

Clinical epidemiology of young men with lower urinary tract symptoms: The SciCOM 3 project

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ABSTRACT

Introduction: A study was performed to determine the most common and most bothersome symptoms and clinical associations in young men (18–40 years) presenting with lower urinary tract symptoms (LUTS).

Methods: Cross-sectional study was conducted across 16 centers. Urinary symptoms, impact of bladder problems, bowel symptoms, erectile dysfunction, premature ejaculation, bladder pain, non-bladder myofascial pain, and general well-being were assessed by validated questionnaires.

Results: A total of 448 men (median age 30 years) were included. Nocturia ≥ 1 (89.1%) and feeling of incomplete bladder evacuation (76.6%) were the most common symptoms while the most bothersome symptoms were daytime frequency and nocturia (median score 5; interquartile range 2–8, for both) on the International Consultation on Incontinence Questionnaire for Male LUTS questionnaire. Bladder symptoms were associated with severe or many severe problems (response 5 or 6, on the Patient Perception of Bladder Conditions Questionnaire) in 17.8% of the patients. Men between 18 and 20 years reported greater bother with their bladder condition. Normal erections and “very good” control over ejaculation were reported by 49.8% and 15.6%, respectively. Constipation and loose stools were reported by 22.8% and 12.9%, while bladder pain and non-bladder myofascial pain were reported by 72.5%, and 48.2%, respectively. 17.0% of the patients reported low scores on the WHO-5 Well-Being Scale. Two distinct patient clusters were identified. A larger cluster (63.9%) that presented with voiding symptoms and urgency but fewer sexual or pain symptoms, and a smaller cluster that showed pronounced sexual symptoms, pain, daytime frequency, and nocturia.

Conclusions: The most common urinary symptoms in young men are nocturia and a sense of incomplete evacuation. Daytime frequency and nocturia are the most bothersome symptoms. It is important to assess associated symptoms in young men presenting with LUTS.

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INTRODUCTION

Lower urinary tract symptoms (LUTS) affect up to half of all the young men in general population.^[1] However, there is a surprising lack of literature on young men presenting to the urology outpatient with LUTS. A recent review on LUTS in young men failed to cite even a single paper specifically addressing this clinical cohort.^[2] Potentially important overlapping morbidities remain unstudied as well. Specifically, the association between sexual symptoms, bowel symptoms, pain (bladder or elsewhere), and LUTS in young men remains undetermined. It is also unclear what impact such symptoms have on the well-being and quality of life of these men. This multicentric study was conducted to address the paucity of evidence regarding young men (18–40 years) presenting with LUTS.

MATERIALS AND METHODS

The SciCOM 3 project was planned as a cross-sectional national study across 16 centers involving a mandatory set of evaluations to be completed at the first visit for entry into the study. Institutional Ethics Committee approval was obtained vide number AHH-C-S-013 / 04-23.

The primary objective was identification of the most common and bothersome symptoms in men between the ages of 18 and 40 years presenting to the urology outpatient department with LUTS.

The validated International Consultation on Incontinence Male LUTS Questionnaire (ICIQ-mLUTS) was used for documenting the urinary symptoms.^[3] An English version was used with provision for assistance as required. The ICIQ-mLUTS has questions for about 13 symptoms (identified by a number and the suffix “A,” such as 2A). All the questions can have potential scores between 0 and 4 depending on how often the patient experiences that symptom (except Q13A which has scores between 1 and 5). Each symptom also has a bother question (identified by the suffix “B” or bother score, e.g., 2B).

- The most common symptom was defined as the symptom which had the highest percentage of responses between 1 and 4 in Part A of each of the question. Response 0 implied that the symptom was absent.
- The most bothersome symptom was defined as the symptom which had the highest median score on the associated bother question (“B” part of each question).
- The highest percentage of “severe bother” was identified as the symptom which had the highest percentage of responses between scores 8 and 10 on the bother score (“B” part of each question)
- Q2-Q6 and Q7-Q14 on the ICIQ-mLUTS were regarded as representing voiding symptoms and storage symptoms, respectively.

Secondary objectives included evaluation of related symptoms, quality of life, noninvasive urological investigations, as well as co-morbid conditions as follows:

1. Patient Perception of Bladder Condition questionnaire (PPBC):^[4] assessed the severity of problems perceived to be related to the bladder
2. Bristol Stool Chart: ^[5] A visual scoring chart of stool consistency. Scores were re-classified as constipated (type I or 2), normal (type 3 or 4) or loose stool consistency (type 5–7)
3. Erectile dysfunction was assessed by the Massachusetts Male Aging Study Single-question Self-report of Erectile Dysfunction^[6]
4. Premature ejaculation was assessed by Questions 1 and 4 of the Premature Ejaculation Profile Questionnaire^[7]
5. Bladder pain was assessed by Question 4 of the Interstitial Cystitis Symptom Index and Interstitial Cystitis Problem Index^[8]
6. Non-bladder myofascial pain was assessed by 10-point Visual Analog Scale (VAS) score. No attempt was made to differentiate the precise location of nonbladder pain given the difficulties in standardizing this. This was an unvalidated measure. Scores were classified as no significant pain (VAS 0-1), mild pain (VAS 2-4), moderate pain (VAS 5-7), and severe pain (VAS 8-10)
7. Well-being was captured by Question 1 of the WHO-5 Well-Being Scale^[9]
8. Non-invasive urological tests included postvoid residual (PVR) and void% by ultrasound, maximum flow rate (MFR) by uroflowmetry, and presence of any hydroureteronephrosis by ultrasound. A history of urinary tract infection (UTI) was based on evaluation of the records and judgment of the urologist. A positive urine culture in isolation was not enough to make a diagnosis
9. Association was made between MFR and PVR with response to each question (Part A) of the ICIQ-mLUTS
10. Other collected details included age, duration of symptoms in months, comorbidities (diabetes, hypertension), and body mass index (BMI)
11. Association of age was also made with clinical presentation. Age was subgrouped as 18–20 years, 20–30 years, and 30–40 years
12. The data was classified based on ICIQ mLUTS, sexual function, and pain (bladder and non-bladder myofascial pain) to identify any relevant patient clusters.

For all the questionnaires, a digital tablet was used with mandatory responses to each question before proceeding to the next. This was used to ensure complete data collection. Data were electronically transmitted to a secure central server once the entry was completed.

Inclusion criteria

All men between the ages of 18 and 40 years presenting to the urology outpatient department with LUTS were offered

inclusion. All patients signed an informed consent before entering the study.

Exclusion criteria

(1) Subjects needed to be treatment naïve or off treatment for at least 4 weeks to enter the study. (2) Subjects who were noted to have a stricture, neurogenic lower urinary tract dysfunction, or had a prior history of lower urinary tract instrumentation or other specific urological diagnoses were excluded. (3) Subjects with a response rate of <90% across all the questions sampled were excluded (with the exception of question 4 of the Premature Ejaculation Profile which was contingent of having a sexual partner). (4) Patients on a catheter or on intermittent catheterization were excluded from the study.

Sample size estimation

The sample size was estimated at 384 based on a population proportion of 50%,^[1] 95% confidence level, and $\pm 5\%$ margin of error. Assuming a 10% unusable or incomplete data, the target recruitment was 422 subjects with competitive enrolment.

Statistical analysis

Descriptive statistics were reported as median and interquartile range (IQR). This was based on the Shapiro–Wilk testing that showed nonnormal distribution of the data. For categorical data, proportion and percentage were reported. Association of each question of the ICIQ-mLUTS questionnaire with MFR and PVR urine was tested by the Moods Median test. The test was applied for examining the difference in median values for each group ($P < 0.05$, two-sided). Bonferroni correction was applied to intergroup testing. An exploratory cluster analysis was performed using the TwoStep Cluster Analysis with log-likelihood distance measure, and automatic clustering by Akaike's Information Criterion. The model yielding the most distinctive cluster sets was identified.

All analysis was done with available data ignoring any missing data points in the calculations. Missing data were

expected to be minimal in view of the digital tablet-based recording system that was employed. Analysis was performed by IBM SPSS Version 25.0.0 (IBM Corp, United States, 2017). The authors confirm the availability of, and access to, all original data reported in this study.

RESULTS

A total of 448 consecutive men (median age 30 years, IQR 25–35 years) presenting between July 1, 2023, and December 31, 2023, across 16 centers were evaluated [Table 1].

Nocturia (≥ 1) was the most prevalent symptom (89.1%), followed by a feeling of incomplete bladder evacuation (76.6%) [Table 2]. The most bothersome symptoms were daytime frequency and nocturia each with a median bother score of 5 (IQR 2–8). Severe bother (scores 8–10) was highest for nocturia (26.3%) followed closely by that of daytime frequency (25.4%) [Table 3].

Almost all the patients marked at least one voiding and one storage symptom as at least “occasional.” Only 2.7% and 1.6% of the patients reported no voiding and no storage symptoms, respectively. The association of each question in the ICIQ-mLUTS with MFR and PVR is shown in Table 4. Urgency, daytime frequency, nighttime frequency, and each of the voiding subdomain questions were associated with MFR.

Perception of problems related to LUTS (PPBC) and general well-being (WHO-5 Scale) are reported in Table 5. While most patients reported minor problems with their bladder, “severe” or “many severe” problems were reported by 17.8%. 17.0% of the patients reported feeling good “less than half of the time” or worse on WHO-5 Well-Being Scale Question 1.

Sexual symptoms were common. Some degree of erectile dysfunction or abnormal control over ejaculation was reported by 51.2% and 70.7%, respectively [Table 6]. Constipation, loose stools, bladder pain, and nonbladder

Table 1: Clinical characteristics of young men between the ages of 18–40 years presenting to the urology outpatient with lower urinary tract symptoms

Characteristics (n)	Median	Q1–Q3	Range (minimum–maximum)
Age (years) (448)	30	25–35	18–40
BMI (445)	23.6	21.2–26.1	14.0–36.5
Duration of symptoms, months (448)	7	3–18	1–240
PVR (mL) (432)	35	25–50	0–600
Void (%) (428)	68	61–90	0–100
MFR (mL/s) (437)	15	10–17	1–48
Serum creatinine (mg/dL) (428)	0.9	0.8–1.1	0.4–6.7
Characteristics (n)	Present, n (%)	Absent, n (%)	
Hypertension (448)	16 (3.6)	432 (96.4)	
Diabetes (448)	12 (2.7)	436 (97.3)	
History of UTI (448)	75 (16.7)	373 (83.3)	
Hydronephrosis (442)	26 (5.9)	416 (94.1%)	

BMI=Body mass index, UTI=Urinary tract infection, PVR=Postvoid residual, MFR=Maximum flow rate

Table 2: Prevalence of individual urinary symptoms in young men between the ages of 18–40 years presenting to the urology outpatient with lower urinary tract symptoms on the International Consultation on Incontinence Male Lower Urinary Tract Symptoms Questionnaire

ICIQ question	Percentage ever felt	Percentage all the time	Median score (Q1–Q3)
2A. Is there a delay before you can start to urinate?	74.8	7.1	1 (0–2)
3A. Do you have to strain to continue urinating?	71.4	8.5	1 (0–2)
4A. Reduced strength of your urinary stream	68.1	8.9	1 (0–2)
5A. Do you stop and start more than once while you urinate?	65.0	6.7	1 (0–2)
6A. Feel that bladder has not emptied properly after urination	76.6	9.8	1 (1–3)
7A. Do you have a sudden need to rush to the toilet to urinate?	60.7	4.9	1 (0–2)
8A. Does urine leak before you can get to the toilet?	39.0	1.1	0 (0–1)
9A. Does urine leak when you cough or sneeze?	18.5	0.2	0 (0–0)
10A. Leak for no obvious reason	23.2	0.2	0 (0–0)
11A. Do you leak urine when you are asleep?	24.3	0.9	0 (0–0)
12A. Slight wetting of pants after you finish urinating	44.4	2.7	0 (0–1)
13A. How often do you pass urine during the day (used cutoff >8) ^a	60.0	NA	3 (2–4)
14A. How many times do you get up to urinate at night (cutoff ≥ 1) ^b	89.1	NA	2 (1–3)
14A. How many times do you get up to urinate at night (cutoff ≥ 2) ^b	66.8	NA	

^aThe five possible responses to this question are 1 (1–6 times), 2 (7–8 times), 3 (9–10 times), 4 (11–12 times), and 5 (≥ 13 times), ^bThere are five possible responses to this question ranging from 0 times through ≥ 4 times. All questions have five possible responses ranging from 0 to 4. Last column shows the median score (IQR, Q1 and Q3 in brackets) for each question. IQR=Interquartile range, ICIQ=International Consultation on Incontinence Questionnaire

Table 3: Bother of individual urinary symptoms in young men between the ages of 18–40 years presenting to the urology outpatient with lower urinary tract symptoms on the International Consultation on Incontinence Male Lower Urinary Tract Symptoms Questionnaire

ICIQ question	Median score (Q1–Q3)	Severe bother (%)	Moderate or severe bother (%)
2B. Is there a delay before you can start to urinate?	2 (1–4)	9.8	23.4
3B. Do you have to strain to continue urinating?	2 (1–5)	11.6	28.3
4B. Reduced strength of your urinary stream	2 (0–5)	12.1	27.9
5B. Do you stop and start more than once while you urinate?	2 (0–5)	10.9	26.7
6B. Feel that bladder has not emptied properly after urination	3 (1–6)	16.7	32.5
7B. Do you have a sudden need to rush to the toilet to urinate?	2 (0–4)	10.0	23.4
8B. Does urine leak before you can get to the toilet?	0 (0–2)	2.9	7.4
9B. Does urine leak when you cough or sneeze?	0 (0–0)	0.4	4.0
10B. Leak for no obvious reason	0 (0–1)	2.0	4.9
11B. Do you leak urine when you are asleep?	0 (0–1)	2.0	4.9
12B. Slight wetting of pants after you finish urinating	0 (0–2)	2.0	10.0
13B. Daytime frequency	5 (2–8)	25.4	54.4
14B. Nocturia	5 (2–8)	26.3	53.5

Median score represents the score on the original 10-point bother scale for each question of the ICIQ-mLUTS (Part B of each question). Q1 and Q3 represent the respective quartiles. Bother was further classified as no bother (score 0–1), mild bother (2–4), moderate bother (5–7), and severe bother (8–10). ICIQ-mLUTS=International Consultation on Incontinence Male Lower Urinary Tract Symptoms Questionnaire

myofascial pain were reported by 23.4%, 13.2%, 72.5%, and 48.2%, respectively [Table 7].

Missing data were 0.3% for ICIQ-mLUTS and 1.0% for all the other questionnaires excluding Q4 of the Premature Ejaculation Profile which was contingent on having a partner and was answered by 348 (77.7%) of the subjects.

When analyzed by age group, distinct differences were noted. Men between 18 and 20 years ($n = 30$, 6.7%) were more likely to report a poor stream ($P = 0.001$); more likely to report leakage without any reason ($P = 0.004$), and reported greater bother with their bladder condition on the PPBC ($P = 0.019$) questionnaire. However, there was no difference in sexual function, bowel function, pain (both bladder and myofascial), WHO Q1 Quality of life, BMI, duration of symptoms, MFR, or PVR urine.

Exploratory TwoStep Cluster Analysis yielded two distinctive clusters (average silhouette 0.3, “fair”), a larger Cluster 1 (271 subjects, 63.9%), and a smaller Cluster 2 (153 subjects, 36.1%). Cluster one patients (most common reported response in brackets) were less likely to report erectile dysfunction (normal erections, 71.2% vs. minimally impotent, 85.0%), had better control over ejaculation (good control, 45.4% vs. fair control, 81.0%), less nocturia (1 per night, 31.4% vs. 3 per night, 64.7%), less daytime frequency (1–6 times, 35.1% vs. 11–12 times, 46.4%), more likely to report slow urine stream (sometimes reduced, 28.4% vs. normal, 51.0%), more likely to strain to void (sometimes, 30.3% vs. no need, 49.7%), more likely to report urgency (occasionally, 32.5% vs. none, 54.9%), less likely to report bladder pain (a few times, 44.6% vs. a few times, 61.4%) as well as myofascial pain (no pain, 32.1% vs. mild, 46.4%). The final clustering analysis used mLUTS ICIQ, bladder pain, myofascial pain, erectile dysfunction, and premature ejaculation to yield the most distinctive clustering.

Table 4: Association of male lower urinary tract symptom International Consultation on Incontinence Questionnaire with maximum flow rate and postvoid residual urine

ICIQ mLUTS	MFR (mL/s), median (Q1-Q3)				P ^a	PVR (mL), median (Q1-Q3)				P ^b		
	0	1	2	3		4	0	1	2		3	4
2A	15.5 (13.0-18.0)	16.0 (14.4-17.0)	12.0 (9.0-16.0)	9.3 (8.0-14.8)	8.0 (6.0-12.0)	<0.001	40 (20-49)	35 (30-45)	30 (10-53)	43 (25-75)	30 (11-108)	0.03
3A	16.0 (15.0-17.0)	16.0 (15.0-17.0)	10.0 (8.0-15.5)	9.0 (8.0-14.0)	10.9 (6.0-13.3)	<0.001	40 (30-45)	35 (30-45)	30 (13-52)	40 (15-66)	40 (6-104)	0.43
4A	16.0 (15.0-17.0)	16.0 (15.0-17.0)	14.0 (9.0-17.0)	8.4 (7.0-10.0)	11.0 (6.0-13.0)	<0.001	35 (25-45)	38 (30-45)	30 (11-57)	40 (15-70)	35 (14-84)	0.23
5A	15.0 (16.0-17.0)	15.0 (11.0-16.0)	12.0 (8.1-17.7)	10.5 (8.6-16.6)	10.4 (6.0-12.0)	<0.001	35 (30-45)	35 (25-45)	36 (15-50)	33 (16-78)	35 (9.5-103)	0.52
6A	16.0 (15.0-17.0)	15.0 (14.0-17.0)	15.0 (9.0-18.0)	9.5 (7.7-14.2)	11.5 (6.3-13.9)	<0.001	35 (30-44)	35 (26-45)	40 (20-54)	35 (15-70)	60 (10-98)	0.02
7A	16.0 (13.7-17.0)	15.0 (10.0-17.0)	12.6 (9.0-17.0)	14.0 (9.6-17.0)	12.0 (6.0-19.0)	0.02	35 (30-50)	35 (20-45)	40 (20-50)	29 (15-40)	40 (15-110)	0.17
8A	15.0 (10.0-17.0)	16.0 (15.0-17.0)	15.0 (9.0-16.0)	15.0 (12.0-18.0)	14.0 (4.0--)	0.18	35 (20-53)	35 (30-45)	38 (30-45)	35 (30-101)	40 (11--)	0.82
9A	15.0 (10.0-17.0)	16.0 (15.0-16.4)	16.5 (13.5-17.0)	-	-	0.03	35 (20-50)	35 (30-40)	40 (35-63)	-	-	0.66
10A	15.0 (9.7-17.0)	15.0 (15.0-17.0)	15.0 (15.0-16.0)	-	5.0 (4.0--)	0.35	35 (20-50)	40 (30-45)	35 (35-45)	-	170 (140--)	0.40
11A	15.0 (10.0-17.0)	16.0 (12.0-16.8)	15.0 (15.0-16.0)	17.0 (7.8-22.5)	6.0 (4.0--)	0.045	35 (20-50)	40 (35-45)	35 (30-45)	30 (8-458)	140 (5--)	0.23
12A	15.5 (10.0-17.0)	15.0 (10.0-16.0)	15.0 (10.3-17.0)	18.0 (13.0-27.0)	10.0 (2.7--)	0.13	35 (20-50)	40 (30-50)	36 (25-45)	25 (3-30)	10 (5--)	0.40
13A*	14.8 (10.3-21.0)	11.0 (8.9-17.0)	15.0 (12.1-16.3)	15.0 (14.8-16.5)	12.0 (8.2-16.3)	0.057	30 (15-56)	35 (20-50)	35 (30-45)	35 (25-45)	35 (18-57)	0.995
14A	15.5 (13.0-18.0)	16.0 (14.4-17.0)	12.0 (9.0-16.0)	9.3 (8.0-14.8)	8.0 (6.0-12.0)	0.26	26 (10-53)	40 (20-68)	35 (19-50)	35 (30-45)	40 (25-55)	0.43

*Possible response for Question 13A is between 1 and 5. All other questions have possible responses between 0 and 4. #P-value for Mood's independent samples test for medians. Intergroup comparisons of the median (Bonferroni correction) - MFR: 2A: 3 and 4 differ from 0 and 1; 2 differs from 1. 3A: 2, 3, and 4 differ from 0 and 1; 4A: 2, 3 and 4 differ from 0 and 1; 3 differs from 2. 5A: 1-4 all differ from 0; 4 differs from 1. 6A: 2-4 differ from 0; 3-4 differ from 1; 3 differs from 2. 7A: 2 differs from 0. MFR=Maximum flow rate, PVR=Postvoid residual urine, ICIQ-mLUTS=International Consultation on Incontinence Male Lower Urinary Tract Symptoms Questionnaire

DISCUSSION

This study marks the first comprehensive attempt to document the clinical epidemiology of LUTS in young men (18–40 years). The most common symptoms (marked as “ever felt”) were nocturia ≥ 1 (89.1%), a feeling that the bladder had not emptied properly after urination (76.6%), and a delay in initiating micturition (74.8%). The most bothersome symptoms were daytime frequency and nocturia, both having a median bother score of 5 (IQR 2–8). About one-fourth of young men found these symptoms severely bothersome and about one-half found them at least moderately bothersome.

Nocturia is well-recognized as a common and bothersome symptom in the elderly. The high prevalence of nocturia in this younger cohort might be considered unexpected. However, the EPIC Study has earlier noted nocturia to be the most prevalent symptom in young men with a population prevalence of 34.5% (nocturia ≥ 1) and 12.9% (nocturia ≥ 2).^[1] A sense of incomplete evacuation was noted in three-fourths of men in our study and was a source of moderate to severe bother in one-third. The population prevalence of voiding symptoms in this age group has been noted to be 19.9% with a sense of incomplete evacuation noted by 9.6%.^[1]

Urinary frequency was the most bothersome symptom in our patient. A study reporting on 87 young adult men attending the video-urodynamics clinic found daytime frequency to be the commonest symptom but did not report the degree of bother.^[10] 30.9% of our subjects reported at least some degree of urgency incontinence. The population prevalence of urinary incontinence in young men has been reported to be 1.5% (0.4% urgency urinary incontinence); hence, the investigators did not expect such a high prevalence of urgency incontinence. However, the National Health and Nutrition Examination Survey also showed a 19.5% prevalence of urinary incontinence (across all men).^[11] It is important to point out that prevalence in our study is based on the response of “ever getting the symptom.” However, bother scores were high in these men suggesting that it is unlikely that our study is overestimating the problem. It would appear important to question young men presenting with LUTS about nocturia and urinary incontinence.

The prevalence of postmicturition dribble was 44.4% with 2.7% reporting it “all the time.” Only 2% found the symptom severely bothersome with 10% reporting moderate to severe bother. The symptom was not as bothersome as has been reported in other studies. Pöyhönen *et al.* reported the symptom in 58.7% of men with the highest weighted score for bother. However, the age group in that study was somewhat older.^[12]

Table 5: Quality of life evaluation in young men between the ages of 18–40 years presenting to the urology outpatient with lower urinary tract symptoms

PPBC (n=448)	Frequency (%)	WHO well-being Q1 ^a (n=447)	Frequency (%)
No problem	31 (6.9)	Good at no time	7 (1.6)
Very minor problems	98 (21.9)	Good some of the time	22 (4.9)
Minor problems	140 (31.3)	Good less than half the time	47 (10.5)
Moderate problems	99 (22.1)	Good more than half the time	89 (19.9)
Severe problems	27 (6.0)	Good most of the time	226 (50.6)
Many severe problems	53 (11.8)	Good all the time	56 (12.5)

^aI have felt cheerful and in good spirits. PPBC and WHO-5 Well-Being score (question 1). PPBC=Patient Perception of Bladder Condition

Table 6: Sexual health in young men between the ages of 18–40 years presenting to the urology outpatient with lower urinary tract symptoms

Erectile dysfunction ^a (n=448)	Frequency (%)	Premature ejaculation Q1 ^b (n=436)	Frequency (%)	Premature ejaculation Q4 ^c (n=348)	Frequency (%)
Not impotent ever	223 (49.8)	Very poor	13 (3.0)	Not at all	102 (29.3)
Minimally impotent	186 (41.5)	Poor	40 (9.2)	A little bit	112 (32.2)
Moderately impotent	34 (7.6)	Fair	172 (39.4)	Moderately	104 (29.9)
Completely impotent	5 (1.1)	Good	31.9 (32.8)	Quite a lot	24 (1.7)
		Very good	68 (15.6)	Extremely	6 (1.7)

^aMMAS single-question self-report of erectile dysfunction, ^bOver the past month, (how) was your control over ejaculation during sexual intercourse or masturbation, ^cOver the past month, to what extent did how fast you ejaculated during sexual intercourse cause difficulty in your relationship with your partner. Erectile dysfunction by MMAS, premature ejaculation by PEP (Q1–Q4). MMAS=Massachusetts male aging study, PEP=Premature ejaculation profile

Table 7: Pain in young men between the ages of 18–40 years presenting to the urology outpatient with lower urinary tract symptoms

Experienced pain bladder Q4 ICSI ^a (n=438)	Frequency (%)	Problem due to bladder pain Q4 ICPI ^b (n=436)	Frequency (%)	Nonbladder myofascial pain (n=447)	Frequency (%)
Not at all	123 (28.1)	Not at all	115 (26.4)	No significant pain	232 (51.9)
A few times	222 (49.6)	A few times	148 (33.9)	Mild pain	144 (32.2)
Fairly often	51 (11.6)	Fairly often	90 (20.6)	Moderate pain	56 (12.5)
Usually	29 (6.6)	Usually	56 (12.8)	Severe pain	15 (3.4)
Almost always	13 (3.0)	Almost always	27 (6.2)		

^aQ4 ICSI=During the past month have you experienced pain or burning in your bladder, ^bQ4 ICPI=During the past month burning, pain, discomfort, or pressure in your bladder. Bladder pain was evaluated by the ICSI and ICPI scores. Non-bladder pain was evaluated by VAS (Scale 0–10 classified as scores were classified as no significant pain (VAS 0–1), mild pain (VAS 2–4), moderate pain (VAS 5–7), and severe pain (VAS 8–10). VAS=Visual Analogue Scale, ICSI=Interstitial cystitis symptom index, ICPI=Interstitial cystitis problem index

As one might expect, there was a significant association of (slow) flow with voiding symptoms. However, interestingly, patients with urgency and enuresis also showed an association with slow flow [Table 4]. Bladder outlet obstruction is associated with detrusor overactivity and this might reflect the higher prevalence of storage symptoms noted earlier in men with obstruction.^[13]

The youngest men in the cohort, those between the ages of 18 and 20 years showed significant differences in their presentation. They were more likely to report a poor stream. However, this was not matched by differences in the MFR, PVR urine, or void%. The relationship between voiding symptoms and flow rate is complex and men can show an improvement in symptoms without a concomitant improvement in flow.^[14] These results might also reflect differing expectations in this youngest group.

Young men presenting with LUTS showed two clinically distinct clusters. A larger cluster (63.9%) with dominant

voiding symptoms and urgency but lower sexual or pain symptoms; and a smaller cluster with pronounced sexual symptoms, pain, daytime frequency, and nocturia. No prior studies have examined presentation clusters in young men presenting with LUTS. Bladder pain was common, affecting over two-thirds of men while nonbladder myofascial pain was reported by almost half the men in our study. Bladder pain is often under-represented in young men but this might be due to the classification of such pain as “prostatitis.”^[15] An association has been noted between pelvic pain, overactive pelvic floor, and LUTS in men.^[16] Conversely, LUTS has been noted in men presenting primarily with myofascial pain.^[17] Pelvic pain has also shown an association with urinary frequency as well as sexual dysfunction in men, and this might explain the clustering observed in our patients.^[18,19] However, contrary to our findings, a study of men with chronic pelvic pain showed a propensity for voiding symptoms.^[20]

We did not attempt to differentiate pelvic pain and nonpelvic pain. This was owing to the difficulties in accurately

capturing the precise location of nonbladder pain in a self-reported question. There is scant data on myofascial pain in young men presenting with LUTS and pain does not currently figure in the guidelines algorithm for the evaluation of LUTS in young men.^[21]

Patients had symptoms for several months before their urological consultation. Delay in presentation with LUTS is not uncommon and has been attributed to a lack of health-seeking behavior as well as delay at the level of primary physicians.^[22] While this study did not examine the reasons for the delay, a longer duration of symptoms might have implied refractory symptoms rather than a true delay in seeking help.

The BMI distribution of young men in our study was similar to that reported for the general population. There are no studies specifically examining obesity in young men presenting with LUTS. However, an association has been noted between obesity and both urgency urinary incontinence as well as nocturia, in the general population of adult men.^[23]

This study noted abnormal stool consistency in a little over one-third of men presenting with LUTS with constipation being twice as common as loose stools. A recent study in young men noted LUTS in 82% of young men with defecatory disorders. The odds of finding LUTS in young men with a defecatory disorder was an odds ratio (OR) 9.3; 95% confidence interval (CI) 1.7–52.7.^[24] Irritable bowel syndrome has been noted to increase the odds of finding overall LUTS and storage LUTS by 2.11 and 1.80 times, respectively.^[25] An association between abnormal consistency of stools and LUTS is well documented in other clinical cohorts with a possible underlying mechanism involving pelvic organ crosstalk in children.^[26]

Sexual symptoms were common. Some degree of erectile dysfunction was reported by half of the men while varying degrees of unsatisfactory control over ejaculation was noted by almost 70%. It is unclear whether some men might have chosen to approach the urologist with a primary complaint of LUTS out of embarrassment. However, a relationship between each component of LUTS and erectile dysfunction has been noted by others with the strongest relationship noted for “weak stream.”^[27] Another study noted increased odds of finding erectile dysfunction in men with a sense of incomplete evacuation (OR 2.1; 95% CI 1.3–3.5).^[28] The presence of erectile dysfunction might be a marker for more severe LUTS.^[29] An association has also been noted between LUTS and premature ejaculation. Premature ejaculation has been noted in 12%–77% of men with LUTS with an age-associated increase in prevalence.^[30]

Symptoms had a significant impact on quality of life. Moderate-to-severe problems with the bladder on the

PPBC Questionnaire were reported by about 40% and an impaired sense of general well-being was noted on the WHO-5 Wellbeing Scale. An inverse relationship between LUTS and quality of life has been reported earlier.^[31] Similar findings have also been noted in population-based studies.^[32] These findings suggest that LUTS in young men causes specific bother related to the bladder and impacts general well-being.

For most men, LUTS remained a quality-of-life issue rather than a health hazard. However, a history of UTI and hydronephrosis were reported by 16.7% and 5.9%, respectively suggesting the potential for serious health consequences in a minority.

The strengths of this study are the adequate size of the sample collected across multiple centers with documentation of detailed clinical epidemiology of LUTS and accompanying symptoms using validated questionnaires. Specifically, the use of the validated ICIQ-mLUTS questionnaire rather than the International Prostate Symptom Score allowed a more comprehensive evaluation of symptoms including urgency urinary incontinence, with determination of the degree of bother related to each symptom. The use of a digital tablet for recording responses allowed for mandatory responses to all the questionnaires minimizing any missing data.

There are some important weaknesses of this study. We used English language questionnaires. The investigators decided against the use of limited translations that were only available for a few of the questionnaires. The use of assistance by some patients might have introduced errors.

CONCLUSIONS

Nocturia and sense of incomplete evacuation are the two most common symptoms in young men presenting with LUTS while daytime frequency and nocturia are the most bothersome. Most young men have a combination of voiding and storage symptoms. LUTS adversely impacts quality of life. Associated pain, erectile dysfunction, premature ejaculation, and bowel symptoms are common and should be specifically sought during evaluation. Patients show distinct clusters that might indicate the need for further research into association and causation. It is important to include the evaluation of pain in algorithms for the management of LUTS in young men.

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