

# Prevalence, risk factors and quality of life of Lower Urinary Tract Symptoms (LUTS) among men attending Primary Care slum clinics in Bangalore: A cross-sectional study

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## ABSTRACT

**Background:** Men, more than 50 years of age, have a higher incidence of lower urinary tract symptoms (LUTS), and this increases with the advancing age. The prevalence of LUTS varies in different geographical areas across the world, and studies have reported that LUTS in men may significantly affect the quality of life (QoL) and influence their health-seeking behavior. Early detection of LUTS is essential as it is related to several complications. This study aimed to estimate the prevalence of LUTS and factors associated with LUTS and health-seeking behavior. **Methods:** We interviewed 201 men (>50 years) attending two urban primary care clinics in Bangalore using the IPSS questionnaire and calculated the prevalence of LUTS. Factors associated with LUTS and health seeking-behavior were tested using the Chi-square test. A *P*-value less than 0.05 was considered as significant. **Results:** The prevalence of LUTS was 85%. LUTS was significantly associated with those having diabetes and those consuming more than two cups of tea per day. The most common symptom was nocturia (85.4%) and a weak stream (35.0%). Moderate and severe LUTS were significantly associated with poor QoL score ( $P < 0.0001$ ). Only 9.3% of the men sought medical help in spite of their symptoms, and the most common reason for seeking health care was the disturbance they had due to the urinary symptoms (81.3%). **Conclusions:** Family physicians should be aware that a significant proportion of the men in the age group of 50 years suffer from LUTS, and eliciting the same is essential during the process of consultation.

**Keywords:** Bangalore, health-seeking behavior, lower urinary tract symptoms, quality of life, urban slum

## Introduction

Lower urinary tract symptoms (LUTS) is related to the disorders of urinary flow. It is a collective term for several symptoms

related to the lower urinary tract.<sup>[1]</sup> The symptoms are divided into irritative, obstructive, or mixed.<sup>[2]</sup> LUTS is associated with multiple pathologies consisting of either obstructive pathologies (benign prostate hyperplasia) or nonobstructive pathologies (autonomic bladder) or mixed. Benign prostate hyperplasia (BPH) plays a significant part, and the enlarged prostate was identified as the fourth leading disorder among men above 50 years of age.<sup>[3,4]</sup> Studies have shown an increasing prevalence of LUTS as the age advances.<sup>[1]</sup> A hospital-based study reported that more than

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50% of men in the age group 61–70 years had LUTS, and the incidence of LUTS rises with age.<sup>[3]</sup> A large community-based study conducted among 5,184 men reported a prevalence of 69% among those more than 40 years of age.<sup>[4]</sup> The prevalence of moderate to severe LUTS was around 13% at 40–49 years of age, and it was about 28% among men more than 70 years of age in the USA.<sup>[5]</sup> It is estimated that there would be 42 million men in the USA with LUTS by 2025, suggesting an increasing burden of LUTS.<sup>[6]</sup>

LUTS is also known to significantly affect the QoL; 50.6% of men reported interference in their routine life by way of having to limit the intake of fluid before going to bed or before traveling, avoiding places without a toilet, limiting outdoor sports activities, worsening their work situation.<sup>[7]</sup> Nocturia is one of the common irritative symptoms, and Schartz reported nocturia was associated with a negative impact on the QoL among 62.2% of men ( $P < 0.0001$ ).<sup>[2,8]</sup> Nocturia ( $\geq 2$  voids/night) also increases the odds of falling 1.8 times odds (95% CI = 1.05–3.22) and affects the QoL eventually.<sup>[9]</sup> LUTS, if left untreated, may lead to several acute and chronic complications. It may compromise general health status, sexual satisfaction, sexual drive, general psychological well-being; lead to worries, concerns, depression, stress, and compromise one's working life.<sup>[9]</sup> Hence, it is crucial to identify LUTS early to avoid such complications.

A Danish study reported that all men in the age group of 60–79 years with LUTS failed to consult a doctor.<sup>[10]</sup> In a study by Cunningham, only 22% consulted their physician for LUTS at some point of their illness. A large population-based study reported that around 25.5% of men had a low QoL score, and 46.8% of men with LUTS never sought medical help.<sup>[11]</sup> The possible reasons for poor health-seeking behavior were lack of knowledge of their condition, misconception, embarrassment, and stigma associated with the urinary symptoms.<sup>[7,12]</sup> To the best of our knowledge, there have been no published reports on the prevalence of LUTS in a primary care slum setting in India. Hence, our study aimed to study the prevalence of LUTS, its associated factors, the health-seeking behavior, and quality of life among men of 50 years of age.

## Methods

We conducted a cross-sectional study among 201 men from January 2018 to May 2019 attending two urban primary care health clinics located in two slums in Bangalore city, namely Deverajeevanahalli and Kadugondanahalli. They are operated by the Department of Community Health of Bangalore Baptist Hospital. These clinics provide primary medical care to a predominantly underprivileged community. The centers conduct daily out-patient (OPD) services providing general medical care, dental, ophthalmology, and laboratory services. The sample size was calculated using a prevalence of LUTS as 69% using the formula  $4pq/d^2$  ( $p = 69\%$ ,  $q = 31\%$ ); with 10% relative precision, the sample size calculated was 180.<sup>[13]</sup>

All men 50 years of age and above who registered at the clinics during the study period were included in the study while men with uncontrolled diabetes mellitus, urinary tract infection, chronic kidney disease, renal calculi, and men who had undergone any urological surgery were excluded. Every consecutive patient was recruited and administered a questionnaire by the principal investigator after a written informed consent. This questionnaire comprised basic demographic details, International Prostate Symptom Score (IPSS), and questions on health-seeking behavior. This questionnaire was translated into vernacular and back-translated.

IPSS consists of eight questions that include both urinary symptoms (incomplete emptying, frequency, intermittency, urgency, weak stream, straining, nocturia) and QoL assessment that the patient experienced over the last 1 month. These parameters were scored between 0 and 5 according to the increase in severity (0 = not at all to 5 = almost always). The total score was categorized for the severity of symptoms as none (IPSS = 0), mild (1–7), moderate (8–19), and severe (20–35). The eighth question is related to QoL and was scored as 0–6.<sup>[10]</sup> IPSS has a sensitivity and specificity of 78% and 59.4%, respectively.<sup>[13]</sup>

The data were entered into Microsoft Excel 2007, and statistical analyses were performed using the Statistics Package for Social Scientists (SPSS version 16.0). The prevalence of LUTS was calculated and presented in proportion. A Chi-square test was performed to test the association between socio-demographic variables, the severity of LUTS symptoms, and health-seeking behavior. Association between LUTS and demographic factors were also tested using the Chi-square test. A  $P$  value less than 0.05 was considered as significant. This study was approved by the Institutional Review Board of Bangalore Baptist Hospital.

## Results

We recruited 201 participants, and the majority (54.3%) were in the age group of 50–60 years, followed by 60–70 years (35.32%) with a mean age of  $60.9 \pm 7.59$  years. More than two-thirds of them (65.6%) did not complete beyond high-school. Nearly three-quarters of them (74%) were employed, and 90% were married. [Table 1]

The most common symptom among our participants was nocturia (85.4%), followed by having a weak stream (35.0%). [Table 2]. The most common symptom associated with LUTS other than mentioned in IPSS was postmicturition dribbling (21.8%). Nearly half (51.2%) of our participants reported erectile dysfunction.

The prevalence of LUTS was in our study population was 85%. The prevalence was higher among people with diabetes (32.0%), and those who had a habit of drinking more than two cups of tea every day (29%), and when these factors were compared with their counterparts, they were statistically significant ( $P < 0.05$ ). There was no significant association between age, education,

occupation, and habits such as smoking and alcohol [Table 3]. Among those who had LUTS, 21% had moderate LUTS while the rest had mild and severe LUTS. Similarly, almost half (46.8%)

of the participants with LUTS had a good QoL. Moderate to severe LUTS was associated with a poor QoL ( $P < 0.05$ ) while education and occupational status did not have a significant association with QoL. [Table 4]

**Table 1: Socio-demographic Characters of the study population**

Characters	Variables	Number	Percentage
Age	≥65 years	57	28.36
	<64 years	144	71.64
Education	<10 std	145	72.14
	≥10 std	56	27.86
Occupation	Unemployed	52	25.87
	Employed	149	74.13
Marital status	Married	182	90.55
	Others	19	9.45
Smoking status	Smoker	37	18.41
	Non/Former smoker	164	81.59
Consumes alcohol	No	17	8.46
	Yes	184	91.54
Tea	>2 cups/day	124	61.69
	<2 cups/day	77	38.31
DM	Present	100	49.7
	Absent	101	50.24
HTN	Present	91	45.27
	Absent	110	54.72

**Table 2: Frequency of symptoms among participants with LUTS (n=171)**

Symptoms mentioned in IPSS	Frequency	Percentage
Incomplete emptying	20	11.69
Frequency	29	16.95
Intermittency	36	21.05
Urgency	55	32.16
Weak stream	60	35.08
Straining	27	15.78
Nocturia	146	85.38

**Table 3: Factors associated with LUTS**

Characters	Variables	LUTS present		LUTS absent		Chi- square	P
		Frequency	%age	Frequency	%age		
Age	≥65 years	20	35.1	37	64.9	4.95	0.02*
	<64 years	29	20.1	115	79.9		
Education	<10 std	37	25.5	108	74.5	0.36	0.54
	≥10 std	12	21.4	44	78.6		
Occupation	Unemployed	16	30.8	36	69.2	1.55	0.21
	Employed	33	22.1	116	77.9		
Smoking status	Smoker	7	18.9	30	81.1	0.73	0.92
	Non or former smoker	42	25.6	122	74.4		
Consumes alcohol	Yes	4	23.5	13	76.5	Fishers=1	
	No	45	24.5	139	75.5		
Tea	>2 cups/day	36	29.0	88	71.0	3.8	0.05*
	<2 cups/day	13	16.9	64	83.1		
DM	Present	32	32.0	68	68.0	6.2	0.01*
	Absent	17	16.8	84	83.2		
HTN	Present	27	29.7	64	70.3	2.5	0.11
	Absent	22	20.0	88	80.0		

\*Significant P value

Among participants with LUTS, 9.3% sought medical attention while the majority (90.6%) of them did not seek any medical help. Most of the patients (81.3%) sought medical help as their symptoms disturbed their routine activities. The reason for not taking medical consultation had multiple responses, and the commonest being the subjective feeling of well-being and perceiving urinary symptoms as a part of aging.

## Discussion

LUTS is a symptom complex that is associated with obstructive (BPH) or nonobstructive (autonomic dysfunction) or mixed pathology. The prevalence of LUTS in men above the age of 50 years in the present study was 85% (IPSS ≥ 1). Studies on LUTS from across the world have reported varied prevalence rates, ranging from 13% to 70%.<sup>[14]</sup> This wide range in prevalence could be due to variations in the definition of LUTS/BPH, different tolerance capacities of the symptoms by men, and changes in the pattern of disease with age. We could attribute the reason for the high prevalence in our study was that our samples were recruited from health care settings.

While there are several contributory factors associated with LUTS, such as obesity, physical activity, and diet, we found diabetes was strongly associated with LUTS ( $P = 0.012$ ).<sup>[15]</sup> This also corroborates with existing literature on LUTS.<sup>[9,16]</sup> Nandy *et al.* reported hypertension as significantly correlated with LUTS in Pune, India. However, we did not find a similar association in our study. We found that the habit of consuming more than two cups of tea daily had a statistically significant association LUTS ( $P = 0.051$ ). We could explain this by the fact

**Table 4: Factors associated with Quality of Life among participants with LUTS**

Characters	Variables	Poor QoL		Good QoL		Chi square	P
		Frequency	%age	Frequency	%age		
Age (n=201)	≥65 years	10	17.5	47	82.5	2.37	0.12
	<64 years	14	9.7	130	90.3		
Education (n=201)	<10 std	19	13.1	126	86.9	0.67	0.41
	≥10 std	5	8.9	51	91.1		
Occupation (n=201)	Unemployed	8	15.4	44	84.6	0.79	0.37
	Employed	16	10.7	133	89.3		
LUTS (n=171)	Moderate and Severe	18	36.7	31	63.3	38.88	0.0001*
	Mild	6	3.9	146	96.1		

\*Significant P value

that caffeine is a diuretic; hence, increased consumption could lead to increased urinary frequency.<sup>[17]</sup> However, we felt that this is a unique finding emerging out of our study, and we could not find any supporting literature to support this finding. This factor could be important in the context of increased consumption of tea/coffee by the Indian population.

The most commonly reported symptoms were nocturia in 85.4% and having a weak stream seen in 35% of the study group. This finding concurs with other studies that nocturia and weak stream were the most prevalent symptoms, and urgency was the least.<sup>[18]</sup> At the same time, Cunningham *et al.* reported urgency, nocturia, dribbling, and weak stream as the most prevalent symptoms in contrast to our findings.<sup>[19]</sup> A quarter (25.1%) of our participants had postmicturition dribbling, whereas Reynard reported 44% had terminal dribbling of urine.<sup>[20]</sup> Erectile dysfunction was one of the major associated symptoms with LUTS in the present study (54.3%). Ojewola reported that coexisting erectile dysfunction as a very crucial factor for health-seeking behavior in men with BPH ( $P < 0.014$ ).<sup>[15]</sup>

While we found more than a quarter of our men had moderate to severe urinary symptoms in contrast to the existing evidence across the globe and India, which reported lesser severity of symptoms.<sup>[7,21,22]</sup> The possible reason could be those studies were done in the community while ours was in hospital settings.

Moderate and severe symptoms were significantly associated with a poor QoL among our men, the National Institute of Clinical Excellence (NICE) practice guidelines stated that 30% of men above 65 years of age have troublesome urinary symptoms.<sup>[1]</sup> A community-based cross-sectional survey by Ojewola among Nigerian men concluded the overall prevalence of LUTS as 59.1%, and 25.5% among them had a low QoL.<sup>[11]</sup>

The reasons for seeking medical help among those with LUTS could generally vary.<sup>[1,21,22]</sup> Almost 90% of participants with LUTS in our study group did not seek medical consultation, which concurs with the existing evidence. We found that the common reasons for not seeking medical care were a feeling of well-being (95%), and perceiving the urinary symptoms as the normal aging process. Our findings correspond to most of the research which has reported that perceiving the symptoms as part of aging was the most common reason for seeking medical help.<sup>[11,21]</sup> Shaw further reported other

reasons for not seeking medical care were poor knowledge about the condition, lack of awareness on the availability of treatment, embarrassment, misconception as urinary symptoms are a medical problem.<sup>[12]</sup> Our men sought medical help when disturbed by their symptoms (81.3%) and fear of some complication (6.3), which also corroborates with other studies.<sup>[11,21]</sup> A survey in Leicestershire (UK) that looked into health-seeking behavior concluded that once the threat of symptoms is considered, the patient evaluates the benefits and harm of the treatment and balances it against the perceived impact of symptoms on the QoL.<sup>[23]</sup>

A general practitioner is an essential point of contact and a gate-keeper for further evaluation for men with LUTS.<sup>[18,21,22]</sup> The study has shown that a majority of men above 50 years have LUTS (85%) and men with moderate to severe LUTS had a significant association with a poor QoL. Ninety percent of them also had a poor tendency to seek health care. LUTS was significantly associated with more than two cups of tea consumption and diabetes. LUTS present with the varied clinical picture, and the most common symptoms of LUTS in our study were nocturia and weak stream. It is critical that family physicians are sensitive to this fact and seek symptomatology of LUTS and screen for it regularly in primary care settings. We recommend that health care programs should focus on increasing the awareness of LUTS and the need for seeking medical help much early to avoid complications leading to poor quality of life. Easy-to-apply evidence-based guidelines for the screening and management of LUTS should be formulated for the general physicians.

To our knowledge, this is the first study reporting the prevalence of LUTS from limited resource settings, and we have used the scientifically appropriate methodology and recruited an adequate sample size. We have also used a validated questionnaire which has added strength to our study. As the participants were from health care settings, these findings may not be generalized to community setting. Another limitation is that we could not use any objective assessment methods such as uroflowmetry to determine the presence of LUTS or the severity of the symptoms.

## Conclusion

Most of the men above 50 years of age have LUTS. Diabetes and consuming more than two cups of tea were significant risk factors

for LUTS. Nocturia, weak stream, postmicturition dribbling were the most common symptoms. Severe LUTS could be associated with poor QoL. In general, men with urinary symptoms have poor health-seeking behavior which can lead to irreversible disease progress. Family physicians should be aware that a good proportion of the men in the age group of 50 years and above suffer from LUTS, and it is essential to elicit it during the process of consultation to avoid further complications related to LUTS.

### Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

### Informed consent

An informed consent was obtained from all individual participants included in the study.

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### Conflicts of interest

There are no conflicts of interest.

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