PREVALENCE OF FEMALE LOWER URINARY TRACT SYMPTOMS (FLUTS) IN PAKISTAN. A POPULATION BASED MULTI-CENTER STUDY

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ABSTRACT

Background: FLUTS affected about 2.3 billion (45.8%) people of the world population in 2018. It is more common among females and mostly affects multiparous and elderly females.

Objectives: This study aimed to find out the prevalence of lower urinary tract symptoms and its association with quality of life within a population-representative sample of women aged between 18 to 70 years in Pakistan

Methods: This was a multicenter prevalence study based on a cross-sectional survey of seven centers of Pakistan among women aged between 18-70 years. Prevalence of FLUTS and its relation with demographic factors like age, parity, mode of delivery, and socioeconomic conditions data was collected.

Results: In this study, the prevalence of LUTS ranges from 4.31- 44.31%. Nocturia was the highest complaint with (44.31%) followed by urgency (35.60 %), suprapubic pain in association with mostly spontaneous vaginal delivery (45.6%). Voiding symptoms are more common than storage. The most bothersome symptoms were nocturnal enuresis (56.03 %). The most common age group is 18-30 years with 44.9 %. Mostly females were of a low socioeconomic status. FLUTS is more common in nulliparous women (55.6%).

Conclusion: FLUTS is a significant problem among women in Pakistan and has a significant impact on quality of life, mental health, and work productivity. Overall, the correlation between LUTS in female's age, parity, mode of delivery, and socioeconomic status highlights the early detection and management. It is necessary to educate females regarding FLUTS, due to its high prevalence.

Keywords: FLUTS, females, prevalence, parity, mode of delivery.

INTRODUCTION

The term lower urinary tract symptoms in females (FLUTS) refers to a variety of different symptoms. According to the International Continence Society (ICS), it is described as symptoms that result from conditions and diseases affecting the bladder, urethra, and prostate [1]

They can be categorized into 3 conditions – voiding, storage, and post-micturition.

Symptoms of LUTS are Nocturia, urgency, stress incontinence, frequency, true incontinence, and nocturnal enuresis. Voiding Symptoms are difficulty in voiding, hesitancy, Suprapubic pain, intermittency and dribbling of urine[2]. Whenever there is leakage with sneezing, cough, during exercise or weight lifting is defined to be as stress incontinence and is frequently seen after pregnancy and childbirth [3].

Dribbling of urine is also common due to neurological diseases or because of an overactive bladder (OAB). The bladder contracts when it shouldn't, causing leakage[4]. This is referred to as urge incontinence. Incontinence and storage problems are generally more common in women than in men[5].

Urinary retention is the opposite of incontinence. when there is trouble emptying the bladder and urine left in the bladder, it causes a risk of infections and affects the

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kidneys as well. Retention is common in elderly men, but it is unusual in women they are suffering from neurological disease, prolapse or postoperative surgical complication [6].

Voiding problems are generally less common in women than men. Postvoiding symptoms are Voiding LUTS which include a sense of incomplete bladder emptying and increased post-voiding residual volume (PVR) of urine, which increases risk of urinary tract infections[7].

Voiding symptoms may be due to a plethora of problems, including detrusor underactivity and bladder outlet obstruction. Studies about FLUTS is generally focus on storage problems such as urgency, frequency, with or without incontinence and nocturia. It is known that Causes of FLUTS are multifactorial and hence present a challenge to the management of these problems. FLUTS affected about 2.3 billion people or 45.8% of the world population in 2018[8].

In the general population the prevalence of incomplete bladder emptying is approximately 35%. Till date, the prevalence of self-reported voiding complaints was only derived from small cohort studies. The earlier studies point that the prevalence of FLUTS is between 45.2 and 76.3% in the outpatient of hospital population[9].

The objectives of this study was to report the prevalence of lower urinary tract symptoms in all women age between 18 -70 years. In addition, to assess the relationship of FLUTS on quality of life and bothersome affects.

Rationale of this study was to increase our understanding of the type and extent of self-reported FLUTS in population. Despite availability of various options of medical treatment, LUTS have remained a significant public health issue as well as an economic burden on the society. In Pakistan however, such basic data as the prevalence of FLUTS is lacking. We are therefore conducting a multi centric cross-sectional population-based study from all provinces of Pakistan.

MATERIAL AND METHODS

It was a multicenter prevalence study based on cross sectional survey, conducted at seven institutions across Pakistan from September 2021 to December 2023. A pilot study was conducted on 100 subjects in May 2021 using the questionnaire to help calculate the sample size.

The sample size for the study was estimated in two stages by using PASS 2020 Power Analysis and Sample Size Software (2020). NCSS, LLC. Kaysville, Utah, USA, ncss.com/software/pass.[41]. First an overall sample size of 1162 was calculated through a procedure of “confidence interval for one proportion” with a two-sided 95% confidence interval with a width equal to 0.05830 when the sample proportion was taken as 0.50000. In the second stage the total sample size of 1162 was divided into 07 strata through a procedure of “confidence Intervals for One Proportion in a Stratified Design” with proportion of 0.143(14.3%) in each stratum which came out as 162 subjects for each stratum.

Study participants were selected randomly by simple randomization technique within 7 survey centers with an appropriate demographic profile (age, gender, socioeconomic factors, marital status, mode of delivery, parity). All participants provided an informed consent. Subjects answered questions on ICS symptom definitions questionnaire.

After validation of proforma by principal investigator, a total number of 1160 candidates were qualified for the study.

Data was collected and analyzed using SPSS version 23

Inclusion criteria:

All woman between ages 18 to 70 years, who presented with symptoms of lower urinary tract were included in the study.

Exclusion criteria:

Women who had received antibiotics, were pregnant, diabetic, immune compromised, malignancies or prolapse were excluded.

A written informed consent was obtained from the candidates, after defining the details of the study, data was collected. A validated questionnaire (IPSS) by principal investigator of all common symptoms of Lower Urinary Tract (LUTS) were filled up by a medical practitioner.

The symptoms were day time nocturia, frequency, stress incontinence, dribbling, urgency, suprapubic pain, hesitancy, nocturnal enuresis, intermittency and difficulty in voiding symptoms. The effect on quality-of-life response in terms of Visual analogue scale (IPSS) were converted into five ordinal scales of scales of Delighted (0), Pleased (1-3), Mostly satisfied (4-6) Dissatisfied (7-8) and Terrible (9-10) and presented in terms of frequency for each lower urinary tract symptom (ICSS). The filled in 1160 survey forms on lower urinary tract symptoms in females were converted into database on SPSS Version 23.0.

First five demographic questions based on respondents age, marital status, social-economic status, Number of children and mode of delivery were summarized in terms of their frequencies., percentages and 95% confidence intervals according to their classifications were calculated. The next eleven questions based on FLUTS were counted for their frequencies to determine prevalence (%) of each symptom and their 95% confidence interval were also computed.

Each demographic variable was then presented in accordance to eleven lower urinary tract symptoms FLUTS in the form of contingency tables. The response in terms of Visual analogue scale were converted into five ordinal scales of Delighted (0), Pleased (1-3), Mostly satisfied (4-6) Dissatisfied (7-8) and Terrible (9-10) and presented in terms of frequency. For each lower urinary tract symptom data were entered into a Microsoft Excel 7.0 database and was developed and analyzed on the basis of filled in proformas on SPSS Version 23.0. We used Descriptive statistics for the initial data analyses. The relationships between age and FLUTS prevalence, Socioeconomic status and LUTS Parity and LUTS. Mode of delivery and FLUTS were computed as well.

Approval was taken from the Institutional Review Board of Jinnah Postgraduate Medical Centre, Karachi and Hayatabad Medical Complex /Medical and Teaching Institute IRB. 1478 approved on 14.8.2023)

Results. The prevalence of LUTS ranged from 4.31-- 44.31 % for different symptoms. In our study it was observed that nocturia was the highest reported complaint (44.31%), which was followed by urgency (35.60 %), suprapubic pain (36.03 %), stress incontinence (29.91%) see Table 1. In our study the most common age group is 18-30 years comprising of 521 females with 44.9 % among all female, most of females are married 78.7% . 78.9% have low socioeconomic status. LUTS is more common in nulliparous women 55.6 %, LUTS more common in spontaneous vaginal delivery 45.6%. Voiding symptoms are more common than Storage symptoms i.e., 70.55 %, vs 24.67%. The most bothersome symptoms in LUTS were nocturnal enuresis, stress incontinence, dribbling, difficulty in micturition (Table 2).

Table:1 Demographic variables Lower Urinary Tract Symptoms in females (N =1160)

Variables	Nocturia (n=514)	Suprapubic pain (n=418)	Urgency (n=413)	Stress incontinence (n=347)	Incontinence (n=215)	Frequency (n=178)	Dribbling (n=137)	Difficulty (n=127)	Hesitancy (n=124)	Intermittency (n=122)	Nocturnal enuresis (n=50)
Age (years)											
18-30	209	156	150	94	43	81	33	37	38	39	11
31-40	127	125	98	105	52	37	37	35	36	32	9
41-50	95	73	92	75	61	35	25	25	21	21	12
51-69	68	50	57	59	44	19	32	23	24	24	14
61-70	15	14	16	14	15	6	10	7	5	6	4
Marital Status											
Married (n=983)	443	354	337	298	176	148	114	100	101	96	40
Unmarried (n=163)	31	38	45	21	16	15	12	13	11	14	5
Widow/ Divorced (n-59)	40	26	31	28	23	15	11	14	12	12	5
Socio-ecnomical status (Rs.)											
<30,000 (n=940)	443	357	339	301	178	148	115	101	101	178	40
30,000-100,000 (n=161)	31	35	43	18	14	15	11	12	11	14	5
>100,000 (n=59)	40	26	31	28	23	15	11	14	12	23	5
Parity											
None (n=706)	330	239	240	202	130	120	83	72	75	70	29
02-Mar (n=324)	139	128	118	112	59	35	40	35	33	34	15
>3 (n=130)	45	51	55	33	26	23	14	20	16	18	6
Mode of Delivery											
SVD (n=650)	290	236	251	220	143	96	83	82	72	70	30
Forceps (n=85)	36	25	24	22	16	12	13	8	7	7	3
Caesarean (n=196)	90	83	60	54	27	34	19	16	24	20	6
Both SVD & C/S (n=77)	40	36	39	35	19	19	14	14	13	14	10

Table 2: Quality of life with Lower Urinary Tract Symptoms in females. (N=1160)

Symptoms	Quality of life							
	Delighted	Pleased	Dissatisfied	Mostly Unsatisfied	Terrible	Total	Prevalence (%)	95% CI* (Prevalence)
Nocturia	3 (0.58%)	333(64.79%)	29(5.64%)	135(26.26%)	14(2.72%)	514(100%)	44.31%	41.47-47.18
Suprapubic pain	11(2.63%)	223(53.35%)	31(7.42%)	145(34.69%)	8(1.91%)	418(100%)	36.03%	33.31-38.83
Urgency	29(7.02%)	219(53.03%)	27(6.54%)	126(30.51%)	12(2.91%)	413(100%)	35.60%	32.89-38.39
Stress incontinence	4(1.15%)	148(42.65%)	27(7.78%)	143(41.21%)	25(7.20%)	347(100%)	29.91%	27.33-32.60
Incontinence	3(1.40%)	98(45.58%)	27(12.56%)	76(35.35%)	11(5.12%)	215(100%)	18.53%	16.38-20.85
Frequency	0(0.00%)	119(86.85%)	0(0.00%)	59(33.15%)	0(0.00%)	178(100%)	15.34%	13.36-17.51
Dribbling	2(1.46%)	57(41.61%)	18(13.14%)	51(37.23%)	9(6.57%)	137(100%)	11.81%	10.05-13.76
Difficulty	10(7.87%)	50(39.37%)	13(10.24%)	49(38.58%)	5(3.94%)	127(100%)	10.95%	9.25-12.84
Hesitancy	10(8.06%)	52(41.94%)	9(7.26%)	50(40.32%)	3(2.42%)	124(100%)	10.69%	9.01-12.57
Intermittency	10(8.20%)	64(52.46%)	5(4.10%)	43(35.25%)	0(0)	122(100%)	10.52%	8.85-12.38
Nocturnal enuresis	2(4.00%)	11(22.00%)	9(18.0%)	24(48.00%)	4(8.00%)	50(100%)	4.31%	3.25-5.60
***CI: Confidence Interval**								

DISCUSSION

FLUTS is common worldwide, but in Pakistan, the frequency of FLUTS is not well studied. In literature, the prevalence of FLUTS in Pakistan was 11.8%-88.5%. The prevalence of storage symptoms were 23.6%-79%, voiding symptoms were 1.8%-51%, and post-micturition symptoms were 0.3%-46%. Urinary incontinence was observed in 5.8%-45.8% of women. The prevalence of voiding and storage symptoms was 8.3%-26.6% and the prevalence of combined voiding, storage, and post-micturition symptoms was 6.6%-19.2%. Majority of patients who were suffering from

stress urinary incontinence were 1.9%-31.8%. The prevalence of urgency, urinary incontinence and mixed-type urinary incontinence was 0.7%-24.4% and 2.1%-12%, respectively

In one study (FLUTS) in Pakistan is estimated to be around 35.8%. The study was conducted on 358 women aged 20 to 70 years. Out of the 358 participants, 128 (35.8%) reported experiencing FLUTS. The most common symptoms reported were frequency (83.6%), urgency (69.5%), and nocturia (60.2%). Other symptoms reported included dysuria (38.3%), incomplete emptying (30.5%), and incontinence (27.3%). The study also found that FLUTS were more bothersome in women who were older, had a lower level of education, and had a lower socioeconomic status[10,11]

In our study out of 1160 women the commonest age group is 18-30 years comprising of 521 female with 44.9 % among all female. Most of female are married 78.7%,. 78.9% have low socioeconomic status, LUTS were more common in nulliparous women i,e 55.6% and in spontaneous vaginal delivery i,e 45.6%,The most bothersome symptoms in our study were nocturnal enuresis ,stress incontinence ,suprapubic pain ,urgency and nocturia i,e 56.19%, 44.22 , 39.98% and 34.62 % respectively. In our observation the prevalence of FLUTS was 4.31-- 44.31 %. Nocturia was the highest reported complaint (44.31%), which was followed by urgency (35.60 %), suprapubic pain (36.03 %), stress incontinence (29.91). Storage symptoms are less common than voiding symptoms 24.67%Vs 70.55%,. The Marital status and work status, vaginal delivery, prolonged labor, comorbidities, alcohol consumption, Increased age, multiparity and post-menopausal were found to be risk factors for lower urinary tract symptoms[12].

The prevalence of FLUTS is increasing particularly with age. Since the worldwide prevalence of FLUTS remains unknown, multi-continental studies, especially in the developing world, with less heterogeneity and more standardized definitions, are needed to better evaluate real-world data in women with lower urinary tract symptoms[13].

52 % of the study subjects were having one or more than one urinary symptoms in the past [14.15]This shows that FLUTS is more common in ASIA than WEST. For which more studies are to be done to find out the difference of prevalence of FLUTS among western and Asian populations.

In our study, nocturia 44.31%, supra pubic pain 36.03% and then stress incontinence (29.91%) was reported, followed by other symptoms. (Table 2).

44.9% of women presented in 18 -30 years of age ,has stress incontinence among all age groups, whereas urge incontinence more prevalent in the 30-40 age group.[16]

There is significant correlation between FLUTS and age, parity, mode of delivery, and socioeconomic status[17] .In our study the commonest age group is 18-30 years comprising of 521 females with 44.9 % among all female, most of females are married 78.7%,. 78.9% have low socioeconomic status. FLUTS is more common in nulliparous women 55.6 %, FLUTS more common in spontaneous vaginal delivery 45.6%. It is more prevalent in older female In literature[17]. This is due to natural aging process which can cause changes in bladder wall and pelvic floor muscles. women over the age more than 60 are more likely to experience FLUTS as compared to younger age but in our study, it is more common in younger age group18-30 years which may be because of old women may be thinking as a normal natural process or not giving proper history of symptoms but this should be further investigated[17].

Nocturia was the most common symptom (89.2%) followed by frequency (83.8%). We know that in voiding FLUTS, the most common is weak stream (63.5%)., Nocturia, Frequency, urge urinary incontinence (UI), urgency stress UI, and nocturnal enuresis, urgency were more common in patients older than 65 years. Urgency and urge UI were reported to be the most bothersome symptoms by 37% of the study population followed by straining (32%). The mean storage scores, incontinence scores, and quality of life (QoL) scores for patients younger than 65 years and 65 years or older were 6.9 and 8.5 ($p < 0.01$), 1.8 and 4.1 ($p \leq 0.01$), 4.9 and 6.1, respectively.[18]

In another study in Bristol, among women aged 19 years and above, pain symptoms were seen in the youngest age group 19 to 39 years[19] .The presence of nocturia in a survey of urinary symptoms in a Chinese population in Hong Kong was noted in 166 women among 819 women (20%). Parous women were three times more affected from FLUTS as compared to nulliparous women[20].

Most of the population consider it to be a routine normal process of ageing and other co-morbid condition but we suggest further studies to be carried out to find the cause.

The study also found that FLUTS had a significantly lower quality of life compared to those without FLUTS.

FLUTS were a common problem in Pakistan and were associated with a significant reduction in work productivity. FLUTS had a higher prevalence of depression and anxiety compared to those without FLUTS. Female sexual dysfunction in patients with urinary incontinence and lower urinary tract symptoms was significant[21].

Overall, the study suggests that FLUTS is an important problem among women in Pakistan and can be a significant source of bother and discomfort.

CONCLUSION

Overall, the literature suggests that FLUTS are a significant problem in Pakistan and have a great effect on their quality of life, work productivity and mental health. Overall, the correlation between FLUTS and age parity and mode of delivery and socioeconomic status highlights the early detection and management.

Health care providers should be aware of these risk factors and provide appropriate counselling and management to improve the quality of life of affected females.

The high no of prevalence of LUTS in young married nulliparous should be investigated to find out the reason behind because it is against the other studies reported in literature from all over the world.

In our study the low no of LUTS in older age groups is, against the reported studies in literature, as well as the nulliparous young females are more affected against literature in multiparous women It should be investigated to find out the reason behind.

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