Original Article

Epidemiological Survey Of Lower Urinary Tract Symptoms In Males Aged 40-90 Years In The Benue South Region Of Nigeria Using The International Prostate Symptom Score

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ABSTRACT
Lower urinary tract symptoms (LUTS) are common among ageing men and significantly impair quality of life (QOL). Although several Nigerian studies have reported varying prevalence rates, there is no published data from the Benue South Senatorial District of Nigeria. This study aimed to determine the prevalence, severity, and quality-of-life impact of LUTS among men aged 40–90 years in this region using the International Prostate Symptom Score (IPSS). This hospital-based cross-sectional study was conducted across nine General Hospitals in Benue South between September and December 2022. Male patients aged 40–90 years attending general outpatient clinics were recruited using a non-probability sampling technique. Data were collected electronically using a structured biodata form, the IPSS questionnaire, and the single-item QOL index. Statistical analysis was performed using SPSS version 21. Associations were tested using Chi-square statistics, with significance set at $p < 0.05$. A total of 368 consenting participants were enrolled across seven local government areas. LUTS prevalence, severity distribution (mild, moderate, severe), and QOL scores were analyzed. Symptom severity increased with age. Moderate-to-severe LUTS constituted a significant proportion of respondents and was associated with poorer QOL scores. LUTS are prevalent among men aged 40 years and above in Benue South and significantly impact quality of life. These findings provide baseline epidemiological data for health planning and resource allocation in the region.

Keywords: Benign Prostatic Hyperplasia, Epidemiology, IPSS, Lower Urinary Tract Symptoms, Nigeria, Quality of Life.

INTRODUCTION
Lower urinary tract symptoms (LUTS) describe a spectrum of storage (filling) and voiding (emptying) urinary symptoms commonly observed among aging men. The international prostate symptom score **(IPSS)** is a validated subjective assessment tool for screening patients for with lower urinary tract symptoms. The IPSS is the World Health Organization **(WHO)** adoption of the American Urological Association **(AUA)** symptom index designed by Barry et al in 1992[1]

LUTS replaced "Prostatism" following standardization proposed by Paul Abrams in 1998, reflecting the recognition that these symptoms are not specific to prostatic pathology but may arise from multiple components of the lower urinary tract[2].

Because LUTS are not disease-specific, standardized and validated tools are essential for objective assessment. The International Prostate Symptom Score (IPSS), adopted by the World Health Organization from the American Urological Association symptom index, is the most widely used instrument for evaluating symptom severity and monitoring treatment outcomes [2]. The IPSS quantifies symptom severity on a scale of 0–35, categorized as mild (0–7), moderate (8–19), and severe (20–35). In addition, a single-question Quality of Life (QOL) index assesses patient-perceived bother on a scale of 0–6, providing insight into the impact of symptoms on daily living[1].

Globally, the prevalence of LUTS among men aged 40 years and above ranges widely from 15% to 90%, with a clear increase in both prevalence and severity with advancing age.[3,4,5] Studies conducted in the United States, United Kingdom, Sweden, Saudi Arabia, India, Malaysia, Ethiopia, and Nigeria consistently demonstrate a significant burden of disease and substantial impairment in quality of life.[5,6,7,8,9,10,11] These variations are attributable to differences in study populations, methodologies, and healthcare access.

In Nigeria, the burden of LUTS is similarly high but variable, with reported prevalence ranging from 20.2% in Eastern Nigeria to as high as 88% in Southwestern Nigeria[7,11,12] These findings underscore the growing public health importance of LUTS in resource-limited settings, where late presentation and limited access to specialized

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urological care may exacerbate disease severity and complications.

Despite this, there is a paucity of epidemiological data on LUTS in the Benue South Senatorial District. With the establishment of the Federal University of Health Sciences, Otukpo, and its Teaching Hospital, locally generated data are essential for evidence-based planning of urological services, resource allocation, and preventive health strategies.

This study therefore aimed to determine the prevalence, severity, and quality of life impact of LUTS among men aged 40–90 years in Benue South, Nigeria. The findings are intended to complement existing data and provide context-specific evidence to guide clinical practice and health policy. Notably, the study further evaluates the relationship between age and symptom severity, given the well-established association between advancing age and progression of LUTS.

MATERIALS AND METHODS

Study Design and Setting

This was a hospital-based cross-sectional study conducted in General Hospitals across the nine Local Government Areas (LGAs) of Benue South Senatorial District: Otukpo, Oju, Obi, Ohimini, Ogbadibo, Ado, Okpokwu, Apa, and Agatu.

The study period was September–December 2022.

Study Population

Inclusion criteria:

- Male patients aged 40–90 years
- Attending General Outpatient Departments
- Provided informed consent

Exclusion criteria:

- Patients who do not give their consent
- Critically ill individuals
- Patients already on treatment for Bladder Outlet Obstruction

Sample Size Determination

Sample size was calculated using Leslie Kish's formula for cross-sectional studies:

[n = \frac{Z^2 p (1-p)}{d^2}]

Where:

n = Minimum sample size.

Z =Standard normal deviate, set at 1.96 (95% confidence level) for this study.

d = Degree of accuracy. For this study, it will be set at 5% (0.05).

p = In this study we will use the prevalence of 88% (0.88) established in the study by Adegun et al in south west Nigeria[7]

Minimum calculated sample size: 482

Adjusted sample size: 504 (to account for attrition)

A total of 368 eligible and consenting participants were ultimately enrolled. Those with incomplete responses on the IPSS Questionnaire were excluded from the analysis

Data Collection

Data were collected using:

- Structured biodata form
- IPSS questionnaire (Appendix I)
- Single-item QOL index

Data were administered electronically using tablet devices by trained research assistants.

Outcome Measures

- Presence of LUTS (IPSS ≥1)
- Severity classification:
  - Mild (0–7)
  - Moderate (8–19)
  - Severe (20–35)
- QOL score (0–6)

Statistical Analysis

Data were analyzed using SPSS version 21.0.

- Descriptive statistics: frequencies, percentages, means
- Association testing: Chi-square
- Significance threshold: $p < 0.05$

Ethical considerations

Ethical approval for the study was obtained from the Ethics and Research Review Committee of the Federal University of Health Sciences, Otukpo, prior to commencement of data collection. Permission was also obtained from the management of the participating General Hospitals in Benue South Senatorial District. All participants provided informed consent before enrolment into the study.

Confidentiality of study participants was strictly maintained. Data were collected anonymously using electronic forms without recording identifying personal information such as names or hospital numbers. Access to the dataset was restricted to the research team, and all information was stored in password-protected files used solely for research purposes.

Participation in the study was entirely voluntary. Respondents were informed that they could decline participation or withdraw at any stage without any consequences. There was no bias, coercion, or victimization of individuals who declined enrolment, and their routine clinical care was not affected in any way.

RESULTS

A total of 368 male respondents aged 40–90 years were included in the study. Three hundred and Thirty one (89.1%) of respondents are rural dwellers while Thirty Seven (10.9%) live in the urban areas.

One hundred and sixty-two (44.0%) of respondents were farmers while 32.6%, 3.8% and 16.6% were civil servants, military personnel and other professionals respectively. Ninety-nine (26.9%) respondents had no formal education while 22.3%, 24.7% and 26.1% had primary, secondary and tertiary educational qualifications respectively. The distribution of Severity of LUTS across age groups was as follows: 40–49 years (104, 28.3%), 50–59 years (90, 24.5%), 60–69 years (83, 22.6%), 70–79 years (75, 20.4%), and 80–90 years (16, 4.3%). (Table 1).

Overall prevalence of LUTS in the study population was 74.5%; mild symptoms were the most prevalent, accounting for 178 (48.4%) of respondents, followed by asymptomatic individuals 94 (25.5%), moderate symptoms 68 (18.5%), and severe symptoms 28 (7.6%). (Fig 1).

There was a clear variation in symptom severity across age groups. Among individuals aged 40–49 years, the majority were either asymptomatic (50, 48.1%) or had mild symptoms (47, 45.2%), with very few exhibiting moderate (6, 5.8%) or severe symptoms (1, 1.0%). In the 50–59 age group, mild symptoms predominated (55, 61.1%), while asymptomatic cases declined (25, 27.8%).

In older age groups, there was a progressive increase in symptom severity. Among those aged 60–69 years, moderate symptoms (20, 24.1%) and severe symptoms (4, 4.8%) became more prominent. This trend was more pronounced in the 70–79 age group, where moderate (29, 38.7%) and severe symptoms (12, 16.0%) constituted a substantial proportion of cases. In the oldest age group (80–90 years), severe symptoms were particularly common (11, 68.8%), while no asymptomatic individuals were observed. A Chi-square test of independence demonstrated a statistically significant association between age group and symptom severity, $p < 0.001$.

The quality of life assessment showed that the majority of respondents reported being either "pleased" or "mostly satisfied," corresponding to the high proportion of individuals with mild or no symptoms. However, a progressive shift toward poorer quality of life categories was observed with increasing symptom severity. Respondents with moderate symptoms frequently reported a "mixed" quality of life, while those with severe symptoms were more likely to report being "mostly dissatisfied," "unhappy," or "terrible." This demonstrates a clear relationship between increasing IPSS scores and worsening quality of life.(Table 2).

Cross-tabulation of IPSS severity and quality of life revealed a progressive decline in patient-reported well being with increasing symptom severity. The majority of respondents with mild symptoms reported being "pleased" or "mostly satisfied," whereas those with moderate symptoms were more likely to report a "mixed" quality of life. In contrast, respondents with severe symptoms predominantly reported being "mostly dissatisfied," "unhappy," or "terrible." This pattern demonstrates a strong relationship between symptom severity and quality of life. (Table 3).

A Chi-square test of independence was performed to examine the relationship between IPSS severity and quality of life. There was a statistically significant association between symptom severity and quality of life, $p < 0.001$. Increasing severity of LUTS was associated with progressively poorer quality of life.

Table 1: Severity of Lower Urinary Tract Symptoms by Age Group

Severity	40–49 yrs	50–59 yrs	60–69 yrs	70–79 yrs	80–90 yrs	Total(%)
Asymptomatic	50	25	15	4	0	94
Mild	47	55	44	30	2	178
Moderate	6	10	20	29	3	68
Severe	1	0	4	12	11	28
Total	104	90	83	75	16	368

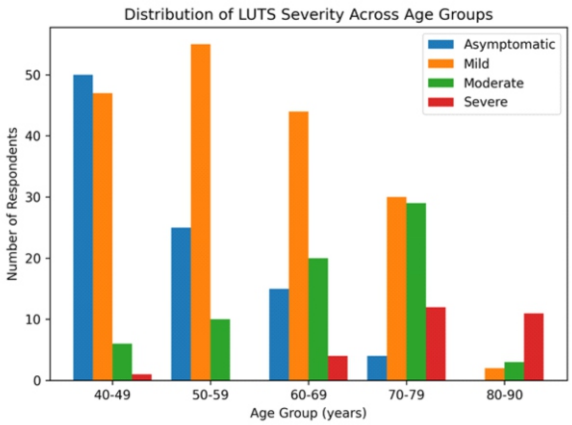

Figure 1: Distribution of LUTS severity across age groups

Table 2. Quality of Life Distribution among the respondents

Quality of Life Category	Number of Respondents	Percentages
Delighted	36	9.8
Pleased	139	37.8
Mostly Satisfied	71	19.3
Mixed	31	8.4
Mostly Dissatisfied	36	9.8
Unhappy	45	12.2
Terrible	10	2.7
Total	368	100

Table 3: Quality of Life vs IPSS Cross – Tabulation (N=368)

PSS ategory (n)	Delighted	Pleased	Mostly Sat	Mixed	Mostly Dis	Unhappy	Terrible	Total
ild (178)	60	60	35	10	7	5	1	178
oderate 58)	5	15	18	12	9	7	2	68
evere (28)	0	2	2	5	10	7	2	28
symptomati (94)	40	22	16	4	4	6	2	94
otal	105	99	71	31	30	25	7	368

Key: n= Number in each category, Sat=Satisfied, Dis=Dissatified

DISCUSSION

The overall prevalence rate of lower urinary tract symptoms in the study population was 74.5%, this is similar to reported prevalence of 15-90% worldwide [5,7,10,11,12,13]

This study demonstrates a clear and statistically significant relationship between advancing age and the severity of lower urinary tract symptoms (LUTS). The predominance of mild symptoms in the overall population (48.4%) suggests that a large proportion of men in this cohort are in the early stages of disease, which presents an opportunity for early intervention and preventive strategies.

The findings reveal a progressive increase in symptom severity with age, with moderate and severe LUTS becoming more prevalent in men aged 60 years and above. This pattern is consistent with the known natural history of benign prostatic enlargement and age-related bladder dysfunction. The near absence of severe symptoms in younger age groups (40–59 years) and their marked increase in older individuals, particularly those aged 70 years and above, underscores the role of aging as a key determinant of disease progression. These findings are consistent with that of studies conducted in the United States, United Kingdom, Sweden, Saudi Arabia, India, Malaysia, Ethiopia, and Nigeria.[5,6,7,8,10,11,12]

The complete absence of asymptomatic individuals in the 80–90 age group further highlights the cumulative burden

of LUTS with advancing age. In this group, the high proportion of severe symptoms (68.8%) may reflect delayed presentation, limited access to care, or progression of untreated disease over time.

These findings are consistent with previous epidemiological studies globally which have demonstrated that LUTS prevalence and severity increase with age due to factors such as prostatic enlargement, detrussor over activity, impaired bladder contractility, and increased post-void residual urine. The observed trend supports the hypothesis that LUTS is largely an age-dependent condition with multi-factorial pathophysiology.[5,7,8,9,10,11,12]

From a clinical and public health perspective, the results emphasize the need for:

- Early screening and symptom assessment, particularly from middle age
- Health education to encourage timely presentation
- Strengthening urological services, especially for elderly populations

Furthermore, the significant association between age and LUTS severity ($p < 0.001$) reinforces the importance of incorporating age stratification in both clinical evaluation and health policy planning.

The observed relationship between symptom severity and quality of life in this study is consistent with previous findings that increasing LUTS severity is associated with greater impairment in daily functioning and well being.[8,9,11,12,13] The predominance of satisfactory quality of life among respondents with mild symptoms highlights the relatively low burden at early stages of disease, while the marked deterioration in quality of life among those with severe symptoms underscores the need for timely intervention.

The significant association between IPSS severity and quality of life observed in this study confirms that LUTS has a substantial impact on patient well being. The progressive deterioration in quality of life with increasing symptom severity highlights the clinical importance of early diagnosis and timely intervention. This finding is consistent with previous studies demonstrating that symptom burden is a key determinant of patient-reported outcomes.[12,13]

CONCLUSION

Lower urinary tract symptoms are common among men aged 40 years and above in Benue South and significantly impair quality of life. This study provides baseline epidemiological data essential for health service planning, specialist training, and resource allocation within the region.

RECOMMENDATIONS

1. Routine screening for lower urinary tract symptoms should be incorporated into outpatient clinics for men aged 40 years and above using the International Prostate Symptom Score to facilitate early detection and timely intervention.
2. Health education and community awareness programs should be implemented to improve knowledge of LUTS and encourage early presentation, particularly among older men who are more likely to have moderate-to-severe symptoms.
3. Primary healthcare providers in the region should be trained on the evaluation and initial management of LUTS, including appropriate use of symptom scoring tools and timely referral to urology specialists.
4. Health authorities should strengthen urology services in General Hospitals within the Benue South Senatorial District by providing basic diagnostic facilities such as ultrasound, urinalysis, PSA testing, and uroflowmetry where feasible.
5. Structured referral pathways should be established between primary care facilities and specialist centers to ensure prompt management of patients with moderate-to-severe symptoms or complications.
6. Community-based screening outreach programs should be considered, particularly targeting rural populations with limited access to specialist care.
7. Further population-based studies with probability sampling techniques are recommended to provide more generalizable prevalence estimates and to evaluate risk factors associated with LUTS in the region.
8. Longitudinal studies should be conducted to assess progression of symptoms and outcomes of various treatment interventions among affected men.
9. Policymakers should incorporate LUTS and benign prostatic enlargement into non-communicable disease planning for ageing male populations, including resource allocation for diagnosis and treatment.
10. Future studies should also evaluate the economic burden and impact of LUTS on productivity and quality of life to guide comprehensive healthcare planning.

Declarations

The authors declare no conflict of interest.

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INTERNATIONAL PROSTATE SYMPTOM SCORE (I-PSS)

Patient Name: Date:	Not At All	Less Than 1 Time in 5	Less Than Half The Time	About Half The Time	More Than Half The Time	Almost Always	YOUR SCORE
1. Incomplete Emptying Over the past month, how often have you had a sensation of not emptying your bladder completely after you finish urinating?	0	1	2	3	4	5	
2. Frequency Over the past month, how often have you had to urinate again less than two hours after you have finished urinating?	0	1	2	3	4	5	
3. Intermittency Over the past month, how often have you found you stopped and started again several times when you urinated?	0	1	2	3	4	5	
4. Urgency Over the past month, how often have you found it difficult to postpone urination?	0	1	2	3	4	5	
5. Weak Stream Over the last month, how often have you had a weak urinary stream?	0	1	2	3	4	5	
6. Straining Over the past month, how often have you had to push or strain to begin urination?	0	1	2	3	4	5	
	None	Once	Twice	3 times	4 times	5 or more	YOUR SCORE
7. Nocturia Over the past month how many times did you most typically get up each night to urinate from the time you went to bed until the time you got up in the morning?	0	1	2	3	4	5	
Total I-PSS Score							

Quality of Life due to Urinary Symptoms	Delighted	Pleased	Mostly satisfied	Mixed	Mostly unhappy	Unhappy	Terrible
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?	0	1	2	3	4	5	6

The I-PSS is based on the answers to seven questions concerning urinary symptoms. Each question is assigned points from 0 to 5 indicating increasing severity of the particular symptom. The total score can therefore range from 0 to 35 (asymptomatic to very symptomatic).

Although there are presently no standard recommendations into grading patients with mild, moderate or severe symptoms, patients can be tentatively classified as follows: **0 - 7 = mildly symptomatic; 8 - 19 = moderately symptomatic; 20 - 35 = severely symptomatic.**

The International Consensus Committee (ICC) recommends the use of only a single question to assess the patient's quality of life. The answers to this question range from "delighted" to "terrible" or 0 to 6. Although this single question may or may not capture the global impact of BPH symptoms on quality of life, it may serve as a valuable starting point for doctor-patient conversation.