

Spectrum of lower urinary tract symptoms in the women attending gynecological OPD in a tertiary care hospital in Northeast India

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Abstract

Aim: Lower Urinary Tract Symptoms (LUTS) are common conditions seen in women of all ages and by clinicians of nearly all specialties. The prevalence of LUTS has been measured by numerous epidemiological studies around the globe. However, there are insufficient data from India, particularly among women consulting gynecology clinics. This observational study was conducted to determine the proportion of LUTS among women attending the Gynecology OPD.

Material and methods: For the evaluation, a standardized, pretested, structured, and scored Bristol LUTS questionnaire containing sociodemographic information and a clinical history of LUTS symptoms has been utilized. The symptoms of LUTS were classified as storage, voiding, and stress symptoms. Each response received a score between 0 and 4. Patients were categorized into no/minimal LUTS (score 1–7), moderate LUTS (score 8–19), and severe LUTS (score >20). In our study, 48% of women attending the Gynecological OPD had LUTS. Age and vaginal delivery had a significant influence on the incidence of LUTS.

Results: Despite the high prevalence of LUTS, few patients in our study spontaneously reported symptoms of LUTS. This underreporting may be due to a lack of awareness as well as social stigma. Many consider these symptoms to be a normal part of the ageing process, especially in postmenopausal women.

Conclusion: Although all of the patients we have identified are based on the evaluation of a symptomatic questionnaire, a urodynamic study should be conducted to determine whether or not these women have different types of LUTS.

Key words: lower urinary tract symptoms, Bristol's questionnaire, urodynamic study, LUTS

Introduction

Lower Urinary Tract Symptoms (LUTS) are prevalent conditions that can affect men and women of all ages and clinical specialties. These symptoms have extensive human and social repercussions, causing distress, shame, and loss of self-esteem. In recent years, there has been a growing interest in various LUTS due to improved diagnostic and treatment options, as well as an increased awareness of the symptomatology and its negative influence on daily life. According to current standards recommended by the International

Continence Society (ICS), LUTS are divided into three groups: storage, voiding, and post-micturition. The symptoms of excessive storage are an overactive bladder (OAB) and urinary incontinence (UI). The symptoms of voiding include a feeble or sluggish stream, hesitancy, and terminal dribbling. The post-urination symptoms include incomplete voiding and post-urination dribbling. LUTS comprises symptoms related to sexual activity, as well as genital and lower urinary tract pain [1,2]. The prevalence of lower urinary tract symptoms is high and tends to rise with age. Pregnancy, childbirth, and obesity are also major

risk factors. Other risk factors for urinary incontinence include smoking, diabetes, chronic obstructive airway disease and neurological disorders, and previous significant pelvic surgery such as hysterectomy [2].

Menopause has been identified as a risk factor for urinary incontinence. Menopause may have a distinct association with stress urinary incontinence than with urge incontinence, according to available evidence. In one study, the prevalence of urodynamic stress incontinence decreased from 21% to 12% after menopause, while the prevalence of detrusor overactivity increased from 9% to 19% [3]. There has been concern that hysterectomy may be associated with development of urinary incontinence via damage to the pelvic nerves and pelvic support structures [4]. A study found that LUTS appears to be more common following vaginal than abdominal hysterectomy [5].

Consequently, a validated instrument with extended questions for LUTS quantification was added to the Gynae OPD register [6]. However, the majority of prospective studies have failed to discover an association between hysterectomy and subsequent incontinence, whereas several epidemiologic studies have reported an association. Hormone replacement therapy has been extensively used to treat LUTS for many years. In the HERS study, however, it was discovered that urinary incontinence intensifies in older postmenopausal women taking daily estrogen plus progestin therapy compared to those women who were on placebo [7]. The prevalence of LUTS, particularly stress urinary incontinence (SUI) and OAB, increases with pelvic organ prolapse. In many cases, correction of pelvic organ prolapse reduces LUTS symptoms.

Before corrective surgery, it is necessary to have a solid understanding of the co-occurrence of LUTS and pelvic organ prolapse [8]. LUTS impacts women of all ages, and an in-depth study of LUTS is necessary to develop an individualized treatment protocol.

Review of literature

The EPIC study is the world's largest epidemiological investigation to measure the prevalence of UI, OAB, and other LUTS to date. This is the first evaluation of LUTS using the ICS definitions from 2002. LUTS can be divided into storage voiding and post micturition symptoms according to the ICS 2002 definitions. The storage symptoms include urgency, frequency, nocturia, and urinary incontinence (UI); voiding symptoms include slow stream, intermittent stream, hesitancy, straining, and terminal dribble; Over active bladder (OAB) is a recently defined syndrome characterized by the storage LUTS of urgency with or without UI usually with frequency and nocturia [9].

The study found that 66.6% of women had one or more LUTS [9]. Before the introduction of ICS definitions, two other studies evaluated the prevalence of OAB – SIFO study in six European countries between 1997-98 and the National Over Active Bladder Evaluation (NOBLE) Study which was conducted in the United States [10]. In other studies, the prevalence of LUTS in women ranges from 45.2% to 76.3%, and this prevalence was from the outpatient population [11]. Debra et al. reported that storage symptoms are more prevalent in women than voiding or postmicturition symptoms. In the majority of women, nocturia was the most prevalent symptom (54.5%), followed by urgency (12.8%) and OAB (12.8%) [3,12]. In the year 1998-99, in Vienna a health screening survey was conducted using Bristol Female LUTS questionnaire and again those women surviving in the year 2005 were re-interviewed which suggested that the female LUTS is a dynamic condition rather than a progression disorder; This study has tried to analyze the natural

history of LUTS in females which postulated that the storage symptoms are more likely to improve with time [13]. Karin et al. from EpiLUTS study evaluated the participants ratings of the frequency and symptom-specific bother of individual LUTS and condition-specific HRQL (health related quality of life), generic health status, anxiety and depression. Most of the women had the lowest levels of HRQL and highest levels of anxiety and depression, 53.3% of women meeting self-reported screening criteria for clinical anxiety (Hospital Anxiety and Depression Scale, HADS, Anxiety > or =8), and 37.6% of women meeting self-reported criteria for clinical depression (HADS Depression > or =8). This indicates that women with LUTS have a high level of anxiety and depression, which is very concerning [9,14].

Numerous studies have identified the risk factors that may contribute to the development of LUTS in women. The factors which are associated with urinary incontinence includes age, parity, obesity, pelvic surgery, pulmonary disease, smoking, alcohol consumption, blood pressure, physical activity diabetes mellitus cardiac diseases [13,15-18]. The EPICONT study surveyed women of Norway between 1996-97 and again in 2006-08, showed a 16% increase in the prevalence of urinary incontinence between two time period with an incidence rate of 18.7% and remission rate of 34.1%.[15] However the prevalence of SUI peaks in the fifth decade of life and thereafter MUI continues to increase [15]. Though many studies have suggested the occurrence of LUTS as an age independent phenomenon, many studies have also confirmed the effect of age related changes leading to LUTS which peaks from 40 years of age and gradually plateau among women between 50-70 years and again its incidence doubles after 70 years of age [9,12,16]. Parity and the use of instruments are also associated with incontinence [17,18,19]. Women with a higher BMI have 12 times more chances of having LUTS as compared to underweight women [19]. Postmenopausal status and longer duration of peri-menopause have also been associated with storage and voiding LUTS, including SUI, nocturia, and a weak stream [20- 25]. In a study it has been suspected that women with adult lower urinary tract symptoms may have a higher prevalence of history of childhood dysfunctional voiding [26]. There are few longitudinal data on LUTS because of the slow progression of the disease, costs of longitudinal designs and difficulties in following a substantial number of individuals over several years; understanding natural history of the disease in women is important due to its high prevalence especially among the elderly [12,13,27].

Aim: The purpose of this study was to determine the prevalence of lower urinary tract symptoms among female patients of our institution's outpatient Obstetrics and Gynecology department.

Objectives: To estimate the proportion of LUTS among women attending the Gynecology OPD.

Material and methods

Type of investigation – observational.

Cross-sectional research design.

The study took place at Agartala Government Medical College AND GB Pant Hospital Agartala, Tripura, India.

This research was conducted over the course of six months, from September 2020 to March 2021.

Females of any age attending the hospital's gynecology outpatient department (OPD) were designated as the study population.

Sample size [8]-

Sample size = $z^2 \times p \times (1-p) / d^2$

Z = degree of assurance

P= anticipated frequency or percentage

D= precision

$n=3.84 \times 35.9 \times (100-35.9) / 5 \times 5 = 354$

The number of samples is 354.

Inclusion requirements: Women of any age attending the gynecology OPD who were presumably healthy and willing to participate in the study met the inclusion criteria for the study.

Exclusionary standards:

- Female with known kidney disease and undergoing any uro-gynecological procedures;
- Females during the menstrual cycle;
- Females with identified urinary tract abnormalities;
- Those who were expectant;
- Not interested in participating.

For the evaluation, a standardized, pretested, structured Bristol's female LUTS-SF questionnaire containing sociodemographic information and clinical history for LUTS symptoms was utilized. The symptoms of LUTS were classified as storage, voiding, and tension. Each response received a score between 0 and 4. Patients were categorized into no/minimal LUTS(score,1–7), moderate LUTS (score,8–19), and severe LUTS (score,>20).

The data was entered into SPSS version 25 and expressed in frequency and percentage form for analysis.

Statistical analysis: The Chi-Square test and multiple regression analysis will be utilized for qualitative data analysis.

Results and evaluation

354 participants were recruited for the study. The Bristol Female LUTS-SF questionnaire was used to assess LUTS in women who met the study's inclusion criteria. The socio-demographic information is provided in Table 1. Presented data are n (%); N=354. In our investigation, the majority of the population was between the ages of 21 and 40, i.e., between 21 and 40 years old i.e., 161 (46.5%) demonstrated in Figure 1 and Table 3. The participant's average age was 35.5 years.

Table 1

Socio-Demographic characteristics of the participants.

Age Group:	
<20	33 (9.3%)
21-40	161 (46.5%)
41-60	120(33.9%)
60-80	20 (7.1%)
80-100	15(4.2%)
Education:	
Illiterate	56(15.8%)
Primary	156(44.1%)
Secondary	88(24.9%)
Graduation	30(8.5%)
Post graduation	24(6.7%)
Marital Status	
Single	54(15.3%)
Married	204(57.6%)
Divorced	50(14.1%)
Widow	46(13%)
Occupation:	
Housewife	151(42.7%)
Working	149(42%)
Student	30(8.5%)
Retired	24(6.8%)
Others	0

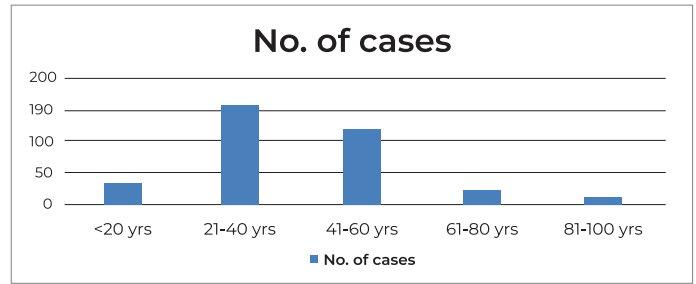


Figure 1 - Number of cases according to age

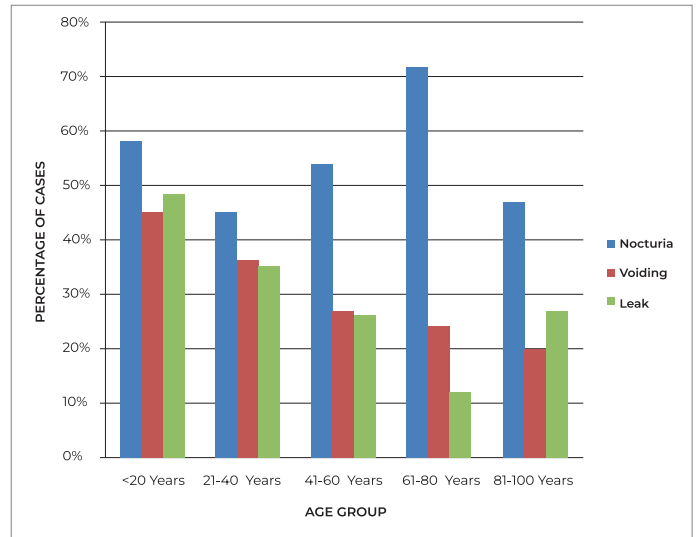


Figure 2 - Percentage of various LUTS

Table 2

Comorbidities in the study population.

Diabetes:	Yes: 54 (15.2%), No:300 (84.8%)
Hypertension:	Yes: 154 (43.5%), No: 200 (56.5%)
Smoking:	Yes: 14 (4%), No:340 (96%)
Abdominal Hysterectomy:	Yes: 4 (1.1%), No:350 (98.8%)

Table 3

Age distribution.

Age Group	No. of cases
<20	33 (9.3%)
21-40	161 (46.5%)
41-60	120(33.9%)
60-80	20 (7.1%)
80-100	15(4.2%)

Table 4

The proportion of LUTS according to severity.

No LUTS	184 (52%)
Mild LUTS	20 (5.6%)
Moderate LUTS	75 (21.2%)
Severe LUTS	75 (21.2%)
Proportion of LUTS	48%

In our study hypertension is the most common comorbidity (43.5%) followed by diabetes mellitus, smoking and hysterectomy respectively demonstrated in Table 2. In our study, the prevalence of LUTS was 48%, with moderate and severe LUTS sharing the same proportion, i.e., 21.2% each (75/170) demonstrated in Table4. The frequency symptoms were seen in 170 (100%), the urination symptoms were seen in 114 (67%), and the leakage symptoms were seen in 110 (64%) as demonstrated in Figure 3.

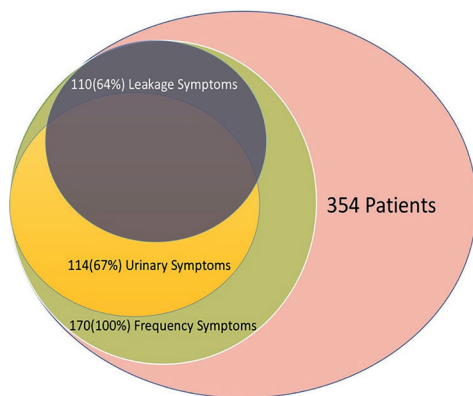


Figure 3 - Proportion of various symptoms of LUTS.

In every age group, nocturia is the most prevalent symptom, followed by voiding complaints as demonstrated in Figure 2. The prevalence of nocturia in different age groups is approximately 58% below 20 years, 44% in the age group 21-40 years, 53% in the age group 41-60 years, 71% in the age group 61-80 years, and 48% in the age group 81-100 years as demonstrated in Figure 2. In our study, elderly women were more likely to experience LUTS than their younger counterparts. The prevalence of severe LUTS increased significantly after the age of 41; in the 81-100 age group, 93.3% (14/15) of participants had severe LUTS, 88.0% (22/25) in the 61-80 age group, and 86.4% (70/81) in the 41-60 age group, which is highly significant ($p < 0.005$) demonstrated in Table 5. While evaluating the parity history, it has been observed that Nulliparous women have no LUTS at all. There were 36(10.2%) women were nulliparous; 117(33.1%) women were with parity =1; 87(24.6%) women were with parity =2; 71(20.1%) women were with parity =3; 21(5.9%) women were with parity = 4; 19(5.4%) women were with parity = 5; and 3(0.8%) women were with parity = 6 as demonstrated in Table 6. The proportion of LUTS were high in women with parity more than >2 ($p < 0.005$). In our study, 63.2% (224/354) of the women had vaginal births. Compared to caesarean section, however, women who delivered vaginally were more prone to develop LUTS (48.6% versus 46.4%) as demonstrated in Table 7. In this study the severity of LUTS increases with increasing BMI. There were 34 women who had BMI >30 and all of them are suffering from severe LUTS. There were 213 women who has BMI <20 Kg/m² and only 17 had severe LUTS as demonstrated in Table 8. Among all the participants 61 women had pelvic organ prolapse and 47 had LUTS. The Odds Ratio calculated is 4.63 which is statistically significant, demonstrated in Table 9.

Table 5 Demonstrate severity of LUTS with age.

Age Group	No LUTS	Mild LUTS	Moderate LUTS	Severe LUTS	P -Value
<20 years	31	2	0	0	0.000
21-40 years	153	7	1	0	
41-60 years	0	11	70	39	
61-80 years	0	0	3	22	
81-100 years	0	0	1	14	

Table 6 Demonstrates severity of LUTS with parity.

Parity	No LUTS	Mild LUTS	Moderate LUTS	Severe LUTS	P -Value
Nulliparous	36	0	0	0	0.000
1	108	5	3	1	
2	40	11	27	9	
3	0	4	34	33	
4	0	0	9	12	
5	0	0	2	17	
6	0	0	0	3	

Table 7 Relation of LUTS with Mode of Delivery.

MODE OF DELIVERY	LUTS PRESENT	LUTS ABSENT	Significance (p- value)
VAGINAL	109 (48.6%)	115 (51.4%)	0.000
CS	61 (46.9%)	69 (53.1%)	

Table 8 Demonstrates the severity of LUTS with BMI.

BMI	No LUTS	Mild LUTS	Moderate LUTS	Severe LUTS	P - Value
≤20 kg/m ²	114	19	63	17	0.000
21-25 kg/m ²	74	1	7	8	
26-30 kg/m ²	0	0	5	16	
>30 kg/m ²	0	0	0	34	

Table 9 Demonstrates the presence of LUTS in Pelvicorgan prolapse.

Prolapse	LUTS present	LUTS absent	Odd's Ratio
Present	47	14	OR=4.63
Absent	123	170	

Discussion

In earlier studies, the prevalence of LUTS in women in the out-of-hospital population ranged from 45.2% to 76.3% [28]. The EPIC study which was the first largescale, multinational, cross-sectional study estimated the prevalence of LUTS, which is 64.3% in general population using the recent ICS definition (2002) and 66.6% of women were affected by one or more LUTS [9]. The prevalence of LUTS in women in China was 57.7%. Storage symptoms (frequency) were present in all women with LUTS, followed by voiding symptoms in 67% of women and post micturition symptoms in 62% of women [29]. Our study's higher prevalence of storage symptoms is consistent with previous research. In this study, the majority of participants were between the ages of 21 and 40, but the prevalence of LUTS increased significantly after age 41. The relationship between age and LUTS is consistent with many previous studies [9,12,16,27,29]. In some studies, it has been found that LUTS symptoms subside after 65 years of age [27]. The remission of symptoms with increasing age is not well understood. In our study, however, we discovered that as age increases, so do the symptoms, which is statistically significant ($p < 0.005$). Our study demonstrates that severe forms of LUTS are more common in people older than 41, with the highest proportion occurring in those aged 81 to 100. Among all of the symptoms of various LUTS, including storage, voiding, and post micturition symptoms, nocturia is the most prevalent, affecting between 44% and 71% of patients across all age categories. This finding of nocturia with or without urgency or frequency indicates a problem with storage LUTS and is the most prevalent symptom, which is consistent with other studies [9,29]. The majority of patients in the younger age group did not have LUTS. This may be attributed to the menopausal

genitourinary changes. According to recent data, 50% of women in the older age group suffer from urinary incontinence [30]. This was primarily contributed by muscle injuries, widening of levator hiatus, diminution of reflex pelvic floor activation on coughing, or increased urethral mobility at stress. In older women, the urethral closing pressure and pelvic denervation decrease. In our study, the presence of pelvic organ prolapses and LUTS has a significant association with an OR of 4.63. Similar results were observed in The Boston Area Community Health Survey or BACH survey, an observational cohort study in which the multivariate adjusted OR for the association between uterine prolapse and the progression of LUTS was 3.05 [31]. This study also demonstrates that LUTS are more prevalent in women with >3 children, and as the number of children increases, so does the severity. However, it has been discovered that LUTS are more prevalent in vaginally-delivered women than in those who have undergone caesarean section. In our study, 63.2% (224/354) of the women had vaginal births. Comparing vaginal delivery to caesarean section, however, women who delivered vaginally were more prone to develop LUTS (48.6% vs. 46.4%). Our study's conclusion regarding the incidence of LUTS in relation to vaginal versus caesarean delivery is statistically significant. In their investigations, Nancy et al. found that women who have had three vaginal births are at a greater risk of developing LUTS [31]. Throughout the literature, caesarean section has been shown to protect against the development of incontinence. In a prospective Cohort study, Erica et al. studied the effects of method of delivery on urinary incontinence and found that Caesarean section is associated with a lower absolute risk of developing incontinence as compared to vaginal delivery in the postpartum period 3 months after delivery; urinary incontinence occurred daily in 3.11 percent of patients following vaginal delivery compared to 0.88 percent following caesarean section [32]. In a number of studies, it was discovered that some degree of LUTS occurs during pregnancy and increases in the postpartum period, but that the symptoms resolve on their own

[32-34]. Many researchers have proposed the reversible trauma hypothesis, which may be due to partial recovery of the pelvic floor muscles.

Conclusion

Although LUTS are prevalent in the population, its impact has received less attention. It has evolved into a major issue affecting the quality of life. The majority of investigations on LUTS have focused on the general population. However, we have limited information regarding gynecology OPD patients who may be suffering from LUTS. Few studies have been conducted on the natural history of LUTS in males, while there was few research in the female population. Therefore, establishing a clinical practice of identifying LUTS in the Gynecology OPD will improve the lifestyle outcomes of women attending for other gynecological issues. In our study, we discovered that nearly 48 percent of patients have some degree of LUTS. However, only a small percentage of patients report experiencing LUTS symptoms. This underreporting may be due to a lack of awareness and social stigma in the community. All of the patients we've identified are based on the evaluation of symptomatic questionnaires, but urodynamic testing should be performed to confirm whether these women truly have various types of LUTS.

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