

Original Article

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Evaluating the symptoms of pelvic floor disorders in relation to the stage of pelvic organ prolapse and quality of life

Leila Pourali¹ , Atiyeh Vatanchi^{1*} , Asiyeh Maleki¹, Hasan Mehrad Majd², Azadeh Kamkar¹¹Supporting the Family and the Youth of Population Research Core, Department of Obstetrics and Gynecology, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran²Clinical Research Center, Mashhad University of Medical Sciences, Mashhad, Iran*Corresponding Author: Atiyeh Vatanchi, Email: vatanchia@mums.ac.ir**Abstract****Background:** This study aimed to investigate the relationship between pelvic organ prolapse symptoms, the severity and location of the prolapse, and their impact on the quality of life of women referring to a pelvic floor disorders clinic.**Methods:** In this cross-sectional and multi-center study, which was conducted at the pelvic floor disorders clinics of Ghaem (AS) and Imam Reza (AS) hospitals from February 20, 2019, to April 20, 2020, approximately 191 women with complaints of pelvic floor disorders were examined. Participants completed the pelvic floor distress index (PFDI) questionnaire, and prolapse severity was assessed using the pelvic organ prolapse quantification (POP-Q) system. The relationship between disease severity, prolapse stage, and quality of life was investigated. Data were analyzed using SPSS 16, with *P*-values of less than 0.05 considered significant.**Results:** The average age of participants was 53.23 years (31 to 89 years), and 95 (49.7%) of the patients were postmenopausal. One hundred eighty patients (94.2%) had at least one urinary symptom, and 116 patients (61%) had at least one bowel symptom. A significant relationship was observed between the stages of anterior and posterior compartment prolapse and the severity of stress urinary incontinence (SUI) (*P*<0.001). Additionally, the stages of anterior and posterior compartment prolapse were significantly linked to incomplete defecation (*P* values of 0.031 and 0.004, respectively) and fecal urgency (*P* values of <0.001 and <0.001, respectively). All urinary and defecatory symptoms, except urinary frequency, urinary incontinence during sexual intercourse, and fecal incontinence were significantly related to PFDI. A significant correlation was also found between PFDI and prolapse severity (*r*=0.334).**Conclusion:** Urinary, defecatory, and sexual symptoms had significant relationships with the severity and the stage of pelvic organ prolapse and with the PFDI.**Keywords:** Pelvic organ prolapse, Quality of life, Urinary stress incontinence, Fecal incontinence**Citation:** Pourali L, Vatanchi A, Maleki A, Mehrad Majd H, Kamkar A. Evaluating the symptoms of pelvic floor disorders in relation to the stage of pelvic organ prolapse and quality of life. *Journal of Kerman University of Medical Sciences*. 2025;32:3666. doi:10.34172/jkmu.3666**Received:** May 8, 2023, **Accepted:** March 10, 2025, **ePublished:** March 11, 2025**Introduction**

Pelvic organ prolapse (POP) refers to the abnormal descent or herniation of pelvic organs from their normal position. This common condition presents challenges to medical practitioners, particularly gynecologists (1). Major risk factors for POP include vaginal delivery, multiple pregnancies, high birth weight, and obesity (2).

In many cases, POP is asymptomatic and is only diagnosed during examination (3,4). The prevalence of POP ranges from 3% to 6% when symptoms are considered and increases to about 50% when diagnosed through vaginal examination (5). Prolapse can significantly impact a woman's daily life, making it difficult to engage in physical activities and maintain a healthy sex life. These symptoms include urinary incontinence, incomplete urination or defecation, fecal incontinence, feeling of vaginal bulging or pressure, and sexual dysfunction.

There is no definitive agreement on the correlation between the severity of POP symptoms and the condition's stage (6-11). Previous research indicates that POP has a moderate to severe impact on quality of life (1). A study revealed discrepancies between physicians' evaluations and patients' self-reported experiences regarding POP symptoms (3). The pelvic floor distress inventory-20 (PFDI-20) questionnaire is a reliable tool for assessing the quality of life of women with pelvic floor disorders, and its efficacy has been demonstrated in Iranian women (12,13). This cross-sectional study investigated the relationship among symptoms of pelvic floor disorders, the stage of POP, and quality of life.

Methods

This cross-sectional study included 191 eligible females who referred to pelvic floor disorders clinics at Qaem and



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Imam Reza hospitals, Mashhad University of Medical Sciences, from March 2019 to April 2021.

Women over 18 years old who referred to the pelvic floor clinics with one of the symptoms of pelvic floor disorders, including urinary incontinence or incomplete urination, stool or gas incontinence, constipation, feeling or observing mass protruding from the vagina, and sexual dysfunction caused by a feeling of mass in the vagina or vaginal laxity were included in the study.

Pregnant and postpartum women, patients with diseases that affect the incidence of POP symptoms (including history of colorectal disease, neurological disorder, history of interstitial cystitis, recent urinary tract infection, diabetes mellitus, taking anticholinergic drugs, and taking constipation-causing or laxatives drugs), and those who had a history of pelvic reconstructive surgery were excluded from the study.

The patients were thoroughly briefed on the study and gave consent before the physician's visit. Prior to the visit, patients either filled out the PFDI-20 questionnaire themselves, or a gynecology resident assisting as the attending researcher asked them the questions and recorded their responses. This questionnaire includes 20 questions in three subscales: POP distress inventory-6, urinary distress inventory-6, and colorectal-anal distress inventory-8. This questionnaire examines the following items: stress urinary incontinence (SUI), urgent urinary incontinence, frequency, urinary urgency, incomplete urination, urinary incontinence during sexual intercourse, nocturia, constipation, fecal incontinence, gas incontinence, incomplete defecation, feeling of urgency in defecation, splinting, feeling of pressure and bulging in the vagina, vaginal noise, vaginal laxity, patient sexual dissatisfaction, partner sexual dissatisfaction, decreased libido, dyspareunia, and lack of orgasm. If the patient experienced any of these symptoms, she was asked to rate the overall severity of the symptoms on a scale of 1 to 10. Symptom severity was categorized as mild (1 to 3), moderate (4 to 6), or severe (7 to 10). The attending gynecologist completed the demographic information checklist, including BMI, patient age, number of pregnancies, delivery method, history of difficult delivery, and grade 3 and 4 perineal lacerations during delivery.

Then, a pelvic floor examination was performed by a pelvic floor specialist. After preparing the patient (placing the patient in a dorsal lithotomy position and covering the thighs) and lubrication, using a sterile speculum, the cervix and vagina were examined for infection and other related pathologies. By performing the Valsalva maneuver, the stage of apical prolapse was determined. Then, using the posterior blade of the speculum, the severity of anterior compartment prolapse was assessed during the Valsalva maneuver or coughing. Then, the severity of prolapse in the posterior wall and enterocele was investigated. The prolapse severity was assessed according to the maximum

protrusion distance of the prolapse point from the hymen, from stage zero to four, based on the POP-Q system, which is as follows:

Stage 0: No prolapse. Stage 1: The most distal part of the prolapse is more than 1 cm above the hymen. Stage 2: The most distal part of the prolapse is within 1 cm, either above or below the hymen. Stage 3: The most distal part of the prolapse is more than 1 cm below the hymen but less than two centimeters shorter than the vaginal length (TVL-2). Stage 4: complete prolapse.

Data analysis was conducted using SPSS version 16, with a *P* value of less than 0.05 deemed significant. It should be noted that patient information in this study is kept strictly confidential and will not be accessed by anyone other than the researchers.

Results

We evaluated 191 patients with PFD symptoms. The mean age and body mass index (BMI) were 53.23 years (31 to 89 years) and 26.20 kg/m² (18.59 to 37.72 kg/m²), respectively. The mean number of vaginal delivery and cesarean sections was 3.62 (0 to 5) and 0.37 (0 to 4), respectively. A total of 95 patients (49.7%) were postmenopausal, and 44 patients (23%) had a history of difficult labor, including operative vaginal delivery, macrosomia, or third- and fourth-degree perineal laceration during labor. Table 1 indicates the results of the physical examination and POPQ staging.

The association of PFD symptoms with the POP stage in each compartment (anterior, posterior, and apical compartments) was evaluated using the Kruskal-Wallis statistical test. The results indicated a significant relationship between the SUI severity and the stage of anterior, posterior, and apical compartment prolapse (*P*=0.001, 0.006, and 0.033, respectively). Moreover, a significant relationship was found between the severity of urgent urinary incontinence and the stage of anterior compartment prolapse (*P*<0.001).

The relationship between the severity of urinary frequency and the stage of POP was analyzed using the Kruskal-Wallis statistical test. A significant association was found between the severity of urinary frequency and the stage of posterior compartment prolapse (*P*=0.000). Additionally, a significant connection was observed between the severity of nocturia and posterior

Table 1. POP-Q examination in patients with PFD symptoms

POP-Q examination	Anterior prolapse	Posterior prolapse	Apical prolapse	Enterocele
Stage 0	1 (0.5%)	4 (2.1%)	87 (45.5%)	159 (83.2%)
Stage 1	53 (27.7%)	71 (37.1%)	64 (33.5%)	24 (12.6%)
Stage 2	95 (49.7%)	98 (51.3%)	30 (15.7%)	4 (2.1%)
Stage 3	37 (19.4%)	13 (6.8%)	6 (3.1%)	4 (2.1%)
Stage 4	5 (2.6%)	5 (2.6%)	4 (2.1%)	0 (0.0%)

compartment prolapse ($P=0.031$). The severity of incomplete bladder emptying was significantly related to the stage of apical compartment prolapse ($P=0.014$). However, urinary incontinence during intercourse had no significant relationship with prolapse. Constipation and the stage of POP were not related.

A significant relationship was observed between incomplete defecation and anterior ($P=0.016$) and posterior ($P=0.003$) compartment prolapse, splinting, and the stage of posterior compartment prolapse ($P=0.014$), fecal ($P=0.024$) and flatus ($P=0.006$) incontinence severity and apical compartment prolapse, and the severity of vaginal pressure and the stage of anterior ($P=0.015$), posterior ($P=0.005$), and apical ($P=0.001$) compartment prolapse. The severity of vaginal noise and vaginal laxity had no significant relationship with the stage of POP.

When examining the relationship between sexual symptoms and the stage of POP using the Kruskal-Wallis statistical test, a significant association was found between the POP stage in the anterior, posterior, and apical compartments and issues including sexual dissatisfaction, dyspareunia, decreased libido, and anorgasmia ($P<0.05$).

The correlation of the clinical symptom severity with the pelvic floor distress index (PFDI) and the maximum prolapse was investigated using the Spearman test, and the results are listed in [Table 2](#).

A significant difference was observed between disease symptoms and PFDI. Moreover, these symptoms were significantly associated with the maximum prolapse stage in each compartment ([Table 3](#)).

Discussion

In this research, voiding dysfunctions and SUI were the most prevalent symptoms (81.7%) among 191 women aged 31 to 89 years with at least one pelvic floor issue who referred to pelvic floor clinics. Splinting was the most common defecatory symptom, and feeling vaginal bulge was the most common prolapse symptom. In the vaginal examination, the most frequent finding was prolapse in the anterior vaginal compartment, most commonly at stage II.

The present study found a significant association between SUI and the anterior and posterior compartment prolapse stages. This correlation was significant between urge incontinence and apical and anterior compartment prolapse severity. According to previous studies, SUI symptoms often coexist with stage 1 or 2 prolapse (4,11,12). In advanced prolapse stages, improved SUI may be observed. However, voiding becomes more difficult (13). In the more severe stages of anterior and apical prolapse, increased obstructed voiding symptoms may occur due to potential urethral kinking. These symptoms include the necessity to manually reduce the prolapse to urinate (known as splinting), experiencing a sensation of the bladder not fully emptying, and in rare instances, even

urinary retention. In Burrows et al.'s study, patients in more advanced prolapse stages experienced less SUI and were more likely to manually reduce prolapse to void (14). Consistent with our findings, evaluating an extensive database indicated that 5% to 12% of subjects of stage 2 and 23% to 36% of stage 3 and stage 4 anterior prolapse, respectively, reported urinary splinting (15).

POP induces a two to five-fold risk of overactive bladder symptoms than in the general population (16). In our study, 121 women (63.4%) had symptoms of overactive bladder. There is inconsistent data on the relationship between the anatomic site (apical, anterior, and posterior) and the severity of prolapse with bladder overactivity symptoms (11). The research conducted by Burrows et al. found that individuals experiencing urinary urgency and urge incontinence had less severe prolapses (15). However, in our study, we observed a significant correlation between the intensity of urgent urinary incontinence and the level of prolapse in the anterior and apical compartments. This inconsistency may be due to the different causes of urgency symptoms that may affect the incidence of the symptoms in POP patients.

Some POP patients may suffer from enuresis or urinary incontinence during sexual activity. The correlation between these symptoms and the specific anatomical location of the prolapse has not been studied previously. In our study, urinary incontinence during sexual intercourse had a significant relationship with anterior, posterior, and apical compartment prolapse, which may demonstrate the urgency of urinary incontinence.

Defecation-related issues were found to be more prevalent in women with POP compared to the general population, with constipation and difficulty fully emptying the bowels being the most frequently reported symptoms (17,18). In our study, splinting was the most common defecatory symptom (61.8%). Constipation (35.1%) and incomplete defecation (24.1%) were other common defecatory symptoms.

Although defecatory symptoms tend to be found to be more commonly associated with worsening posterior compartment prolapse (11), they may be present in women with any anatomic site of prolapse. In our study, a significant relationship was observed between defecatory symptoms and the anterior compartment prolapse stage.

Considering sexual symptoms related to POP is a controversial issue. In this regard, a moderate association was found between sexual function impairment and worsening prolapse in all three compartments. The apical compartment had the highest correlation, while a weak correlation was found between worsening anterior compartment prolapse and increasing sexual abstinence time (11). On the other hand, Burrows et al. showed little correlation between POP and sexual activity (15). The present study showed that sexual dissatisfaction and dyspareunia were associated with increasing anterior,

Table 2. The relationship between symptoms of pelvic floor disorder with pelvic floor distress index and maximum prolapse stage

Variables	Correlation coefficient with maximum prolapse stage	P value*	Correlation coefficient with PFDI	P value*
Stress urinary incontinence	0.061	0.402	0.316	<0.001
Urgency urinary incontinence	-0.007	0.923	0.453	<0.001
Frequency	-0.140	0.053	0.308	<0.001
Urgency	-0.109	0.132	0.271	<0.001
Nocturia	-0.071	0.326	0.303	<0.001
Incomplete bladder emptying	0.069	0.343	0.313	<0.001
Urinary incontinence during sexual activity	0.192	0.008	0.100	0.169
Splinting	0.322	<0.001	0.441	<0.001
Constipation	0.034	0.643	0.444	<0.001
Incomplete defecation	0.058	0.428	0.432	<0.001
Fecal incontinence	0.114	0.118	0.202	0.005
Flatus incontinence	0.198	0.006	0.336	<0.001
Fecal urgency	0.007	0.921	0.248	0.001
Vaginal noise	-0.067	0.356	0.217	0.003
Vaginal laxity	0.013	0.862	0.020	0.779
Vaginal pressure	0.340	<0.001	0.373	<0.001
Vaginal mass protrusion	0.496	<0.001	0.392	<0.001
Patient sexual dissatisfaction	0.211	0.003	0.262	<0.001
Partner sexual dissatisfaction	0.179	0.013	0.238	0.001
Dyspareunia	0.264	<0.001	0.132	0.068
Decreased libido	0.257	<0.001	0.231	0.001
Anorgasmia	0.217	0.003	0.167	0.021

*Spearman correlation coefficient

Table 3. The correlation coefficient between each prolapse compartment and pelvic floor distress index

Variables	Correlation coefficient with PFDI	P value*
Anterior compartment prolapse stage	0.0299	<0.001
Posterior compartment prolapse stage	0.172	0.017
Apical compartment prolapse stage	0.259	<0.001
Enterocoele stage	0.198	0.006
Maximum prolapse	0.334	<0.001

*Spearman correlation coefficient.

posterior, and apical prolapse severity. Moreover, an association was found between decreased libido and anterior and posterior compartment prolapse. Lack of orgasm was also associated with the anterior prolapse stage. However, the mean age of our patients was lower than in the previously mentioned studies (53 years versus 58 years). The inconsistencies in these results may be mainly due to the different sexual attitudes of different cultures and multiple causes of sexual problems (15). On the other hand, we did not have any information on the sexual activity of our patients before the prolapse symptoms.

Similar to the results of some previous studies (4,11,15,19), the present study showed that the worsening degrees of prolapse in all compartments were strongly

correlated with the vaginal bulging sensation. Ghetti et al reported that vaginal bulging is the principal symptom related to the severity of prolapse, which is moderately correlated to the highest prolapse values ($r=0.4$, $P<0.001$) (19).

The present study indicated the highest direct correlation between the vaginal bulging sensation and prolapse ($r=0.496$). Furthermore, pelvic pressure sensation ($r=0.340$) and splinting ($r=0.322$) were significantly correlated with prolapse severity.

Using standard validated questionnaires was one of the strengths of the current study, which evaluated the severity of clinical symptoms with the PFDI and the maximum degree of prolapse. Almost all pelvic floor dysfunction symptoms were significantly correlated with PFDI and maximum degree of prolapse, which is consistent with another similar study (20).

As a limitation, given our tertiary care referral practice, this study was conducted on patients presenting pelvic floor disorder symptoms. A simultaneous study on the control group with no complaints could be used for a better comparison and a more accurate evaluation. Moreover, as about half of the patients were postmenopausal, it is important to acknowledge that this status may be a confounding factor that produces or exacerbates the pelvic floor symptoms in the current population.

This study aimed to identify symptoms of pelvic floor dysfunction and their severity, specifically compartment-specific, stage- and life-quality-correlated ones.

Conclusion

This study emphasized the prevalent occurrence of pelvic floor disorder symptoms and their connection to different compartments and stages of POP. Additionally, the impact of these symptoms on various facets of quality of life warrants careful consideration and targeted interventions.

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Authors' Contribution

Conceptualization: Leila Pourali.

Data curation: Azadeh Kamkar.

Formal analysis: Hasan Mehrad Majd.

Investigation: Leila Pourali, Atiyeh Vatanchi, Asiyeh Maleki.

Methodology: Hasan Mehrad Majd.

Project administration: Asiyeh Maleki, Azadeh Kamkar.

Software: Hasan Mehrad Majd.

Supervision: Leila Pourali.

Validation: Leila Pourali, Atiyeh Vatanchi.

Visualization: Leila Pourali, Azadeh Kamkar.

Writing—original draft: Leila Pourali, Azadeh Kamkar.

Competing Interests

The authors declare that they do not have any conflict of interest.

Ethical Approval

This article was approved by the Ethics Committee of Mashhad University of Medical Sciences (IR.MUMS.MEDICAL.REC.1397.588).

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