

# Impact of LUTS on treatment-related behaviors and quality of life: A population-based study in Brazil

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## Abstract

**Aims:** To report on the impact of lower urinary tract symptoms (LUTS) on treatment-related behaviors and quality of life in Brazilian adults greater than or equal to 40 years.

**Methods:** Data were from a computer-assisted telephone survey conducted in Brazil between 1 September and 31 December 2015 (Brazil LUTS study). Participants were adults greater than or equal to 40 years with landlines living in major cities from five geographical regions in Brazil. Participants rated how often they experienced individual LUTS during the previous month and associated bother, and the impact on quality of life (QoL), treatment seeking, treatment, treatment satisfaction, and treatment discontinuation. Multiple logistic regression models were adjusted to analyze the simultaneous effects of predictor variables on each dependent variable.

**Results:** When the presence of LUTS was defined as symptoms occurring less than half the time or more, one-quarter of respondents sought treatment but 6% fewer actually received treatment. Of these, around 25% reported dissatisfaction with treatment and almost 10% reported treatment discontinuation. The occurrence of some symptoms and, in particular, the resultant bother were significantly related to worse QoL and to treatment-related outcomes, such as treatment seeking, actual treatment, treatment dissatisfaction, and treatment discontinuation. Symptoms of all three categories were associated with all these domains for both sexes.

**Conclusions:** This is the first population-based study carried out in South America showing that treatment seeking and treatment rates for LUTS are low. Since the LUTS prevalence is high, this reinforces the importance of a comprehensive medical assessment, focusing on the resulting bother, for more appropriate and personalized patient management.

**Abbreviations:** HRQoL, health-related quality of life; IPSS, International Prostate Symptom Score; LUTS, lower urinary tract symptoms; QoL, quality of life; SUI, stress urinary incontinence; UI, urinary incontinence; UUI, urge urinary incontinence.

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## 1 | INTRODUCTION

Large international studies have reported the prevalence of lower urinary tract symptoms (LUTS) in adults aged greater than or equal to 40 years as 65% in Europe (EPIC),<sup>1</sup> 74% in North America and Europe (EpiLUTS),<sup>2</sup> and 61% in Asia.<sup>3</sup> In both the EPIC and EpiLUTS studies, the prevalence of storage symptoms was greater than for voiding symptoms,<sup>1,2</sup> with voiding symptoms more common in men and storage symptoms more common in women.<sup>1-3</sup> A recent nationwide, population-based epidemiological study of LUTS in Brazil, the Brazil LUTS study, reported LUTS prevalence as around 75% in adults greater than or equal to aged 40 years, with more women affected than men (82% vs 69%).<sup>4</sup> Storage symptoms represented the most prevalent category in both sexes, with perceived frequency and nocturia having the highest overall prevalence. Generally, storage symptoms were more common in women and voiding symptoms more common in men. The most common voiding symptoms were terminal dribble and slow stream.<sup>4</sup>

LUTS are very bothersome to patients and have a negative impact on work productivity, health-related quality of life (HRQoL), and social functioning.<sup>5,6</sup> Embarrassment, concerns about treatment costs, and the belief that LUTS are an inevitable part of aging or the result of childbirth, all prevent many patients from talking to physicians about their symptoms.<sup>7,8</sup> Knowing which symptoms and symptom-specific bother lead men and women to seek treatment is fundamental to the treatment approach in patients with LUTS, and may also be helpful for the design of educational campaigns, health policies, and resource allocation. Therefore, this manuscript reports on the impact of LUTS on QoL, treatment seeking, treatment, treatment satisfaction, and treatment discontinuation in men and women from the Brazil LUTS study.<sup>4</sup>

## 2 | MATERIALS AND METHODS

Previously published methods<sup>4</sup> are presented briefly here. Data were from a computer-assisted telephone survey conducted in Brazil between 1 September and 31 December 2015. Ten thousand telephone numbers were randomly selected via systematic randomization for each of the municipalities of São Paulo, Porto Alegre, Recife, Belém, and Goiânia. The randomized selection was stratified by zip code to ensure equal representation by the city. Following identification of households, a trained interviewer made up to ten call attempts between 8:00 AM and 9:00 PM on any day of the week. The interviewer explained the purpose of the

research and its characteristics and requested a verbal informed consent based on a random, computer-assisted selection of any individuals aged 40 years and older who were resident in the home. The interview consisted of a standardized questionnaire, which in addition to gathering participants' demographic data included the International Prostate Symptom Score (IPSS) and overactive bladder (OAB)-V8 questionnaires validated in Portuguese. Participants ( $n = 5814$ ) were adults greater than or equal to 40 years with landlines living in major cities from five geographical regions in Brazil: South East (São Paulo), South (Porto Alegre), North East (Recife), North (Belém), and Central West (Goiânia). Exclusions were pregnancy and current/past urinary tract infection (within 1 month). The study was approved by an ethics committee, and was performed in compliance with good clinical practice and in accordance with the Declaration of Helsinki. Informed consent was obtained from all participants.\* LUTS was defined as suggested by International Continence Society (ICS)<sup>9</sup> and included: slow stream, splitting, intermittency, hesitancy, straining, terminal dribble, perceived frequency, urgency, urgency with fear of leaking, urgency urinary incontinence (UUI), stress urinary incontinence (SUI), leak for no reason, nocturnal enuresis, leak during sexual activity, incomplete emptying, and post-micturition dribble.<sup>8</sup> IPSS<sup>10</sup> and OAB-V8 questionnaires,<sup>11</sup> validated in Portuguese, were included in the questionnaire. Participants rated how often they experienced individual LUTS during the previous month ( $\geq 1$  voiding, storage, or post-micturition symptom [ $\geq 2$  episodes for nocturia]), using a Likert scale: none (score 0), less than 1 in 5 times (score 1), less than half the time (score 2), about half the time (score 3), more than half the time (score 4), or almost always (score 5). The bother associated with LUTS was also assessed (Likert scale: not at all [score 0], a little bit [score 1], somewhat [score 2], quite a bit [score 3], a great deal [score 4], or a very great deal [score 5]). Questions asked during the telephone survey regarding the impact of LUTS on QoL (IPSS question 8), treatment seeking, treatment, treatment satisfaction, and treatment discontinuation are shown in Table 1. Similarly to the EpiLUTS study, two definitions were used for the presence of LUTS: definition 1 (symptoms occurring less than half the time or more) and definition 2 (symptoms occurring half the time or more) (Table S1).<sup>9</sup> As with the EpiLUTS study, the results presented

\*Access to anonymized individual participant level data will not be provided for this trial as it meets one or more of the exceptions described on [www.clinicalstudydatarequest.com](http://www.clinicalstudydatarequest.com) under "Sponsor Specific Details for Astellas."

**TABLE 1** Questions regarding quality of life, treatment seeking, treatment satisfaction, and treatment discontinuation

QoL was assessed by the IPSS-QoL question (question 8):

Quality of life due to urinary symptoms: If you were to spend the rest of your life with your urinary condition just the way it is now, how would you feel about that?

- Delighted (0)
- Pleased (1)
- Mostly satisfied (2)
- Mixed (3)
- Mostly dissatisfied (4)
- Unhappy (5)
- Terrible (6)

Symptoms: perceived frequency, nocturia, urgency with a fear of leaking, urgency incontinence, stress incontinence, leak for no reason, slow/weak stream, splitting or spraying, intermittency, hesitancy, straining, terminal dribble, incomplete emptying, and post-micturition dribble

For some of these symptoms have you sought medical attention? Which of the following reflects your case:

- I have not received treatment and I am satisfied that I improved the symptoms (0)
- I have not received treatment and I am not satisfied that I have not improved the symptoms (1)
- I have received treatment and I am satisfied that I improved the symptoms (2)
- I have received treatment and I am not satisfied that I have not improved the symptoms (3)
- I have received treatment and dropped out (4)

here focused on the primary LUTS subgroup definition 2, unless otherwise specified.

## 2.1 | Statistical methods

Pearson's  $\chi^2$  test was performed to analyze associations between categorical variables. Multiple logistic regression models were adjusted to analyze the simultaneous effects of predictor variables on each of the dichotomous dependent variables (treatment seeking, treatment, treatment satisfaction, and treatment discontinuation). For the QoL, the analysis was performed using ordered logit regression due to its polytomous nature. Predictor variables were age, sex, educational status, working situation, marital status, nutritional status, smoking, physical activity, reported comorbidities (depression/anxiety, diabetes, hypertension, cardiac diseases, constipation, and dyslipidemia), frequency, and both of each LUTS. For the multiple regression analysis, the presence of individual LUTS was considered when the individual experienced it less than half of the time or more (IPSS grade  $\geq 2$ ) and bother was considered when graded somewhat or higher (OAB-V8 grade  $\geq 2$ ).

Due to the large number of variables, predictor variables were selected in each model when their association with the dependent variable reached 20% significance in the univariate analysis. Initially, all selected variables were included; then variables not reaching 5% significance (except for age, the control variable) were excluded one by one in order of significance (backward method). Models for men and women were individually adjusted. All statistical analyses

**TABLE 2** Treatment-seeking behavior

	Sex							P
	Men		Women		Total			
	N	%	N	%	N	%		
<i>Men and women with symptoms occurring less than half the time or more (definition 1)</i>								
Treatment seeking	390	24.8	546	29.6	937	27.4	0.063	
Received treatment	292	18.6	436	23.6	728	21.3	0.063	
Treatment dissatisfaction	76	25.9	105	24.0	180	24.8	0.74	
Treatment discontinuation	26	8.3	42	8.8	68	8.6	0.88	
<i>Men and women with symptoms occurring at least half the time (definition 2)</i>								
Treatment seeking	267	30.6	401	36.8	668	34.0	0.080	
Received treatment	195	22.3	309	28.4	504	25.7	0.11	
Treatment dissatisfaction	59	30.5	87	28.1	146	29.0	0.73	
Treatment discontinuation	21	9.8	37	10.6	58	10.3	0.86	

All numbers presented are weighted; subgroups might or might not equal total N because of rounding, weighted values or missing data. P = descriptive level of the  $\chi^2$  test considering the sampling plan.

**TABLE 3** Heat map of logistic and ordered multiple regressions for quality of life (QoL) due to urinary symptoms, treatment seeking, treatment, treatment dissatisfaction, and treatment discontinuation in men

Covariates	QoL due to urinary symptoms	Treatment seeking	Treatment	Treatment dissatisfaction	Treatment discontinuation
<b>Voiding symptoms</b>					
Slow stream	1.43 (1.02–2.00)				
Slow stream – bother	2.18 (1.38–3.44)	2.05 (1.14–3.71)			
Splitting					
Splitting – bother	1.77 (1.06–2.97)				
Intermittency					
Intermittency – bother					
Hesitancy					0.19 (0.05–0.82)
Hesitancy – bother					
Straining			2.13 (1.08–4.24)		
Straining – bother					
Terminal dribble					
Terminal dribble – bother					
<b>Storage symptoms</b>					
Perceived frequency					
Perceived frequency – bother		1.79 (0.97–3.30)		5.18 (1.95–13.76)	
Nocturia					
Nocturia – bother					
Urgency					
Urgency – bother	2.10 (1.41–3.13)				
Urgency with fear of leaking					
Urgency with fear of leaking – bother					
UUI					
UUI – bother				6.27 (1.90–20.65)	
SUI					
SUI – bother					
Leak for no reason					
Leak for no reason – bother					
Nocturnal enuresis					
Nocturnal enuresis – bother					
Leak during sexual activity					
Leak during sexual activity – bother					
<b>Post-micturition symptoms</b>					
Incomplete emptying					7.95 (1.28–49.45)
Incomplete emptying – bother	2.50 (1.65–3.79)	2.93 (1.57–5.47)	3.26 (1.75–6.06)		8.42 (2.49–28.43)
Post-micturition dribble					
Post-micturition dribble – bother	2.47 (1.71–3.55)				0.19 (0.05–0.74)
<b>Demographics/characteristics</b>					
Age		1.06 (1.04–1.09)	1.07 (1.05–1.09)		
Educational status					
Work situation					
Marital status					
Nutritional status – overweight					8.33 (1.66–41.89)
Nutritional status – obese					22.3 (3.25–152.98)
Smoking					
Physical activity – moderate	0.63 (0.42–0.95)				0.21 (0.08–0.60)
Physical activity – high	0.68 (0.49–0.96)	1.70 (1.08–2.69)			0.21 (0.08–0.60)
Depression/anxiety	1.81 (1.18–2.78)	2.31 (1.21–4.41)	2.13 (1.14–3.98)		
Diabetes					
Hypertension					
Cardiac diseases					
Constipation					
Dyslipidemia					

Abbreviations: SUI, stress urinary incontinence; UUI, urgency urinary incontinence.

Red cells indicate an increase and blue cells indicate a decrease. Numbers show adjusted odd ratios (95% confidence interval).

**TABLE 4** Heat map of logistic and ordered multiple regressions for quality of life (QoL) due to urinary symptoms, treatment seeking, treatment, treatment dissatisfaction, and treatment discontinuation in women

Covariates	QoL due to urinary symptoms	Treatment seeking	Treatment	Treatment dissatisfaction	Treatment discontinuation
<b>Voiding symptoms</b>					
Slow stream					
Slow stream – bother	1.77 (1.21–2.61)	1.81 (1.09–2.99)			
Splitting					
Splitting – bother		1.87 (1.09–3.21)	2.49 (1.52–4.09)		
Intermittency					
Intermittency – bother		1.97 (1.13–3.43)	1.69 (1.14–2.50)		
Hesitancy					
Hesitancy – bother					
Straining					
Straining – bother					
Terminal dribble					
Terminal dribble – bother	2.09 (1.40–3.11)				
<b>Storage symptoms</b>					
Perceived frequency					
Perceived frequency – bother	1.52 (1.07–2.16)	1.57 (1.04–2.37)		2.49 (1.16–5.32)	
Nocturia					
Nocturia – bother	1.52 (1.10–2.09)				
Urgency					
Urgency – bother		1.68 (1.13–2.49)			
Urgency with fear of leaking			1.93 (1.32–2.83)		
Urgency with fear of leaking – bother	1.63 (1.11–2.40)				
UUI					
UUI – bother	1.62 (1.11–2.38)			2.64 (1.20–5.81)	
SUI					
SUI – bother	1.98 (1.45–2.72)				
Leak for no reason					
Leak for no reason – bother					3.34 (1.23–9.08)
Nocturnal enuresis					
Nocturnal enuresis – bother					6.19 (1.92–19.93)
Leak during sexual activity					
Leak during sexual activity – bother					
<b>Post-micturition symptoms</b>					
Incomplete emptying					
Incomplete emptying – bother				3.19 (1.38–7.37)	
Post-micturition dribble					
Post-micturition dribble – bother	1.87 (1.23–2.84)				
<b>Demographics/characteristics</b>					
Age		1.02 (1.01–1.03)	1.07 (1.05–1.09)	0.96 (0.93–0.99)	
Educational status					
Work situation – unemployed					0.08 (0.01–0.60)
Marital status					
Nutritional status – overweight					
Nutritional status – obese					
Smoking – ex smoker					0.29 (0.11–0.81)
Physical activity – moderate					
Physical activity – high					
Depression/anxiety	1.37 (1.04–1.79)				
Diabetes					
Hypertension					
Cardiac diseases	1.55 (1.08–2.24)				3.32 (1.13–9.76)
Constipation					
Dyslipidemia					

Abbreviations: SUI, stress urinary incontinence; UUI, urgency urinary incontinence.

Red cells indicate an increase and blue cells indicate a decrease. Numbers show adjusted odd ratios (95% confidence interval).

were performed using SPSS v20 for Microsoft Windows and took into account the sample plan.

### 3 | RESULTS

Using definition 1 for the presence of LUTS, 24.8% ( $n = 390$ ) of respondents sought treatment (Table 2), and 18.6% of these ( $n = 292$ ) actually received treatment. Of those who received treatment, 25.9% ( $n = 76$ ) reported dissatisfaction with treatment and 8.3% ( $n = 26$ ) reported treatment discontinuation. Using definition 2 for LUTS, 30.6% ( $n = 267$ ) of respondents sought treatment; 22.3% ( $n = 195$ ) of whom received treatment. Of these, 30.5% ( $n = 59$ ) reported dissatisfaction with treatment and 9.8% ( $n = 21$ ) reported treatment discontinuation. The significant results of the logistic regression models in men and women are summarized in heat maps, including adjusted odds ratios and 95% confidence interval (CI) (Tables 3 and 4 and Tables S2 and S3), and are presented in detail below.

#### 3.1 | QoL due to LUTS

In men, slow stream with or without bother, and bother associated with splitting, urgency, incomplete emptying, and post-micturition dribble were associated with more chance of classifying QoL due to LUTS as “terrible” than those without these symptoms (Figure S1). Depression/anxiety were also associated with a higher chance, while moderate or high physical activity were associated with a lower chance.

In women, slow stream, and bother associated with the terminal dribble, with perceived frequency, with urgency with fear of leaking, with UUI, SUI, nocturia, and with post-micturition dribble were associated with more chance of classifying QoL due to LUTS as “terrible” than those without these symptoms. Depression/anxiety and cardiac diseases were also associated with a higher chance of reporting a terrible QoL (Figure S1).

#### 3.2 | Treatment seeking

Men bothered by slow stream, perceived frequency, and incomplete emptying had more chance of seeking treatment than those without these symptoms (Figure S2). Men reporting high physical activity had more chance of seeking treatment than sedentary men. There was an increase of 6% in the chance of seeking treatment for LUTS with each increased year of age. Women with bother associated with the slow stream, splitting, intermittency, perceived frequency, and urgency had more chance of seeking treatment than those without symptoms (Figure S2). For each

additional year of age, there was a 2% increase in seeking treatment for LUTS.

#### 3.3 | Treatment

Men with straining, those bothered by incomplete emptying, and those reporting depression/anxiety had more chance of receiving treatment than those without symptoms (Figure S3). A 7% increased chance of receiving treatment occurred with each additional year of age. Women with intermittency, with bothersome splitting, and with urgency with fear of leaking had more chance of receiving treatment than those without symptoms (Figure S3). A 2% increase in the chance of receiving treatment occurred with each additional year of age.

#### 3.4 | Treatment dissatisfaction

Men bothered by perceived frequency and by UUI, and women bothered by perceived frequency, by UUI, and by incomplete emptying had an increased chance of dissatisfaction with treatment for LUTS vs those not reporting these symptoms (Figure S4). In women only, there was a 4% reduction in the chance of dissatisfaction with treatment for each additional year of age.

#### 3.5 | Treatment discontinuation

Men with hesitancy and with bothersome post-micturition dribble had a lower chance of discontinuing treatment than those without these symptoms (Figure S5). Men with incomplete emptying (with or without bother) had a higher chance of discontinuing treatment, as did overweight and obese men vs those with normal body mass index. Men undergoing moderate-to-high physical activity had less chance of discontinuing treatment compared with sedentary men.

Women reporting bother associated with nocturnal enuresis and with the leak for no reason, and those reporting cardiac diseases had more chance of discontinuing treatment vs women without these conditions (Figure S5). Women who were unemployed and who had stopped smoking had less chance of treatment discontinuation.

## 4 | DISCUSSION

Percentages of individuals with LUTS seeking treatment were low, in accordance with previous studies, in which 14% to 33% of individuals sought treatment.<sup>3,8,12-14</sup> Even though LUTS were frequently reported as bothersome



and with significant impact on QoL in the Brazil LUTS study,<sup>4</sup> treatment seeking may be impacted by other factors, such as patients' embarrassment about LUTS, and a wrong perception about LUTS being a "natural" consequence of the aging process and not amenable to treatment.<sup>7,15,16</sup> Among Brazilian men, the prominent symptoms associated with worse QoL were splitting, slow stream, urgency, feeling of incomplete emptying, and post-micturition dribble. For women, storage symptoms (perceived frequency and nocturia) and those related to UI (urgency with fear of leaking, UUI, SUI, and post-micturition dribble) were associated with worse QoL, as were slow stream and terminal dribble.

For men, bother related to symptoms of distinct categories, including voiding (slow stream), storage (perceived frequency), and post-micturition (incomplete emptying), was associated with a higher chance of treatment seeking. This emphasizes the importance of a broader evaluation of men with LUTS, to assess LUTS subtypes and associated bother. This is an important aspect, which enables individualized treatment. Although LUTS in women are often associated with storage symptoms, symptom-specific bother associated with a higher chance of seeking treatment included voiding (slow stream, splitting, intermittency) as well as storage symptoms (perceived frequency, urgency).

Not all patients seeking medical advice for LUTS actually receive treatment; additionally, most guidelines do not recommend treatment for mild and nonbothersome LUTS.<sup>17,18</sup> For men, straining and feeling of incomplete emptying were associated with a higher chance of receiving treatment. Since these symptoms are commonly associated with benign prostatic obstruction by physicians, it is possible that they are more comfortable prescribing treatment for symptoms commonly associated with men. As bother with perceived frequency was associated with treatment seeking, this may represent an unmet need. A higher chance of treatment for women was associated with intermittency and bother with splitting, and with urgency with fear of leaking. Therefore, it appears that both storage and voiding are considered in the treatment decision for women.

Bother with perceived frequency and with UUI were associated with a higher chance of dissatisfaction among treated men. It is possible that this is due to ineffective/inadequate treatment, or storage LUTS not being recognized in men. An  $\alpha$ 1-blocker with or without 5ARI is usually first-line therapy for moderate-to-severe LUTS in men<sup>18</sup>; however, symptom control may be unsatisfactory, especially if there are concomitant OAB symptoms. Antimuscarinics or  $\beta$ 3-adrenoreceptor agonists are first-line pharmacologic therapy for storage symptoms associated with OAB,<sup>19</sup> but there may be reluctance to use antimuscarinics due to misguided

perceptions that they are associated with urinary retention.<sup>20</sup> According to EAU guidelines, combination of an  $\alpha$ 1-blocker with an antimuscarinic is recommended in patients with moderate-to-severe LUTS without risk factors for benign prostatic enlargement (BPE) progression (eg, prostate volume < 40 cm<sup>3</sup>) if relief of storage symptoms is insufficient with  $\alpha$ 1-blocker monotherapy.<sup>21</sup>

In women, bother with perceived frequency, with UUI, and with a feeling of incomplete emptying were associated with a higher chance of treatment dissatisfaction. As storage symptoms are more readily associated with women by physicians, one explanation may be that symptoms are not adequately controlled. In this situation, and/or if unacceptable adverse events occur, AUA guidelines recommend dose modification or a trial with another antimuscarinic, or a  $\beta$ 3-adrenoreceptor agonist such as mirabegron.<sup>19</sup> Recent studies have shown increased persistence rates with mirabegron vs antimuscarinics in the UK, Canada, and Japan, suggesting an improved efficacy/tolerability balance for mirabegron vs antimuscarinics.<sup>22-24</sup>

It is recognized that treatment for LUTS has a high rate of discontinuation.<sup>22,25,26</sup> Among men, feeling of incomplete emptying (with or without bother) was associated with a higher chance of treatment discontinuation, while hesitancy and bother with post-micturition dribble were associated with a lower chance. Among women, bother with the leak for no reason and with nocturnal enuresis were associated with a higher chance of discontinuation. These symptoms associated with a higher chance of treatment discontinuation are generally complex and with no specific targeted treatment, which may explain this observation.

Increasing age appeared to have more impact on treatment seeking and receiving treatment in men than in women (6%-7% increase with each increased year of age for men; 2% increase for women); this was also the case for previous studies.<sup>8,13</sup> These results may translate into different behavior between men and women regarding overall healthcare seeking, in which women usually start an earlier routine of frequent healthcare visits. Regarding treatment dissatisfaction, there was a 4% reduction in the chance of dissatisfaction with treatment in women for each additional year of age, but not in men.

Other demographics and reported comorbidities were associated with the studied outcomes and highlight the importance of a comprehensive evaluation of patients with LUTS, with possible implications for treatment outcomes. Reported depression/anxiety was associated with a higher chance of worse QoL due to LUTS for both sexes and with a higher chance of treatment seeking and treatment among men. This is supported by data from EPIC and EpiLUTS.<sup>1,27</sup> Moderate or high-level physical activity was associated with a lower chance of worse QoL and treatment discontinuation and higher chance of treatment seeking among men.

Strengths of this study are the large sample size and inclusion of different geographical areas. Prior LUTS studies were performed in single cities in Brazil.<sup>4</sup> There were balanced numbers of men and women, and the use of well-established diagnostic tools. Limitations included the fact that LUTS, comorbidities, and treatment were self-reported, that no details about treatment were explored, and that drug-related AEs were not assessed.

Even though there were differences in men and women regarding significant LUTS, some findings were consistent. In addition, symptoms of all three categories were associated with all domains of the analyses (for QoL and treatment-related outcomes) for both men and women. Therefore, from the perspective of individuals' needs and possible influences on treatment choices, a broad, comprehensive assessment of patients with LUTS is fundamental for a personalized management approach. Around 75% of patients in the current study were satisfied with treatment; suggesting a need for education of the general population regarding potential benefits of treatment, and a recommendation for physicians to proactively ask patients about their LUTS.

## 5 | CONCLUSIONS


Despite the high prevalence of LUTS, rates of treatment seeking and treatment of LUTS were low. The occurrence of some symptoms and, in particular, the resultant bother were significantly related to worse QoL and to treatment-related outcomes, such as treatment seeking, actual treatment, treatment dissatisfaction, and treatment discontinuation. Symptoms of all three categories were associated with all these domains for both sexes. The findings indicate the importance of a comprehensive assessment of all types of symptoms, including especially the resulting bother, for a more appropriate and personalized management of men and women with LUTS.

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## SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

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