

## INTERNATIONAL PROSTATE SYMPTOM SCORE IS NOT SUITABLE FOR ASSESSING EMPTYING LOWER URINARY TRACT DYSFUNCTION IN WOMEN

### Hypothesis / aims of study

Lower urinary tract symptoms (LUTS) are symptoms reported by patients' perception of bladder feeling. The real pathophysiology for LUTS might be difficult to interpret based on symptoms alone. As in men, LUTS in women also include storage, voiding, pain and postvoiding symptoms. The pathophysiology of female LUTS may also involve bladder, urethral, and pelvic floor disorders. However, there is no suitable questionnaire validated for assessing female LUTS so far. Researchers used to adapt International Prostate Symptom Score (IPSS) in evaluation of female LUTS. The aim of this study is to evaluate whether IPSS can be used in assessment of female LUTS.

### Study design, materials and methods

A total of 245 women aged 19 to 88 (mean 57.5) presenting with LUTS were enrolled prospectively. Patients were evaluated with IPSS with quality of life index, self reported OABSS and urgency severity score USS). A total of 27 women had test and retest at baseline and 2 weeks after the first visit without any treatment. The alpha-value was calculated for reliability analysis of IPSS in assessing LUTS. The patients further received urological examinations and their lower urinary tract dysfunctions (LUTD) were classified as storage and empty LUTD. The total IPSS score, IPSS-storage (IPSS-S) subscore, IPSS-empty (IPSS-E) subscore, OABSS, urgency severity score (USS) were analyzed by correlation coefficient. According to ROC analysis, an IPSS empty to storage subscore ratio (E/S ratio) of 1.5 had the best sensitivity and selectivity rate for differential diagnosis between storage and empty LUTD. The total IPSS, IPSS-E, IPSS-S and IPSS-E/S ratio were compared between storage and empty LUTD. Predictive value of storage or empty LUTD using IPSS-E/S ratio of 1.5 was assessed in different final LUTD based on the results of videourodynamic study.

### Results

The test retest reliability was good in total IPSS, IPSS-E, IPSS-S, and LUTS item of incomplete emptying, frequency, urgency, straining to void and nocturia. (Table1) There was significant correlation between OABSS and IPSS-total, IPSS-S and E/S ratio (all  $p=0.000$ ). USS was also correlated with IPSS-total, IPSS-S and IPSS-E/S ratio (all  $p=0.000$ ). Among all women, empty LUTD was diagnosed in 41 patients and storage LUTD in 201, the baseline IPSS-total showed no significant difference between two LUTD subgroups ( $16.86 \pm 6.74$

$v 19.10 \pm 6.74$ ,  $p=0.054$ ), but IPSS-E was significantly greater in empty LUTD ( $12.12 \pm 5.36$

$v 8.84 \pm 5.38$ ,  $p=0.001$ ) whereas IPSS-S was greater in storage LUTD ( $7.96 \pm 6.98 v 6.98 \pm 2.67$ ,  $p=0.038$ ). The mean E/S ratio was  $1.99 \pm 1.12$  in empty LUTD and  $1.27 \pm 1.08$  in storage LUTD ( $p=0.000$ ). However, using E/S ratio =1.5 as cut off value, only 78 (75.7%) of women with OAB and 50 (63.3%) of women with increased bladder sensation had an  $E/S \leq 1.5$ , whereas only 30 (76.9%) of women with voiding dysfunction had an E/S ratio  $>1.5$ . The predictive values of  $E/S \leq 1.5$  was 93.4% for storage LUTD, but was only 36% for empty LUTD.

### Interpretation of results

IPSS-total and IPSS-S had high correlation with OAB symptom score assessed by OABSS or USS. However, IPSS-E was not correlated with OAB symptom well. Intermittency and slow stream did not show good test retest reliability in assessing LUTS using IPSS. Total IPSS score was not a good predictor to differentiate storage and empty LUTD, but an IPSS E/S ratio of 1.5 provided a better predictive value to reflect the difference between IPSS-E and IPSS-S subscores in LUTD subgroups. Nevertheless, the predictive value of emptying LUTD using E/S ratio of  $>1.5$  was very low. A high percentage of women with storage may present with empty LUTS which interfere the interpretation of LUTS using IPSS-E subscore.

### Concluding message

IPSS-storage subscore can be adapted to assess women with storage LUTS. An IPSS-E/S ratio of  $\leq 1.5$  provides a high predictive value for diagnosis of storage LUTD in women, however, IPSS-E subscore or E/S ratio of  $>1.5$  are not suitable for assessing emptying LUTD in women. Therefore, we concluded that IPSS is not suitable for assessing emptying LUTD in women

Table 1. Reliability test of IPSS in female LUTS

	<b>Baseline</b>	<b>2 weeks</b>	<b>Alpha</b>	<b>P Value</b>
IPSS-Total	18.57±5.43	15.14±5.15	0.77	0.000
IPSS-Empty	11.04±4.28	8.18±3.75	0.65	0.009
IPSS-Storage	7.54±2.22	6.96±2.52	0.72	0.002
IPSS-E/S ratio	1.69±1.22	1.25±0.60	0.27	0.433
Incomplete voiding	3.89±1.45	3.00±1.49	0.75	0.001
Frequency	4.39±1.31	3.71±1.08	0.59	0.026
Intermittency	2.96±1.73	1.96±1.86	0.29	0.380
Urgency	0.39±0.96	0.36±0.99	0.95	0.000
Slow Stream	2.50±1.71	2.11±1.55	0.49	0.088
Straining to void	1.68±1.66	1.29±1.54	0.81	0.000
Nocturia	2.93±1.44	2.71±1.33	0.84	0.000
QoL	4.47±0.72	3.65±1.06	0.26	0.442

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<i>Was this study approved by an ethics committee?</i>	Yes
<i>Specify Name of Ethics Committee</i>	IRB of Buddhist Tzu Chi General Hospital and Tzu Chi University
<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	Yes