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CLINICAL ARTICLE

Evaluation of confounding factors interfering with sexual function in women with minimal pelvic organ prolapse

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ABSTRACT

Objective: To evaluate the effects of confounding factors on sexual function in women with minimal pelvic organ prolapse (POP). **Methods:** A cross-sectional study was conducted at a cervical cancer screening center in Turkey between December 1, 2012, and March 31, 2013. Symptom-free women with stage I or II POP were enrolled to evaluate the association between sexual function and sociodemographic variables, POP, POP-related quality of life, stress incontinence, and overactive bladder. **Results:** Of 243 volunteers (mean age 46.0 ± 9.1 years), 188 (77.4%) had a low Female Sexual Function Index score. Women with better sexual function tended to be younger, have a higher salary, not be in the menopause, and have no chronic illness ($P < 0.05$ for all). There was no difference between the groups in terms of POP Quantification measurements ($P > 0.05$), apart from transvaginal length ($P = 0.011$). Overactive bladder was more common ($P = 0.005$) and more severe ($P = 0.002$) in women with sexual dysfunction, and their POP-related quality of life was worse ($P < 0.05$). In a linear regression analysis, high salary had a positive effect and overactive bladder had a negative effect on sexual function. **Conclusion:** Sexual dysfunction is highly prevalent in women with minimal POP. Overactive bladder and low income are the major factors adversely affecting sexual function.

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1. Introduction

Pelvic floor disorders include pelvic organ prolapse (POP), urinary incontinence, fecal incontinence, and defecation dysfunction. Women do not usually mention problems related to the pelvic floor, and such problems tend to emerge only on detailed questioning. Although pelvic floor disorders do not cause important morbidity and mortality, they may have a major effect on quality of life and sexual function. Sexual dysfunction is defined as a disorder of sexual desire, arousal, orgasm, or sexual pain that leads to personal distress [1]. The frequency of sexual dysfunction increases with age, and up to 50% of women may be affected [2].

A previous study [3] investigated the effect of pelvic floor disorders on sexual function in symptomatic women. The effect of pelvic floor changes on sexual function in asymptomatic women is not known. We hypothesized that women with less deformed pelvic anatomy will have better pelvic function, better quality of life, and better sexual

function. The present study aimed to compare the clinical and anatomic characteristics of women with and without sexual dysfunction, and to evaluate the effects of overactive bladder, pelvic floor changes, and related quality of life on sexual function in women with minimal POP.

2. Materials and methods

The present cross-sectional study was conducted among women who attended the Cancer Early Diagnosis, Screening, and Education Center (KETEM) in Denizli, Turkey, for a routine cervical screening test between December 1, 2012, and March 31, 2013. Symptom-free women with stage I–II POP and who had been sexually active in the previous 4 weeks were included in the study. Women who had undergone a hysterectomy were excluded. Informed consent was obtained from all participants and all women were informed about the objectives of the study and the confidentiality of the data. The project was approved by the Research Ethics Committee of Pamukkale University Medical School, Denizli, Turkey.

Aslan et al. [4] found that the prevalence of low sexual function in women was 50.2%. On the basis of this information, we calculated that the minimum sample size was 233, with a significance level of 0.05, a margin of error of $d = 0.063$, and a population size of 9000.

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In the first part of the study, the women were interviewed to obtain information on sociodemographic factors, sexual function, and quality of life. The recorded sociodemographic variables included age, body mass index (calculated as weight in kilograms divided by the square of height in meters), educational status, presence of health insurance, income level, number of pregnancies, number and route of delivery (cesarean/vaginal), history of a macrosomic infant (>4000 g), menopausal status, history of gynecologic surgery, and presence of systemic illness. In the second part of the study, POP assessments and residual urine measurements were performed, and a stress test was conducted after filling the bladder with 250 mL of sterile saline.

The validated Turkish version of the Female Sexual Function Index (FSFI) [5] was used to evaluate sexual function. The FSFI is a 19-item multidimensional tool assessing sexual problems or function in the preceding 4 weeks. The tool has six domains: desire, arousal, lubrication, orgasm, satisfaction, and pain. Each question is scored from 0 or 1 to 5, and then the totals for each domain are multiplied by a domain factor, with the resulting values added together to give a full scale score. The highest possible score is 36, the lowest 2. Higher scores indicate better sexual function. Scores below 26.5 were considered to indicate sexual dysfunction [5].

POP was assessed and staged according to the POP Quantification (POP-Q) system [6]. All measurements were performed by the same investigator (A.K.). Residual urine was measured just after micturition. After filling the bladder with 250 mL of sterile saline, the presence of stress incontinence was tested with coughing. In agreement with the POP-Q system, stage I prolapse was defined as prolapse occurring 1 cm or more above the hymen; stage II was defined as prolapse extending up to 1 cm above or below the hymen; stage III was defined as prolapse extending more than 1 cm below the hymenal ring but remaining within 2 cm of the total vaginal length; and stage IV was defined as complete vaginal eversion extending from the hymenal ring.

The validated Turkish short-form versions of the Pelvic Floor Distress Inventory (PFDI-20) and the Pelvic Floor Impact Questionnaire (PFIQ-7) [7,8] were used for the evaluation of pelvic floor symptom burden and quality of life. The PFDI-20 is both a symptom inventory and a measure of the degree of bother and distress (quality of life) caused by pelvic floor symptoms. The PFDI-20 is composed of three subscales: the Urinary Distress Inventory (range 0–100); the Pelvic Organ Prolapse Distress Inventory (range, 0–100); and the Colorectal Anal Distress Inventory (range, 0–100). With the PFDI-20, patients are asked to indicate whether they have a particular symptom, and if present, how much it bothers them on a four-point scale (1 = “not at all”; 4 = “quite a bit”).

The effect of pelvic symptoms on quality of life was assessed with the PFIQ-7, which is a short-form version of the PFIQ [8] and also comprises three subscales: the Urinary Impact Questionnaire (range 0–100); the Pelvic Organ Prolapse Impact Questionnaire (range 0–100); and the Colorectal Anal Impact Questionnaire (range 0–100). The degree to which pelvic symptoms affect the quality of life, in particular physical activity, travel, and social relationships, is rated on a four-point scale (1 = “not at all”; 4 = “quite a bit”).

The presence of overactive bladder was evaluated with the validated Turkish form of the Overactive Bladder Validated Eight-Question Awareness Tool. This is a screening and awareness tool that is composed of eight questions derived from the Overactive Bladder Questionnaire [9,10]. Patients rate the degree to which each symptom affects quality of life on a six-point Likert scale (1 = “not at all”; 6 = “a very great deal”). The total score ranges from 0 to 40, and scores of 8 or greater indicate the presence of overactive bladder.

The statistical analysis was performed using SPSS version 10.0 (SPSS Inc, Chicago, IL, USA). The participants were classified into two groups according to their sexual function, based on an FSFI cutoff score of 26.5. Continuous variables were expressed as mean $\pm$ SD and categorical variables as numbers and percentages. Continuous variables were compared with an independent sample *t* test; categorical variables were compared with the χ^2 test. Multiple linear regression analysis

was performed to assess the effect of independent risk factors (age; menopausal status; scores on PFDI-20, PFIQ-7, and the Overactive Bladder Validated Eight-Question Awareness Tool; presence of systemic illness; and income level) on the FSFI score. $P < 0.05$ was considered statistically significant.

3. Results

Of 276 patients considered for inclusion, 243 volunteers were included in the study. Their mean age was 46.0 ± 9.1 years (range, 22–68 years). Of the 243 women, 188 (77.4%) had an FSFI score below 26.5, and 55 (22.6%) had a score equal to or above this value. In the group with better sexual function, the mean age was younger, the income was higher, and the numbers of women in menopause and with chronic illness were lower ($P < 0.05$) (Table 1).

The study population included 198 (87.5%) women with stage I POP and 45 (18.5%) women with stage II POP. The stages were distributed evenly between the two groups. No difference was detected between the groups in terms of POP-Q measurements ($P > 0.05$), except for total vaginal length (Table 2).

Overactive bladder was more frequent and severe in women with sexual dysfunction, and their quality of life was lower (Table 3). However, the frequency of stress incontinence and the postvoid residual urine volume did not differ between the groups (Table 3).

According to the regression analysis, the presence of overactive bladder and monthly income significantly affected the total FSFI score, whereas age, menopausal status, PFIQ-7 and PFDI-20 scores, and presence of a systemic illness did not (Table 4). The linear regression equation was as follows: FSFI score = $1632 + (-0.159)$ overactive

Table 1
Baseline characteristics of the study population.^a

Variable	FSFI score <26.5 (n = 188)	FSFI score ≥ 26.5 (n = 55)	P value
Age, y	46.80 ± 9.35	43.25 ± 7.49	0.004
Parity	2.5 ± 1.1	2.2 ± 0.8	0.124
Body mass index ^b	29.1 ± 5.1	28.9 ± 4.1	0.856
Duration of menopause, y	6.6 ± 5.0	7.2 ± 7.2	0.805
Number of vaginal deliveries			
0	32 (17.0)	7 (12.7)	0.445
≥ 1	156 (83.0)	48 (87.3)	
Number of cesarean deliveries			
0	153 (81.4)	44 (80.0)	0.818
≥ 1	35 (18.6)	11 (20.0)	
Infant with birth weight ≥ 4000 g			
Negative	171 (91.0)	47 (85.5)	0.237
Positive	17 (9.0)	8 (14.5)	
Employment status			
Employed	137 (72.8)	33 (60.0)	0.081
Unemployed	51 (27.1)	22 (40.0)	
Education			
Primary school	138 (73.4)	38 (69.1)	0.272
Secondary school or higher	50 (26.6)	17 (30.9)	
Social security			
Absent	24 (12.8)	3 (5.5)	0.127
Present	164 (87.2)	52 (94.5)	
Socioeconomic status			
Low income	155 (82.4)	33 (60.0)	0.001
Middle or high income	33 (17.6)	22 (40.0)	
History of gynecologic surgery			
Present	161 (85.6)	51 (92.7)	0.166
Absent	27 (14.4)	4 (7.3)	
Chronic diseases			
Present	120 (63.8)	48 (87.3)	0.001
Absent	68 (36.2)	7 (12.7)	
Menopause			
Present	82 (43.6)	9 (16.4)	<0.001
Absent	106 (56.4)	46 (83.6)	

Abbreviation: FSFI, Female Sexual Function Index.

^a Values are given as mean $\pm$ SD or number (percentage), unless otherwise indicated.

^b Calculated as weight in kilograms divided by the square of height in meters.

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