, Robertson R, Sharpe L, McLeod C, Hacker N. Post-treatment sexual adjustment following cervical and endometrial cancer: a qualitative insight. *Psychooncology* 2003;12(3):267–79.
- [61] Park ER, Norris RL, Bober SL. Sexual health communication during cancer care barriers and recommendations. *Cancer J* 2009;15(1):74–7.
- [62] Manne SL, Winkel G, Rubin S, et al. Mediators of a coping and communication-enhancing intervention and a supportive counseling intervention among women diagnosed with gynecological cancers. *J Consult Clin Psychol* 2008;76(6):1034–45.
- [63] Ratner ES, Foran KA, Schwartz PE, Minkin MJ. Sexuality intimacy after gynecological cancer. *Maturitas* 2010;66(1):23–6.

- [64] Brotto LA, Heiman JR, Goff B, et al. A psychoeducational intervention for sexual dysfunction in women with gynecologic cancer. *Arch Sex Behav* 2008;37(2):317–29.
- [65] Humphery S, Nazareth I. GP's views on their management of sexual dysfunction. *Fam Pract [Internet]* 2001;18(5):516–8.
- [66] Stead ML, Fallowfield L, Brown JM, Selby P. Communication about sexual problems and sexual concerns in ovarian cancer: qualitative study. *Br Med J* 2001;323(7317):836–7.
- [67] Sacerdoti RC, Laganà L, Koopman C. Altered sexuality and body image after gynecological cancer treatment: how can psychologists help? *Prof Psychol: Res Pract* 2010;41(6):533–40.
- [68] Albaugh JA, Kellogg-Spadt S. Sensate focus and its role in treating sexual dysfunction urologic nursing. *Off J Am Urol Assoc Allied* 2002;22(6):402–3.
- [69] Masters WH, Johnson VE. *Human sexual inadequacy*. Boston: Little, Brown and Co.; 1970.