

Evaluation of Traditional and Pictorial Symptom Scores among Indian Men with Lower Urinary Tract Symptoms: A Retrospective Observational Study

EESHANSH KHARE

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ABSTRACT

Introduction: The traditional questionnaire for Lower Urinary Tract Symptoms (LUTS) in males is the International Prostate Symptom Score (IPSS). To minimise its limitations, a picture-based Visual Prostate Symptom Score (VPSS) was developed as an alternative.

Aim: To compare the ease of use, applicability, and clinical correlation of the Traditional Symptom Score (TSS) and Pictorial Symptom Score (PSS) among Indian men presenting with LUTS.

Materials and Methods: This was a retrospective, record-based observational study conducted on 100 male patients with LUTS in the Outpatient Department (OPD) of the Urology Department at Vivanta Critical Care and Multispeciality Hospital, Chhindwara, Madhya Pradesh, India, from January 2024 to December 2024. The first 50 patients were given the IPSS questionnaire to complete, followed by the VPSS, and were considered Group I; the next consecutive 50 patients who completed the VPSS first and the IPSS later were considered Group II. Evaluation parameters were age, education status, time taken for filling symptom scores, help needed for filling symptom scores, prostate-specific antigen, prostate size, and

uroflowmetry parameters. Unpaired t-test, Chi-square test, and Pearson's correlation test were used in statistical analysis.

Results: The majority of patients, 16 (32%) in Group I and 20 (40%) in Group II, were aged 61-70 years. 29 (58%) in group I and 16 (32%) in group II had an average educational status of primary education and below. Thirty-two patients in group I completed the PSS without help, but only 15 in group II completed the TSS without help. 12 patients had difficulty completing the PSS, compared with 38 for the TSS. Difficulty faced by patients was understanding the scoring systems of each question and the questions asked in questionnaires. Mean Prostate-specific antigen (PSA) in group I and II was 2.46 ± 1.5 ng/mL and 2.17 ± 1.35 ng/mL, respectively. Patients with increased prostate size had a higher total score in group I ($r=0.91$) and group II as well ($r=0.90$). PSA also showed a positive correlation with both scores ($r=0.83$ and $r=0.76$, respectively). Both TSS and PSS showed a negative correlation with maximum flow rate ($r = -0.60$ and $r = -0.76$, respectively).

Conclusion: The PSS was easier for patients to complete than the traditional symptom score. The severity of LUTS was strongly correlated with both symptom scores. Maximum urinary flow rate inversely correlated with both symptom scores.

Keywords: Maximum urinary flow rate, Prostate, Prostate specific antigen, Obstructive, Post voiding

INTRODUCTION

Many of the patients attending the urology OPD present with LUTS. LUTS can be obstructive, storage, and post-voiding [1]. These symptoms have a strong positive association with age [2]. The common cause for LUTS in males is benign enlargement of the prostate (BPE); however, other non prostatic causes are also present [2]. The bother of lower urinary tract symptoms varies with each patient [3]. Some patients have slow and prolonged progressive symptoms, whereas in some it may resolve with time [3]. Validated questionnaires like TSS [Table/Fig-1] known as IPSS [4], and PSS [Table/Fig-2] known as VPSS [5], are key tools in diagnostic evaluation of LUTS in males.

Other diagnostic tests for further evaluation of LUTS include voiding diary, uroflowmetry, routine urine examination, urine culture and sensitivity test, local genitourinary examination with or without Digital Rectal Examination (DRE), Ultrasonography (USG) and serum PSA in suspected cases of prostatic enlargement [6].

Despite the differences in both scores, a correlation exists between the TSS and PSS. Though PSS is easy to use by patients with limited education, its wide application worldwide is limited, however some studies [7,8] in distinct parts of the world is available. Studies by Oranusi CK et al., showed negative correlation of maximum flow rate with IPSS score [9]. Similarly van der Walt CLE et al., showed

अंतर्राष्ट्रीय प्रोस्टेट लक्षण स्कोर (I-IPSS)							
प्रश्न का नाम:		दिनांक:					
	किसीसे कम (0)	1 से 2 तक	3 से 4 तक	5 से 6 तक	7 से 8 तक	9 से 10 तक	अवस्था
1. आपका पेशाब कितना कमजोर है?	0	1	2	3	4	5	
2. आपका पेशाब कितना अक्सर रुक जाता है?	0	1	2	3	4	5	
3. आपका पेशाब कितना अक्सर रुक जाता है?	0	1	2	3	4	5	
4. आपका पेशाब कितना अक्सर रुक जाता है?	0	1	2	3	4	5	
5. आपका पेशाब कितना अक्सर रुक जाता है?	0	1	2	3	4	5	
6. आपका पेशाब कितना अक्सर रुक जाता है?	0	1	2	3	4	5	
7. आपका पेशाब कितना अक्सर रुक जाता है?	0	1	2	3	4	5	
8. आपका पेशाब कितना अक्सर रुक जाता है?	0	1	2	3	4	5	
9. आपका पेशाब कितना अक्सर रुक जाता है?	0	1	2	3	4	5	
10. आपका पेशाब कितना अक्सर रुक जाता है?	0	1	2	3	4	5	
कुल I-IPSS स्कोर							
आपका पेशाब कितना अक्सर रुक जाता है?	0	1	2	3	4	5	

[Table/Fig-1]: Traditional Symptom Score (or IPSS).

correlation between IPSS and VPSS and uroflowmetry parameters [10].

This study evaluates traditional and pictorial symptom scores along with uroflowmetry parameters in district-level urological practice at a single center.

Objectives of this study:

- To study the demographic profile of male patients with male LUTS.

- To study the ease and difficulties faced at the time of filling TSS and PSS symptom scores.
- To study relation between peak urinary flow rate (Qmax) and TSS and PSS score.

MATERIALS AND METHODS

A retrospective, record-based observational study conducted on 100 male patients with LUTS in the Outpatient Department (OPD) of the Urology Department at Vivanta Critical Care and a private district-level Multispecialty Hospital, Chhindwara, Madhya Pradesh, India, from January 2024 to December 2024. Previously documented TSS and PSS questionnaires, uroflowmetry findings, PSA values, and other clinical parameters were analysed. Institutional Ethical approval (VCCH/ICH/2026/001) was obtained for this study.

Inclusion criteria: Records of male patients with LUTS, aged more than 35 years, and patients who had filled out symptom score questionnaires were included.

Exclusion criteria: Records of female patients, incompletely filled questionnaires, patients who had suprapubic catheter or per urethral catheter, patients who had history of urological intervention (for urethra and urinary bladder) before OPD visit, patients with carcinoma prostate, patients on chemotherapy and/or radiotherapy for any other oncologic cause, Inpatient Department (IPD) patients and patients who had not given consent for participation in study were excluded.

Study Procedure

Both traditional and pictorial scores categorise patients into three groups based on severity of symptoms: mild, moderate, and severe. Questions related to storage symptoms in TSS [4] enquire about three things (frequency, urgency, and nocturia) while PSS enquires only about two (daytime and nighttime frequency of voiding) [5]. TSS enquires about four voiding-related questions (poor urinary flow, straining during voiding, intermittency, and sense of inadequate voiding), while PSS has only one question related to voiding symptom (pictorial urine flow). Both scores also vary in terms of Quality-of-life (QoL) questions; in TSS, this question is asked separately but not calculated in the final score, while in PSS, it is included in the total score.

Traditional Symptom Score (TSS) [Table/Fig-1] and Pictorial Symptom Score (PSS) [Table/Fig-2] used in the present study were originally IPSS and VPSS questionnaires. Patients were categorised into two groups based on the sequence of questionnaire administration documented in the records as follows-



[Table/Fig-2]: Pictorial Symptom Score (or VPSS).

- Group I included patients who completed TSS before PSS, while
- Group II included patients who completed PSS before TSS.

Responses from the second questionnaire, completed at the first follow-up visit (7–10 days after the initial assessment), were extracted from patient records. Thus, 50 patients were enrolled in each group.

Hindi version of each questionnaire was used in all patients. Back translation of the English version of the questionnaires was not used in the study.

Data collected in the study included age, medication for LUTS (at the time of OPD visit), education status, time taken for filling questionnaires, difficulty faced at the time of filling these score forms, (that is, inability in understanding the questions and scoring system of questionnaires, understanding the QoL part in questionnaires), nursing staff assisted patients by reading questions aloud; however, this might have influenced patient responses and questionnaire interpretation. Prostate-specific Antigen (PSA), prostate size on sonography, and uroflowmetry findings, including maximum urinary flow rate (Qmax), were recorded.

STATISTICAL ANALYSIS

The data were analysed using Statistical Package for Social Sciences (SPSS) software version 20.0. Numerical variables were summarised as mean and standard deviation and compared between two groups with an unpaired t-test. Categorical variables were summarised as counts and compared between the two groups by Pearson's Chi-square test. Correlation was assessed using the Pearson correlation coefficient. For these comparisons, $p < 0.05$ was considered statistically significant.

RESULTS

The mean age of patients in groups I and II was 60.34 ± 10.36 years and 62.64 ± 10.44 years, respectively [Table/Fig-3]. Age-wise education status of patients in both groups was insignificant (p -value=0.10) [Table/Fig-4]. Average total scores in each group were in the severe category [Table/Fig-5].

The comparison between the time taken to fill PSS by group I patients and by group II patients to complete TSS was highly significant, indicating that PSS was filled with much greater ease after completing TSS, whereas TSS was difficult to fill even after completing PSS [Table/Fig-6].

Group I showed a positive correlation with prostate size and PSA, whereas there was a negative correlation with Qmax [Table/Fig-7]. A similar correlation was found in group II [Table/Fig-7].

Age (in years)	Group I n (%)	Group II n (%)
41-50	11 (22)	8 (16)
51-60	15 (30)	10 (20)
61-70	16 (32)	20 (40)
71-80	6 (12)	11 (22)
>80	2 (4)	1 (2)
Total	50 (100)	50 (100)
Prostate size(gram)	51.1+/-19.8	45+/-15.65
PSA (ng/mL)	2.46+/-1.5	2.17+/-1.35
Qmax(mL/s)	11.42+/-3.55	11.76+/-2.95

[Table/Fig-3]: Age distribution in groups I and II.
 $p=0.44$ NS (Chi-square test) (for age comparison)

Education	Group I n (%)	Group II n (%)
Illiterate	11 (22)	5 (10)
Primary	18 (36)	11 (22)
Middle	6 (12)	5 (10)
High School	3 (6)	6 (12)
High Secondary	2 (4)	7 (14)
Graduate and above	10 (20)	16 (32)
Total	50 (100)	50 (100)

[Table/Fig-4]: Distribution of educational status.
 p -value=0.10 (Chi-square test)

Group I									
S. No.	TSSQ1	TSSQ2	TSSQ3	TSSQ4	TSSQ5	TSSQ6	TSSQ7	TSS QoL	Total TSS score
1	1	3	0	2	0	0	2	5	8
2	5	5	5	4	4	5	2	4	30
3	2	4	3	3	2	2	4	4	20
4	5	4	3	5	5	5	3	6	30
5	0	0	2	2	3	2	3	3	12
6	3	4	5	2	4	4	2	5	24
7	1	2	5	0	5	5	2	6	20
8	5	5	5	5	2	4	3	6	29
9	5	5	5	0	0	0	4	5	19
10	3	3	3	3	3	3	3	4	21
11	5	5	4	5	1	5	5	6	30
12	4	5	2	5	5	2	5	5	28
13	4	2	5	5	2	0	1	5	19
14	1	5	5	0	2	0	4	3	17
15	5	5	5	3	5	5	4	6	32
16	3	4	3	2	3	4	4	4	23
17	1	1	2	2	2	3	3	3	14
18	2	2	2	1	1	0	3	4	11
19	0	0	0	0	0	0	1	1	1
20	0	1	1	0	0	1	1	2	4
21	4	5	5	5	5	5	5	6	34
22	0	1	0	0	0	0	1	1	2
23	1	1	0	0	0	0	1	1	3
24	2	2	1	1	0	1	2	3	9
25	4	3	3	3	4	5	4	5	26
26	5	5	5	2	3	5	5	6	30
27	3	4	3	3	3	3	3	1	22
28	5	5	5	3	5	5	4	5	32
29	5	5	5	3	4	4	5	6	31
30	2	3	1	2	1	1	4	4	14
31	3	4	3	3	4	3	5	4	25
32	0	3	0	3	0	2	5	5	13
33	3	3	3	4	3	4	4	3	24
34	4	4	2	4	2	3	4	4	23
35	5	4	4	5	0	0	5	5	23
36	2	4	4	1	3	3	5	4	22
37	0	5	5	4	5	0	2	4	21
38	5	5	5	4	5	5	5	6	34
39	0	5	0	5	4	0	5	6	19
40	5	5	5	5	5	5	5	6	35
41	4	5	4	4	4	3	5	5	29
42	5	4	4	0	4	4	4	5	25
43	3	2	0	4	4	0	3	5	16
44	2	4	2	2	5	2	5	5	22
45	5	2	2	0	4	3	2	2	18
46	4	5	3	3	4	4	5	6	28
47	2	1	0	2	3	4	2	2	14
48	2	1	2	2	2	3	3	3	15
49	4	4	0	4	3	4	3	4	22
50	2	5	2	3	5	4	5	5	26
Group II									
S. No.	PSSQ1	PSSQ2	PSSQ3	PSS QoL	Total PSS score				
51	4	4	3	3	14				
52	4	4	5	4	17				
53	6	6	4	6	22				

54	6	5	4	6	21
55	6	1	1	3	10
56	6	6	5	6	23
57	6	2	4	6	18
58	5	3	3	2	14
59	6	2	5	3	16
60	6	6	4	2	18
61	6	5	4	2	17
62	5	3	4	3	15
63	4	1	4	3	12
64	5	1	5	3	14
65	5	3	2	3	13
66	6	4	4	4	18
67	5	5	4	5	19
68	5	2	4	3	14
69	3	1	3	3	10
70	5	4	3	5	17
71	6	6	4	6	22
72	5	6	5	6	22
73	5	5	5	5	20
74	5	5	4	3	17
75	6	5	5	3	19
76	6	1	4	3	14
77	4	5	3	3	15
78	6	6	5	3	20
79	5	1	4	4	14
80	4	4	4	4	16
81	4	3	4	5	16
82	6	3	2	5	16
83	3	4	3	5	15
84	6	6	5	6	23
85	4	6	3	5	18
86	5	3	4	3	15
87	3	3	4	2	12
88	3	4	3	2	12
89	2	3	6	3	14
90	6	5	5	6	22
91	2	5	6	3	16
92	4	2	4	2	12
93	6	5	6	4	21
94	6	6	5	6	23
95	6	2	4	5	17
96	6	6	5	6	23
97	5	5	4	6	20
98	6	6	5	6	23
99	5	1	1	2	9
100	2	4	3	2	11

[Table/Fig-5]: Symptom Scores in group I and II (TSS and PSS respectively).

Parameters	Group I	Group II	p-value
Assistance needed	35 (70%)	18 (36%)	0.001(significant)
Difficulty in filling	38 (76%)	12 (24%)	0.001(significant)
On medications	13 (48.15%)	14 (51.85%)	0.82
Qmax (mL/s)	11.42±3.55	11.76±2.95	0.603
Prostate size	51.1±19.8	45±15.65	0.093
PSA (ng/mL)	2.46±1.5	2.17±1.35	0.312
Time to fill score (min)	4.53±1.1	2.04±0.74	<0.001(significant)
Time to fill another score (min)	1.3±0.43 (PSS after TSS)	4.06±0.8 (TSS after PSS)	<0.001(significant)

[Table/Fig-6]: Comparison of assistance needed, filling time, Qmax, PSA and Prostate size.
(Chi-square test and Unpaired 't' test)

Groups	Karl Pearson's Correlation "r"
Group I and Q max	-0.60 (Moderate negative correlation)
Group II and Q max	-0.76 (Good -negative correlation)
Group I and PSA	+0.83 (Good positive correlation)
Group II and PSA	+0.76 (Good positive correlation)
Group I and Prostate size	+0.91(High degree positive correlation)
Group II and Prostate size	+0.90(High degree positive correlation)
TSS Q2 and PSS Q2	-0.12 (low degree of negative correlation)
TSS Q7 and PSS Q3	+0.08 (Low degree of positive correlation)
TSS Q5 and PSS Q1	+0.15(Low degree of positive correlation)
Qmax and PSS Q1	-0.75 (High degree negative correlation)
Qmax and TSS Q5	-0.45(Moderate negative correlation)

[Table/Fig-7]: Correlation between groups and Qmax, PSA and prostate size.

DISCUSSION

Filling out TSS requires a good level of education and a longer duration, and often healthcare assistance is required to complete TSS [11].

A study of 92 men with Benign Prostatic Hyperplasia (BPH) evaluated the effect of educational status on IPSS responses. Among literate patients, no significant difference was found between self-administered and physician-assisted questionnaires ($p=0.55$). In contrast, illiterate patients showed significant differences between the two methods ($p<0.001$), indicating difficulty with self-completion [11].

In a study of 342 patients, the VPSS was completed without assistance significantly more often than the IPSS ($p<0.001$). Educational level did not independently affect VPSS completion, whereas a university-level education was an independent predictor of successful IPSS completion ($OR=9.735$, $p<0.001$). VPSS also required significantly less time to complete than IPSS across all groups ($p<0.001$). Strong positive correlations were observed between VPSS and IPSS scores, and VPSS total and weak-stream scores showed significant negative correlations with maximum and average urinary flow rates (Qmax and Qave) ($p<0.001$), supporting the validity and ease of use of VPSS across different educational backgrounds [12].

In the current study, the majority of patients in group I had primary education or below, whereas in group II, the majority were postgraduate. Although education levels across regions and countries cannot be directly compared, TSS seems exceedingly difficult to use in the study region, where education levels are limited.

According to Taneja Y et al., there was a statistically significant difference in the number of patients requiring assistance in completing the questionnaires by education level. There was a positive correlation between IPSS total score and VPSS total score ($r=0.7235$; $p<0.0001$), VPSS total score and VPSS quality of life (Qol; $r=0.70753$; $p<0.0001$), IPSS total versus IPSS Qol ($r=0.65583$;

$p<0.0001$), and IPSS Qol versus VPSS Qol ($r=0.84093$; $p<0.0001$). A negative correlation was observed between total VPSS and Qmax, total IPSS and Qmax, IPSS total versus Qavg ($r=-0.479$; $p<0.0001$), and VPSS total versus Qavg ($r=-0.5$; $p<0.0001$). All VPSS questions showed statistically significant correlation with the corresponding IPSS questions [8].

In a study by Afriansyah A et al., a total of 103 men completed the VPSS and IPSS. Associations between literacy and educational level and questionnaire completion, and correlations between VPSS and IPSS scores, were analysed. The VPSS was completed independently more often than the IPSS (79.6% vs. 53.4%). While no illiterate participant could complete the IPSS unaided, 44.1% could complete the VPSS ($p<0.001$). Lower educational level was associated with a greater need for assistance ($p<0.001$). VPSS scores showed significant correlations with corresponding IPSS scores ($r=0.503-0.823$; all $p<0.001$) [13].

In the Nigerian study, IPSS showed a negative correlation with maximum flow rate ($r=0.368$; $p<0.0075$); likewise, the current study also showed a negative correlation between Qmax and TSS ($r=-0.60$ for group I) [9].

Limitation(s)

As the present study was a retrospective observational study and Hindi versions of symptom scores were used, the results cannot be standardised across other populations. This is a single-centre study, so there may be selection bias as well. Also, the sample size was small, and the study was conducted in a multispecialty private hospital in a district. The study's duration was also short. Both TSS and PSS were assessed only once, at the first OPD visit. Uroflowmetry was also done only at the time of the first OPD visit. Impact of ongoing LUTS medications on symptom scores and uroflowmetry was also not evaluated. Correlation and group comparisons were performed without controlling for age, education, medication status, prostate size, and baseline symptom score. Assistance may also lead to final interpretation bias.

CONCLUSION(S)

The present single-centre study showed a significant correlation between traditional and pictorial LUTS questionnaires and maximum flow rate among patients consulting the urology OPD at a private hospital in a district of India. Patients completed the PSS without assistance in the majority of cases and in less time. The current study's findings suggest that PSS can be used to categorise patients with LUTS by severity in the Hindi-speaking population.

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PARTICULARS OF CONTRIBUTORS:

1. Consultant Urologist, Department of Urology, Vivanta Critical Care Multispeciality Hospital, Chhindwara, Madhya Pradesh, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Eeshansh Khare,
304, Subhash Colony, Bararipura Road, Behind Church Compound,
Chhindwara-480001, Madhya Pradesh, India.
E-mail: eeshanshkhare29@gmail.com

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