

# Sexual Dysfunction in Aging Men With Lower Urinary Tract Symptoms

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**Introduction:** Our aim was to evaluate the relationship between lower urinary tract symptoms (LUTS), age, and sexual dysfunction in the Iranian men aged 50 to 80 years.

**Materials and Methods:** A total of 357 men aged 50 to 80 years presenting at the urological clinic were enrolled in this study. The International Prostatic Symptom Score (IPSS) and the International Index of Erectile Function (IIEF) questionnaires were used to assess the LUTS and sexual function, respectively. The questionnaires were completed by face-to-face interview. Logistic regression model was used for multivariate analysis of the risk factors of sexual dysfunction and its domains assessed by the IIEF.

**Results:** Of the patients, 332 (93%) were sexually active with a median sexual attempts of 4.6 times per month. Frequency of sexual attempts was inversely related to LUTS severity ( $P < .001$ ). Advanced age was positively associated with LUTS severity ( $r = 0.534$ ,  $P < .001$ ). Sexual dysfunction, defined as IIEF score of 20 and less, was present in 68.2% of the patients. All IIEF domain scores and the overall score were correlated with age ( $P < .001$ ) and the IPSS ( $P < .001$ ). In a multivariate analysis, age, diabetes mellitus, and the IPSS were strong independent predictors of the overall IIEF score.

**Conclusion:** Sexual activity as an important component of the quality of life continues in the majority of men over 50 years. However, their sexual function can be severely affected by LUTS and its severity.

*Urol J. 2008;5:260-4.  
www.uj.unrc.ir*

*Keywords: sexual dysfunction, prostatic hyperplasia, aged, urination disorders*

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*Received April 2008  
Accepted July 2008*

## INTRODUCTION

Lower urinary tract symptoms (LUTS), mainly caused by benign prostatic hyperplasia (BPH), and sexual dysfunction (SD) are highly prevalent urologic problems among the aging male population. Both conditions have significant impact on the overall quality of life.<sup>(1)</sup> The Massachusetts male aging study showed that 34.8% of 40- to 70-year-old men suffer from moderate to severe erectile dysfunction. In Iran, impotence was reported in 47% of men aged between 60 and 70

years.<sup>(2)</sup> The condition is strongly related to age, cardiovascular diseases, depression, and diabetes mellitus.<sup>(2)</sup> Although evidence on the relationship between LUTS and SD are controversial,<sup>(3,4)</sup> some have shown LUTS to be an independent risk factor of SD. Results of a recent study indicated improvement in LUTS following the treatment of SD.<sup>(5)</sup>

Sexual dysfunction is a complex phenomenon not limited only to erectile dysfunction. It is well

established from several clinical studies that ejaculatory disorders are as prevalent as erectile dysfunction, affecting half of men aged over 50 years.<sup>(6)</sup> Moreover, recent data from the multinational survey of the aging male (MSAM-7), conducted in the United States and 6 European countries, revealed that 46% of men had a reduced amount of ejaculate, and 59% of these men considered it to be a problem.<sup>(6)</sup> In addition, it was found that ejaculatory disorders significantly increased with the severity of LUTS.<sup>(7)</sup> Reports from different countries have shown a wide range of incidence of SD in different populations.<sup>(8)</sup> Meanwhile, some mechanisms such as activation of the noradrenergic system in bladder outlet obstruction or local effects of the enlarged prostate on cavernosal nerves have been proposed to explain this coexistence, but the exact pathophysiology of this relation is unknown.<sup>(6)</sup> We conducted a cross-sectional study to provide a preliminary sketch of basic epidemiologic data on the frequency of sexual dysfunction and lower urinary tract symptoms in our aging patients and to assess their relationship.

## MATERIALS AND METHODS

Between June 2004 and December 2006, we enrolled 357 men aged 50 to 80 years in this study. Data were collected from the patients referring to the outpatient urological clinic at Shariati Hospital. Those with documented history of bladder calculus, urethral stricture, bladder tumor, prostate cancer, and those with indwelling catheters were excluded.

During the outpatient visits, demographic characteristics, comorbidities (diabetes mellitus, hypertension, and hyperlipidemia), life style factors (smoking, alcohol consumption), and history of any pelvic surgery, related traumas, or treatment were asked. Sexual dysfunction and LUTS were assessed by the international index of erectile function (IIEF) and the international prostatic symptom score (IPSS) questionnaires, respectively, completed by face-to-face interview.<sup>(9,10)</sup> The interviews were performed by trained urology residents in this center. Both questionnaires were linguistically validated using translation and back-translation process. The IPSS

questionnaire, is a validated 8-item questionnaire for assessment of the severity of LUTS. The first 7 questions are scored from zero to 5 with an overall score of zero to 35. The severity of symptoms is classified as “mild,” “moderate,” and “severe” for scores of 7 and less, 8 to 19, and more than 20, respectively. The IIEF questionnaire, as the gold standard method for assessment of sexual function in clinical trials, scores separate domains of erectile function, orgasmic function, sexual desire, intercourse satisfaction, and overall satisfaction. We analyzed the relation of the patients’ IIEF and IPSS scores.

Statistical analyses were done using the SPSS software (Statistical Package for the Social Sciences, version 13.0, SPSS Inc, Chicago, Ill, USA). For comparisons between groups, the chi-square test and the Kruskal-Wallis test were used. Correlations were tested with the Spearman rho test. Multivariate analysis using logistic regression model was used to measure the relationship between LUTS and sexual dysfunction, adjusted for confounding factors. Two-sided test with type 1 error of 5% and 95 % confidence interval was used.

## RESULTS

All of the approached 357 eligible patients consented to participate in the study. The mean age of the patients was  $64.1 \pm 7.4$  years (range, 50 to 80 years). Table 1 summarizes the clinical characteristics of the respondents.

The median IPSS score was 15 and in terms of severity, 68 (19.0%), 188 (52.7%), and 98 (27.5%) patients had mild, moderate, and severe LUTS, respectively. Logistic regression analysis showed

**Table 1.** Characteristics of Patients With Lower Urinary Tract Symptoms (n = 357)

Characteristics	Patients (%)	Missed Data (%)
Comorbidities		
Diabetes mellitus	49 (13.7)	1 (0.3)
Hypertension	96 (26.9)	12 (3.4)
Hyperlipidemia	48 (13.7)	7 (1.9)
Life style factors		
Smoking	102 (28.6)	1 (0.3)
Alcohol consumption	3 (0.8)	0
History of pelvic trauma	13 (3.6)	40 (11.2)
History of pelvic surgery	18 (5.0)	44 (12.3)

a significant association between the age and severity of LUTS ( $r = 0.534$ ,  $P < .001$ ). The association of other variables with the IPSS are shown in Table 2.

Of the participants, 332 (92.9%) were sexually active, reporting a median monthly sexual attempts of 4.6 times. This rate was significantly lower in those with severe LUTS ( $P < .001$ ); The median frequency of sexual attempts was 6.4 times per month for the patients with mild symptoms compared to 3.3 times per month for

those with severe LUTS. The overall frequency of sexual dysfunction, defined as IIEF scores of 20 or less, was 68.2%. There was a strong relationship between all IIEF domain scores and the severity of LUTS irrespective of other comorbidities such as diabetes mellitus, hypertension, and hyperlipidemia. Similar relations were observed for the age (Tables 3 and 4). Univariate logistic regression analysis revealed that the IPSS ( $P < .001$ ), age ( $P < .001$ ), smoking ( $P < .013$ ), diabetes mellitus ( $P < .001$ ), and hypertension ( $P = .001$ ) were associated with the overall IIEF scores. However, on multivariate analysis, only age, diabetes mellitus, and the IPSS were remained in the model.

**Table 2.** Severity of Lower Urinary Tract Symptoms Stratified By Risk Factors\*

Risk Factors	Lower Urinary Tract Symptoms			P
	Mild	Moderate	Severe	
Smoking				
Yes	16 (15.8)	48 (47.5)	37 (36.6)	
No	52 (20.6)	140 (55.3)	61 (24.1)	.06
Diabetes mellitus				
Yes	4 (8.2)	28 (57.1)	17 (34.7)	
No	64 (21.0)	160 (52.5)	81 (26.6)	.09
Hypertension				
Yes	8 (8.4)	50 (52.6)	37 (38.9)	
No	57 (23.0)	135 (54.4)	56 (22.6)	.001
History of surgery				
Yes	2 (11.1)	2 (38.9)	9 (50.0)	
No	61 (20.8)	156 (53.2)	76 (25.9)	.11
History of trauma				
Yes	1 (7.7)	9 (69.2)	3 (23.1)	
No	62 (20.5)	62 (51.3)	85 (28.1)	.45

\*Numbers in parenthesis are percents.

## DISCUSSION

Lower urinary tract symptoms and sexual dysfunction are age-related conditions that are commonly seen during the routine urologic visits. It has been shown that the prevalence of histologic BPH increases from 8% in the 4th decade to 82% in the 8th decade of life.<sup>(11)</sup> There might be differences in the prevalence of LUTS in different cultures. A greater rates of LUTS were reported in Japan and the United States in comparison to those in France or Scotland.<sup>(12)</sup> There has been notable differences in the prevalence of moderate to severe LUTS between men in Singapore (14%) and Philippines (56%).<sup>(13)</sup>

**Table 3.** Correlation Coefficients for Association of IIEF Domains With IPSS and Age\*

Associated Factors	IIEF Domains Scores					
	Overall	Overall Satisfaction	Intercourse Satisfaction	Sexual Desire	Orgasmic Function	Erectile Function
IPSS score	-0.655	-0.539†	-0.487	-0.450	-0.439	-0.659
Age	-0.504	-0.458†	-0.330	-0.350	-0.323	-0.516

\*IIEF indicates the international index of erectile function and IPSS, the international prostatic symptom score.

† $P < .001$ ; Spearman rho test.

**Table 4.** Scores of IIEF Domains According to Severity of Lower Urinary Tract Symptoms\*

Domains	Lower Urinary Tract Symptoms			P
	Mild	Moderate	Severe	
Erectile function	25 (5 to 30)	20 (8 to 29)	13 (1 to 25)	< .001
Orgasmic function	8 (4 to 10)	6 (0 to 10)	5 (0 to 10)	< .001
Sexual desire	7 (3 to 10)	6 (2 to 10)	5 (2 to 9)	< .001
Intercourse satisfaction	11 (1 to 15)	9 (4 to 14)	6 (0 to 13)	< .001
Overall satisfaction	9 (2 to 10)	7 (2 to 10)	5 (2 to 10)	< .001
Overall	59 (24 to 68)	47 (24 to 70)	34 (5 to 64)	< .001

\*Values are medians (ranges).

In a recent report from Sweden, Ströberg and coworkers demonstrated that 45% of the individuals with LUTS had moderate to severe degree of problems.<sup>(14)</sup> The current study showed that the prevalence of moderate to severe LUTS was 80.1% which was significantly higher than that in other studies. Discrepancies in the LUTS prevalence might be due to cultural differences and the willingness to seek medical help for LUTS and sexual dysfunction. Moreover, our sample was collected from a tertiary center population, leading to a selection bias. Moreover, there has been significant correlation between age and IPSS score which is in accordance with Reggio and colleagues' study.<sup>(14)</sup>

Recently, several investigations have examined the association of the components of metabolic syndromes with BPH and suggested that metabolic profile of men constitute a risk factor of the development of BPH. A prospective study showed that only categorized parameters of fasting blood glucose, serum triglyceride, and serum high-density lipoprotein cholesterol correlated with the severity of LUTS. In addition, the researchers did not find any association of LUTS with hypertension, smoking, hyperlipidemia, alcohol consumption, and diabetes mellitus.<sup>(16)</sup> We did not find such relations between these variables and the IPSS, either.

Sexual activity remains high in Iranian men aged 50 to 80 years. This prevalence is rather high compared with men in the southeast of Asia (93% versus 73%).<sup>(13)</sup> In the MSAM-7, 52% of men aged 40 to 70 years had some degrees of erectile dysfunction ranging from 39% in men aged 40 years to 67% in those aged 70 years.<sup>(6)</sup> Other studies demonstrated different incidences of sexual dysfunction among different countries. For example, men in Japan (34%) and Malaysia (22%) had higher incidences of moderate to complete erectile dysfunction in comparison with those in Italy (17%) and Brazil (15%).<sup>(8)</sup> Erectile dysfunction was reported by 68.2% of the men in our study that was significantly higher than these reports.

Previous cross-sectional studies have shown that the prevalence of sexual dysfunction is independently increased with the LUTS severity.

In a large cohort study on 6000 French men with LUTS, Lukacs and colleagues reported that impairment of patients' sexual activity was related to both age and severity of the LUTS, which is in accordance with other studies.<sup>(17)</sup> The MSAM-7 showed that IPSS score was a highly significant predictor of all the IIEF domain scores. They also showed an independent effect of age and other comorbidities (diabetes, hypertension, cardiac disease, and hyperlipidemia), as well as tobacco use and alcohol consumption, on all the IIEF domain scores. The strongest predictor was age followed by the IPSS score. Likewise, we found a significant association between the LUTS severity and all of the IIEF domain scores. In the present study, in line with the other studies, the IPSS score, age, and diabetes mellitus were strong independent predictors of the overall IIEF score.

Although, epidemiological studies provide clear evidence that LUTS and sexual dysfunction are strongly linked, a causal relationship cannot be established by the data from these studies. Even these associations from epidemiological studies must have plausible biochemical explanations to be widely accepted. Reduced production of nitric oxide/nitric oxide synthase in the pelvis and the activation of autonomic system due to bladder outlet obstruction have been proposed as potential mechanisms.<sup>(6)</sup> However, the exact mechanism has not been understood yet.

We could not assess the ejaculatory problems because of lack of validated questionnaires. Limitations of the present study are a rather small sample size compared to similar studies, a selection bias due to recruitment of the patients from a tertiary center, and finally, the cross-sectional nature of this study which limits its strength to establish a causal relationship. On the other hand, data in our study were collected by face-to-face interview. This method increases the reliability of our data. To our knowledge, this is the first study examining sexual dysfunction in relation to LUTS in the Middle East.

## CONCLUSION

Elderly men, especially those with LUTS, should be routinely asked about their sexual function. Erectile dysfunction is prevalent in these patients

and is also strongly related to the severity of the symptoms. Sexual dysfunction should be considered when treating aging men with LUTS.

## FINANCIAL SUPPORT

This study was supported by a medical research grant from Tehran University of Medical Sciences.

## CONFLICT OF INTEREST

None declared.

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