Original Article

# Evaluation of 'Visual prostate symptom score' in men with benign enlargement of prostate in a tertiary care center in midwestern Nepal

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## Abstract

**Introduction:** Quantification of lower urinary tract symptoms (LUTS) in patients with benign enlargement of prostate (BEP) is required to initiate and regulate treatment. Among many, International Prostate Symptom Score (IPSS) is standard though it is time consuming and difficult to understand by many patients. A recent Visual Prostate Symptom Score (VPSS) which is presumed to be simpler and well understood by patients with lower educational status has been in use.

**Methods:** This is a prospective observational study conducted in Nepalgunj Medical College, Nepalgunj. In a total of 79 patients, 25 patients of LUTS because of other causes were excluded and 54 patients clinically diagnosed with BEP were enrolled for the study over a period of one year. Symptom evaluation was done in all with both IPSS and VPSS and uroflowmetry parameters were also recorded. The IPSS and VPSS were compared with each other and also with uroflowmetry parameters.

**Results:** Mean age of the patients was 67 years and mean prostate volume was 48 gm. The patients who mostly were farmers had median eighth grade of education. Fourteen were illiterates and 40 were literate patients. Significant number of patients required assistance of a medical personnel to complete IPSS (p= <0.001) including those in literate group as well (p= <0.001). Time taken to complete VPSS was significantly less (p= 0.019). Total IPSS correlated with total VPSS ((r= +0.36; p=0.007). There was negative and significant correlation of VPSS with uroflowmeter parameters while IPSS failed to do so.

**Conclusion:** VPSS is an easy and reliable tool to assess symptom severity in cases of BEP presenting with LUTS. It has the added advantage of utility in assessment of LUTS in patients with lower educational status. Moreover, the patients take shorter time to complete the questionnaire.

**Keywords:** Benign enlargement of prostate; international prostate symptom score; visual prostate symptom score.

## Introduction

Benign Prostatic Hyperplasia (BPH) is a major cause of morbidity in ageing men.[1] By 60 years of age, its prevalence is greater than 50% and by age 85, is as high as 90%. Of these, between 15% and 30% men have lower urinary tract symptoms (LUTS).[2] The impact of LUTS on the patient's quality of life is highly variable. However, this perception of severity determines the choice of therapy.

Measurements of prostate size and the severity of bladder outlet obstruction (BOO) correlate poorly with the severity of LUTS. Objective measurements of LUTS are key outcome measures for judging the success of treatment in clinical practice.[3] Taking thorough clinical history is one established method to assess the patient's status. However, the method is not standardized and probably takes a different form for each clinician.[4]

Several validated questionnaires have evolved over time to stratify patients according to symptom severity. The American Urological Association -7 (AUA-7) symptom index, later recognized by World Health Organization as International Prostate Symptom Score (IPSS) is a validated tool with excellent test-retest reliability.[5] This is a highly recommended symptom scoring tool for baseline assessment of patients with LUTS.[6] This attempts to convert subjective symptoms into objective score.[7] However, there are few pitfalls with its use. IPSS was supposed to be self administered with its use in primary care settings but patients with lower education level find it difficult to understand.[8] Education grade of VI is considered necessary to understand the IPSS.[9] There are chances of misinterpretation and misreporting if done by other family members.[10, 11] Furthermore, aged patients with LUTS may have visual and cognitive impairment adding to the difficulty.[12] To overcome these problems Visual prostate symptom score (VPSS) has been devised by van Der Walt et al from Stellenbosch University, South Africa. It is a pictogram having four components representing weak stream, day and night frequency and quality of life.[13] This is easy to use and comprehend even by patients with lower education level.[14-16] It is simple, easily completed without assistance and less time taking.

Limited data is available on applicability of VPSS in a setting like ours where major proportion of the patients belongs to low socioeconomic status with low education level. Present study attempts to compare VPSS with IPSS to test its applicability in our setting.
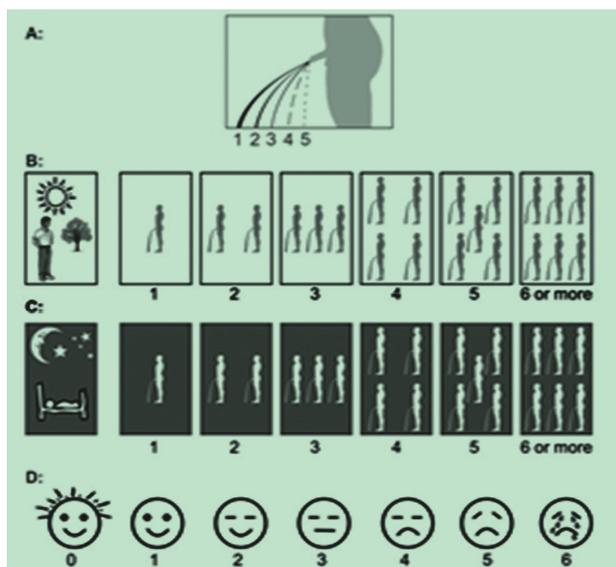
## Materials and methods

This study was conducted at Nepalgunj Medical College (a tertiary care center in Mid western part of Nepal). The study enrolled 79 male patients over 40 years of age who visited the outpatient clinic during the time period of October 2014 to September 2015. Patients were requested to complete the Nepali version of IPSS questionnaire, which consists of 7 questions: Q1, incomplete emptying; Q2, frequency; Q3, intermittency; Q4, urgency; Q5, weak stream; Q6, straining; and Q7nocturia including additional question on quality of life (QoL). The total score of the IPSS was obtained by summing all 7 questions. The patients were also requested to complete the VPSS questionnaire. The VPSS consists of 4 pictograms to evaluate the following domains: Q1, force of urinary stream; Q2, frequency; Q3, nocturia, and Q4, QoL of patients.

The demographic characteristics including age, occupation, level of education, income and literacy status, were recorded. Evaluation of how the patients completed the VPSS and IPSS, with or without assistance and the time taken to complete the task were noted. Uroflowmetry parameters were taken for comparison.

The chi-square test was used for contingency table analysis to evaluate factors associated with how the respondent completed the IPSS and VPSS questionnaires. Spearman's test was used for correlation analysis between the IPSS and the VPSS. A two-tailed P-value <0.05 was accepted as statistically significant.

## Results

Seventy nine patients with LUTS suggestive of BEP were evaluated. Twenty five patients who had LUTS because of other causes were excluded. Finally 54 patients were evaluated with IPSS, VPSS and uroflowmetry. Patient characteristics are shown in Table 1. Median duration of LUTS was 15 months. The number of patients who could read and write was 40 with eighth grade being their median grade of schooling (Figure 2). Farmers were the main patient group (50%).



Figure 1. Visual Prostate Symptom Score

**Table 1. Patients' characteristics and laboratory values**

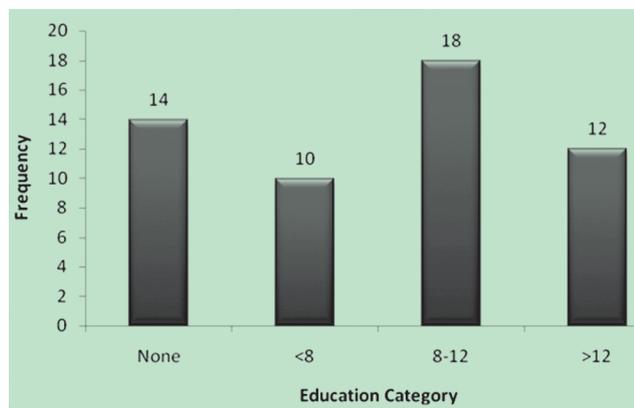| Variable | Mean | SD | Range |
|----------|------|-----|-------|
| Age (yr) | 67 | 6.8 | 50-78 |
| Prostate wt (gm) | 48.26 | 26 | 27-138 |
| S. Creatinine (μmol/l) | 94.29 | 9.9 | 75-120 |
| S. PSA (ng/ml) | 1.79 | 0.89 | 0.4- 4.31 |

**Figure 2. Educational status of the patients**

Overall the patients who could complete VPSS alone without anyone's assistance was 43%. Medical personnel had to assist in 28% of the cases. On the other hand, 76% of the cases required the assistance of a doctor while completing IPSS (p< 0.001). In illiterate population all required assistance to fill up IPSS while VPSS could be filled in by self or family member in 50 % of the cases. In literate population, filling up of VPSS required assistance of a doctor in 10% while it was 63% in IPSS group (Table 2).

**Table 2. Requirement of assistance while completing IPSS and VPSS according to literacy**

| Completion by | IPSS | VPSS | p value |
|---|---|---|---|
| **Illiterate ( n= 18)** | | | |
| Alone | 0 | 2 | |
| Family member | 0 | 6 | |
| Doctor | 18 | 10 | 0.01 |
| **Literate (n= 36)** | | | |
| Alone | 9 | 21 | |
| Family member | 4 | 10 | |
| Doctor | 23 | 5 | < 0.001 |

Similarly, calculating time to complete IPSS and VPSS showed significant differences both in illiterate as well as literate population. Median time for completing VPSS versus IPSS was 1 min 07 sec and 3 min 12 sec respectively in illiterate population (p=0.019), while it was 4 min 55 sec and 1 min 54 sec in literate population (p=0.015).

Mean IPSS of the patients was 23 ± 7.5 with mean IPSS QoL of 4.7 ± 1.3. Similarly, mean VPSS was 11.9 ± 2.6 with mean VPSS QoL of 3.6 ± 1.6. With median voided volume of 252 ml in uroflowmetry, $Q_{max}$ was 10.72 ml/s. Post procedure ultrasonography showed a mean post void residual volume of urine of 76.73 ml.

Age correlated significantly with VPSS (r= + 0.38; p= 0.004) but failed to do so with IPSS (r= -0.088; p= 0.529). Age showed correlation with prostate weight as well (r= +0.398; p= 0.003). Negative correlation was seen between total VPSS and $Q_{max}$ (p=< 0.0001) and Qave. Question on weak stream in VPSS (Q1) also correlated negatively with $Q_{max}$, though the result was not significant.

Importantly, there was significant positive correlation between total VPSS and total IPSS. Similarly, IPSS QoL and VPSS QoL correlated positively (Table 3).

**Table 3. Spearman's correlation for IPSS and VPSS**

| Parameters | Spearman's correlation coefficient (r) | p value |
|---|---|---|
| Total VPSS vs Qmax | - 0.481 | <0.0001 |
| Total IPSS vs Qmax | - 0.117 | 0.401 |
| VPSS Q1vs Qmax | - 0.185 | 0.181 |
| IPSS Q5 vs Qmax | - 0.285 | 0.037 |
| Total VPSS vs VPSS QoL | + 0.417 | 0.002 |
| Total IPSS vs IPSS QoL | + 0.382 | 0.004 |
| Total IPSS vs Total VPSS | + 0.362 | 0.007 |
| IPSS QoL vs VPSS QoL | + 0.440 | < 0.001 |
| Frequency VPSS vs Frequency IPSS | + 0.456 | 0.001 |
| Nocturia IPSS vs Nocturia VPSS | + 0.592 | < 0.0001 |
| Weak Stream IPSS vs WS VPSS | + 0.262 | 0.056 |

## Discussion

IPSS is considered as a standard form of assessment for evaluation of patients with LUTS. Due to difficulties in completing the IPSS, new symptom scoring systems came into existence. The concept of the VPSS was based on the observation that illiterate or poorly educated men found it impossible to complete the IPSS, even with physician's assistance. In contrast, patients easily comprehended a simple diagram showing a urinating man, in which the patient can indicate the force of the urinary stream corresponding to his own (Q1 in the VPSS).[13]

BPH is a disease of old age. The age group of patients in this study is mostly in 60s (42%).This is consistent with the existing literature which shows the incidence to be greater than 50% in men in their 60s and as high as 90% by age 85.[1, 2] In the present study, age shows positive correlation with symptom scores and prostate volume. It shows significant correlation with VPSS. Age has been well correlated with prostate volume in various studies. [1, 17, 18]

Educational status plays significant role while assessing patients with symptom scores. In a study in South Africa, van der walt et al found nearly one third of population to have education below seventh standard and 4.2% to have no education while evaluating with IPSS and VPSS. The literacy rate in Nepal is low with nearly 75% in male population.[19] In present study, nearly 44% had education below eighth standard and nearly 33% had no education. Among illiterates, 50% of patients required assistance to complete VPSS, and 100% to complete IPSS. Among literates, VPSS could be filled in majority by patient himself, and needed assistance in 10% only, while for IPSS still majority needed some help (63%). In the study by van der walt, patient with low education status < 7 grade, 87% required assistance to complete IPSS and 32% to complete VPSS. In patients with more than grade 10 education, 24% required assistance to complete IPSS while only 8% to complete VPSS.[13]

Time consumption while completing symptom score forms is another important consideration, especially in outdoor setting. In present study, overall analysis showed that time taken to complete VPSS was significantly less as compared to IPSS. Among illiterates and literates also time consumption was significantly less in completing VPSS. This was similar to a study by Serge G. Wessels and Chris F. Heyns.[20]

Mean IPSS in present study was 23 with mean IPSS QoL of [4.7.] IPSS categorizes patients into three subgroups designating patients into mild, moderate or severe symptom group. The study categorized the majority of the patients into patients with severe symptoms. This was probably because the majority of patients were indoor patients admitted for operation. Other studies show similar results of IPSS with mean IPSS ranging from 17 to 21.7. Those undergoing operation for BEP have higher IPSS.[21-23]

Mean VPSS in present study was 12 with mean VPSS QoL of 3.6. Only few studies have been done to date to evaluate VPSS in LUTS and in patients with urethral stricture disease. One study had mean VPSS of 9.[14]

In Present study IPSS shows negative correlation with uroflowmetry parameters. However, the correlation is weak and not significant. There are certain pitfalls of uroflowmetry and the reading requires cautious evaluation for measurement errors and reading errors. Nevertheless, VPSS shows negative as well as significant correlation with Qmax. The results are similar with the studies by van der Walt and Wessels SG.[13, 20]

Present study compares VPSS and IPSS. VPSS shows significant positive correlation with IPSS. The results are consistent with the study done by van der walt and others.[13-16] Another study comparing IPSS and VPSS in patients with urethral stricture disease also shows similar positive correlation. Similarly, specific questions of IPSS related to frequency, nocturia and weak stream have also been positively correlated with the respective components in VPSS.

## Conclusion

VPSS is an easy and reliable tool to assess symptom severity in cases of BEP presenting with LUTS. It has the added advantage of utility in assessment of LUTS in patients with lower educational status. Moreover, the patients take shorter time to complete the questionnaire.

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