Original Article

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Lower Urinary Tract Symptoms and its Impact on Quality of Life among Adults: A Cross-sectional Study from a Tertiary Care Hospital, Mangaluru, Karnataka, India

Urology Section

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ABSTRACT

Introduction: A collection of clinical symptoms affecting the bladder, prostate, urethra, and urinary sphincter is collectively referred to as Lower Urinary Tract Symptoms (LUTS). LUTS can be categorised into two types: storage symptoms and voiding symptoms. Male individuals experiencing LUTS may have a lower Quality of Life (QoL).

Aim: To assess LUTS and its impact on QoL among adults in a selected tertiary care hospital in Mangaluru, Karnataka, India.

Materials and Methods: A cross-sectional observational study was conducted at Yenepoya Medical College Hospital in Mangaluru, Karnataka, India, from June 2020 to December 2023. A total of 220 subjects were recruited using a non probability purposive sampling technique. A LUTS questionnaire was used to assess the severity of symptoms, and the World Health Organisation (WHO) QoL Bref tool was utilised to evaluate QoL. The collected data were analysed using descriptive and inferential statistics. The correlation and association between the concepts were analysed using Karl Pearson's correlation coefficient and the Chi-square test.

Results: The majority, 171 (77.7%), of adult males had a moderate level of LUTS, followed by 39 (17.8%) with a mild level of LUTS and 10 (4.5%) with a severe level of LUTS symptoms. The overall QoL was average. There was a positive correlation between LUTS symptoms and QoL (r-value=1.71, p-value=0.01). However, the calculated p-value indicates that there was no significant association between the prevalence of LUTS and demographic variables.

Conclusion: In this study, LUTS affects majority of adults aged ≥40 years, and symptoms increase with advancing age. Clinically, this underscores the importance of comprehensive assessments and personalised treatment approaches for LUTS, focusing not only on symptom severity but also on overall QoL.

Keywords: Elderly men, Overactive bladder, Urinary symptoms

INTRODUCTION

Urologic disorders are the third most common complaint in the adult population. LUTS are common among elderly individuals and have significant effects on individuals, caregivers, and the wider healthcare system [1]. LUTS refer to a group of clinical symptoms involving the bladder, urinary sphincter, prostate, and urethra [2]. LUTS are symptoms that result from conditions and diseases affecting the bladder and the urethra, including urinary incontinence such as stress, urge, and mixed urinary incontinence; storage/Overactive Bladder (OAB) symptoms (e.g., urgency, frequency, and nocturia, with or without incontinence); voiding symptoms (e.g., urinary retention, hesitancy, straining to void, slow or interrupted stream); and postmicturition symptoms (e.g., post-micturition dribble) [3]. LUTS, including OAB, have negative effects on QoL and overall wellbeing; thus, LUTS and OAB may significantly limit healthy ageing [4]. These signs may be caused by or may result from multiple conditions, including Benign Prostatic Hyperplasia (BPH), OAB, urinary tract infections, and pelvic floor dysfunction [5]. As populations age, there may be an increase in the number of people suffering from LUTS or OAB, which could impact their QoL and functionality. For instance, nocturia can cause sleep disturbances and tiredness, raising the risk of falls and unfavourable fall-related outcomes. This situation contributes to significant morbidity as well as economic burden [6]. Common LUTS include urinary frequency, urgency, hesitancy, weak stream, and nocturia. Although LUTS are rarely life-threatening, under-recognition, which leads to inadequate treatment, and under-treatment are major challenges since they increase the overall symptom burden [7].

Vishwakarma SK et al., reported that the highest prevalence of LUTS (26%) was found in the age group between 60-69 years among the Indian population [8]. LUTS and OAB were prevalent in Poland at rates of 69.8% and 79.9%, respectively [9,10]. The estimated prevalence among Malaysians in the study by Isa NMM and Aziz AFA was 89.85% [11]. An investigation carried out in Kerala, India, on adults over 50 years of age revealed a 66.8% prevalence [12]. Age, gender, lifestyle, and co-morbidities are some of the factors that affect the occurrence of LUTS, which differs across individuals and geographical regions [7]. Kant P et al., demonstrated that 85% of the men attending a primary care slum clinic in Bangalore had LUTS [13]. Understanding the severity of LUTS and its impact on QoL is crucial for healthcare providers to develop effective management strategies and improve patient outcomes. Tertiary care hospitals, equipped with specialised healthcare professionals and advanced diagnostic and treatment modalities, play a vital role in managing complex urological conditions, including LUTS [14]. LUTS occurs in all age groups, but its incidence increases with age and is more prevalent in older age groups. LUTS presents a significant burden for the adult population. It negatively impacts the daily activities of affected individuals and has the potential to impair multiple domains of QoL, including restrictions on social and work life, while also resulting in higher healthcare resource use and costs [15].

LUTS are common, with over 50% of affected individuals experiencing bothersome storage symptoms. Conditions such as diabetes and neurological diseases are linked to a higher incidence of LUTS [16]. Although extensively studied worldwide [3,6,7,9,12],

there is a lack of research on LUTS in Mangaluru, particularly regarding its impact on patients' QoL and the factors contributing to its severity among adults in the region. This knowledge gap hinders the development of targeted interventions and limits ones understanding of how LUTS affects healthcare resource allocation in tertiary care settings.

This study aimed to address this gap by assessing the severity of LUTS and its impact on QoL among adults attending a selected tertiary care hospital in Mangaluru, Karnataka, India. The objective of carrying out this study was to provide insight into the severity of LUTS in this group, pinpoint risk factors associated with it, and assess the consequences for clinical practice and the distribution of healthcare resources.

MATERIALS AND METHODS

The cross-sectional observational study was conducted at Yenepoya Medical College Hospital in Mangaluru, Karnataka, India, from June 2020 to December 2023. The Scientific Review Board and the Institutional Ethics Committee approved the research protocol (Approval number: YEC-1/2020/030). Prior to the study, all subjects were provided with detailed information about the study using a participant information sheet, and informed consent was obtained. The subjects were made aware of the study's nature and purpose. The administrative authorities of the hospital granted formal permission.

Inclusion criteria: Adult men aged above 40 years, regardless of any illness, attending the inpatient and outpatient departments (Urology and Geriatrics) of Yenepoya Medical College Hospital were included in the study.

Exclusion criteria: Subjects diagnosed with diabetes mellitus, chronic kidney disease, bladder cancer, a history of trauma, bladder surgery, catheterised patients, and those with neurological or psychological disorders were excluded from the study.

Sample size calculation: A total of 220 adult male patients were recruited using a non probability purposive sampling technique.

Study Procedure

The severity of LUTS and its symptoms checklist was selected based on the objectives and review of the literature [2,12,16,17]. The tool was given to seven experts for validation. A pretest of the tool was conducted on 15 samples to assess its feasibility. The tool was administered to 20 samples to evaluate its reliability. The reliability co-efficient was assessed using the test-retest method. The calculated reliability co-efficient (Cronbach's Alpha) for the LUTS questionnaire was 0.82, and for the WHO QoL Bref tool, it was 0.84.

Data were collected using a demographic proforma, LUTS questionnaire, and WHO QoL Bref tool [18,19]. The demographic proforma included age, education, marital status, occupation, diet, and habits. The LUTS questionnaire consisted of six items that assessed symptoms and their severity, which ranged from 0 to 5 and were classified as mild, moderate, or severe after consultation with a statistician for the study's purpose. A score of 0-7 is rated as mildly symptomatic, 8-19 as moderately symptomatic, and 20-35 as severely symptomatic. The WHO QoL Bref tool consisted of 26 items classified under four domains: physical, psychological, social, and environmental. Scores range from 0 to 100, with a higher score indicating better QoL. Overall QoL was classified as delighted, pleased, mostly satisfied, mixed, dissatisfied, or unhappy [11].

This study was performed on the inpatient and outpatient departments of Urology and Geriatrics at Yenepoya Medical College Hospital in Mangaluru. Based on the inclusion criteria, subjects were identified. The participant information sheet was explained, and informed consent was obtained from the participants. Each subject took approximately 15 minutes to complete the questionnaire. Confidentiality was maintained.

STATISTICAL ANALYSIS

The collected data were coded and transformed into a master data sheet for statistical analysis. The data were analysed using IBM Statistical Package for Social Sciences (SPSS) software version 16.0. The demographic proforma and LUTS questionnaire were analysed using descriptive statistics such as frequency, percentage, mean, and standard deviation. Pearson correlation co-efficient was used to find the correlation between prevalence and QoL. Chi-square tests were employed to determine the association between prevalence and QoL with demographic variables. A p-value<0.05 was considered significant.

RESULTS

In the present study, most of the study subjects, 94 (42.7%), were in the age group of 51-60 years, with the majority being married 211 (95.9%). Most of them 101 (45.9%) had primary education, and 207 (94.1%) were employed. About 210 (95.5%) were consuming a mixed diet. One subject was a smoker, 130 (59.1%) were alcoholics, and 33 (15%) chewed tobacco [Table/Fig-1].

Demographic characteristics	n (%)
Age (years)	
40-50	71 (32.3)
51-60	94 (42.7)
61-70	40 (18.2)
>71	15 (6.8)
Education	
No formal Education	20 (9.1)
Primary	101 (45.9)
Secondary	76 (34.5)
PUC	19 (8.6)
Degree	4 (1.8)
Marrital status	
Married	9 (4.1)
Unmarried	211 (95.9)
Occupation	
Employed	207 (94.1)
Unemployed	13 (5.9)
Diet	
Vegetarian	10 (4.5)
Mixed	210 (95.5)
Bad habits	
Smoking	
Yes	1 (0.5)
No	219 (99.5)
Alcoholism	
Yes	130 (59.1)
No	90 (40.9)
Tobacco chewing	
Yes	33 (15)
No	187 (85)

[Table/Fig-1]: Frequency and percentage distribution of demographic characteristics of adult males (N=220).

The majority (171 or 77.7%) of the males had moderate LUTS, 39 (17.8%) had mild LUTS, and 10 (4.5%) had severe LUTS. A symptom wise frequency and distribution of lower urinary tract symptoms is depicted in the [Table/Fig-2].

The overall QoL of the adult men with urinary symptoms was average. Of these, 32.27% had a mixed opinion, 21.36% were

S. No.	Symptoms	None n (%)	Mild n (%)	Moderate n (%)	Severe n (%)
1.	Frequent	53 (24.09)	38 (17.27)	60 (27.27)	69 (31.36)
2.	Intermittent	6 (2.73)	36 (16.36)	167 (75.91)	11 (5.00)
3.	Urgency	42 (19.09)	48 (21.82)	62 (28.18)	68 (30.91)
4.	Weak stream	42 (19.09)	78 (35.45)	60 (27.27)	40 (18.18)
5.	Straining	42 (19.09)	49 (22.27)	68 (30.91)	61 (27.73)
6.	Nocturia	5 (2.27)	58 (26.36)	95 (43.18)	62 (28.18)

[Table/Fig-2]: Frequency and percentage of severity of Lower Urinary Tract Symptoms (LUTS).

dissatisfied, and 5.91% were unhappy regarding their QoL. The QoL was represented according to different domains of wellbeing [Table/Fig-3]. Scores of different domains is shown in [Table/Fig-4].

Overall Quality of Life (QoL)	n (%)
Delighted	24 (10.91)
Pleased	29 (13.18)
Mostly satisfied	36 (16.36)
Mixed	71 (32.27)
Mostly dissatisfied	47 (21.36)
Unhappy	13 (5.91)
Terible	0

[Table/Fig-3]: Distribution of overall Quality of Life (QoL).

Domains	Min possible score	Max possible score	Mean±Standard deviation
Physical wellbeing	32.14	60.71	44.3±1.10
Psychological well-being	33.3	70.8	51.89±1.39
Social wellbeing	41.6	68.2	49.35±1.64
Environment	40.6	84.3	46.39±1.23

[Table/Fig-4]: Distribution of Quality of Life (QoL) according to domains.

[Table/Fig-5] demonstrates that there was a significant positive correlation between the severity of LUTS and QoL, with a correlation co-efficient (r value) of 1.71 and a p-value of 0.01, indicating a strong relationship between the two variables.

Variables	r-value	p-value
Severity of LUTS	1.71	0.01*
QOL		

[Table/Fig-5]: Correlation between Severity of Lower Urinary Tract Symptoms (LUTS) with Quality of Life (QoL).
The statistical test used: Karl Pearson's correlational coefficient; Level of significance: <0.05; * Significant p <0.05

[Table/Fig-6] shows that there was no significant association between the prevalence of LUTS and demographic variables such as age (p-value=0.846), marital status (p-value=0.536), education (p-value=0.540), occupation (p-value=0.510), diet (p-value=0.485), and bad habits like smoking (p-value=0.097), alcoholism (p-value=0.152), and tobacco chewing (p-value=0.841).

Demographic characteristics	Severity of LUTS	
	χ^2	p-value
Age	2.694	0.846
Education	6.965	0.540
Marital status	1.245	0.536
Occupation	1.345	0.510
Diet	1.447	0.485
Bad habits		
• Smoking	4.662	0.097
• Alcoholism	3.772	0.152
• Tobacco chewing	0.347	0.841

[Table/Fig-6]: Association between severity of LUTS and demographic variables.
The statistical test used: χ^2 test. Level of significance: p <0.05 *significant p <0.05

DISCUSSION

LUTS are a group of symptoms that include voiding, storage, and postmicturition issues that become more prevalent with age. It is known that patients frequently have overlapping and underlying pathophysiologic mechanisms that could be connected to the manifestation of LUTS [20]. Symptoms such as frequency, urgency, nocturia, weak stream, hesitation, partial emptying, and incontinence can have a major negative influence on one's QoL. Although LUTS primarily affect the elderly, they can also occur in younger individuals for various reasons, such as pelvic floor dysfunction, lifestyle choices, and inflammatory diseases [21]. Effective care to improve patient outcomes and alleviate symptoms includes a thorough evaluation to determine the underlying cause and customise interventions, which can range from behavioural therapies and lifestyle modifications to medication and surgery [22].

In the current study, the majority (171 or 77.7%) of the males had moderate LUTS, 39 (17.8%) had mild LUTS, and 10 (4.5%) had severe LUTS. LUTS should be regarded as a serious public health issue. This consistent pattern across research points to a recurring problem that needs to be addressed in therapeutic practice. These results highlight the importance of early screening, diagnosis, and management options for LUTS, given its impact on QoL and possible implications for general health. According to Kant P et al., the majority of individuals (54.3%) who had LUTS were between the ages of 50 and 60 years. This suggests that LUTS is more common in middle-aged and older men, with an overall prevalence of 85% [13].

A comparative analysis of the severity of LUTS among different categories of the population is shown in [Table/Fig-7] [12,23-26].

Author (s), year	Place, publication year	Sample size	Outcomes of the study
Kim MK et al., [23]	Korea, 2022	1555 individuals aged above 19 years	77.9% of the respondents had LUTS; 63.7% had mild symptoms (1-7), 11.7% had moderate symptoms (8-19), and 2.4% had severe symptoms (20-35).
Anuar MFM et al., [24]	Malaysia, 2022	2251 males aged 40 years	66.7% had mild LUTS, 15.1% had moderate LUTS and 2.5% had severe LUTS.
Bhat S and Anjali S [12]	Kerala, 2021	480 Adults >50 years of age	56.7% had mild, 42.5% had moderate and 0.8% had severe symptoms of LUTS.
Liao L et al., [25]	China, 2018	8284 Males aged ≥40 years	87.7% of the male population had mild to severe LUTS where as 51.4% of subject had mild LUTS
Nnabugwu II et al., [26]	Nigeria, 2019	267 aged between 40-90 years	41.6% reported mild LUTS, 47.2% reported moderate LUTS and 11.2% reported severe LUTS
Present study	Mangaluru, 2024	220 adult males, aged above 40 years	Majority 77.7% of the adult male had moderate level of LUTS followed by 17.8% had mild level of LUTS and 4.5% had severe level of LUTS symptoms. The overall QoL was average.

[Table/Fig-7]: Comparative analysis of prevalence of Lower Urinary Tract Symptoms (LUTS) among different categories of population [12,23-26].

The findings of the present study indicate that the QoL of adult males is average across various aspects of wellbeing. Gomes CM et al., conducted a survey that showed a higher likelihood

of worse QoL associated with LUTS symptoms [15]. Similarly, another study conducted by Qudah S et al., found that the mean HRQL score was 73.3±22, which significantly decreased across OAB severity groups (p-value <0.001). The associated symptoms negatively affect HRQL [27]. This result was consistent with the findings of Liao L et al., which showed that males aged above 40 years experienced reduced QoL and sexual function with greater symptom severity [25]. Together, these studies reinforce the finding that LUTS significantly diminish the QoL of adult males, necessitating targeted interventions to effectively address these issues.

One significant implication of these findings is the potential impact on overall wellbeing and health outcomes. QoL serves as a crucial metric for assessing an individual's physical, mental, and social functioning. When QoL is compromised, it can lead to various negative consequences, including diminished satisfaction with life, increased psychological distress, and impaired social relationships. Furthermore, the observed correlation between symptom severity and reduced QoL suggests the importance of early detection and management of health conditions commonly experienced by males, particularly as they age. Proactive measures aimed at addressing symptoms and improving overall health may help mitigate the negative impact on QoL in this population.

This study found a positive correlation between the severity of LUTS and QoL. Consistent findings were observed in a study conducted by Gomes CM et al., which found that symptoms in all categories, including voiding, storage, and postmicturition, were associated with a negative impact on individuals' lives, QoL, and treatment-related outcomes [15]. Another study conducted by Qudah S et al., showed a positive correlation between OAB symptoms and greater symptom bother (p-value <0.001) and also found a significant inverse correlation with HRQL (p-value <0.001) [27]. Similar findings were reported in a study conducted by Thilo W et al., which found that health-related QoL was significantly lower in patients with LUTS (p-value <0.001) [28].

The present and supportive findings collectively contribute to the understanding of the significant impact of LUTS on QoL. By recognising the positive correlation between LUTS prevalence and impaired QoL, healthcare providers can implement targeted interventions to improve outcomes and enhance the overall wellbeing of individuals affected by these symptoms. The findings of the present study revealed that there was no association between the severity of LUTS and demographic variables such as age, marital status, education, occupation, diet, and bad habits (p-value >0.05). These findings were consistent with those of a study conducted by Kant P et al., which revealed no significant association between age, education, occupation, and bad habits [13].

Limitation(s)

The limitations of this study included a small sample size, a single setting, and the assessment of symptoms using a self-reporting checklist for LUTS without medical evaluation. Individuals may not always provide accurate answers.

CONCLUSION(S)

A significant proportion of the adult population experiences moderate to mild symptoms. Nocturia, increased frequency, and straining were identified as common symptoms, highlighting their impact on daily life and wellbeing. The overall QoL for adult males was average, indicating a need for improvement in managing and addressing these symptoms. Enhancing awareness and access to treatment options could play a crucial role in improving outcomes and QoL for individuals affected by LUTS. Effectively addressing LUTS requires a comprehensive approach that considers the multifaceted influences on patients' health and wellbeing.

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