Original Research Article

Journal of College of Medical Sciences-Nepal, Vol-20, No.4, Oct-Dec 2024

ISSN: 2091-0657 (Print); 2091-0673 (Online) Open Access

DOI: 10.3126/jcmsn.v20i4.70209

Visual Prostate Symptom Score: Questioning Its Feasibility in The Scenario of a Tertiary Health Care Center of Central Nepal

Bhusan Raj Timilsina[1], **Aayush Kafle**[1], **Rupak Raj Ghimire**[1], **Saroj Giri**[1], **Naveen Mahaseth**[1], **Nirmal Prasad Sah**[1], **Sulav Pradhan**[1], **Sudeep Raj KC**[1]

[1]Department of Urology, College of Medical Sciences-Teaching Hospital, Bharatpur, Chitwan, Nepal.

ABSTRACT

Background

International Prostate Symptom Score (IPSS) is a widely used as a standard, despite the fact that many patients find it time-consuming and confusing. Recent years have seen the development of a Visual Prostate Symptom Score (VPSS), which is thought to be easier and more comprehensible by patients with lower educational status.

Methods

This is a qualitative comparative cross sectional study conducted at College of Medical Sciences, Bharatpur Chitwan, from December 2023 to February 2024. Both the IPSS and the VPSS were used to evaluate all of the symptoms, and uroflowmetry values were also collected. Comparisons between the IPSS and VPSS and with uroflowmetry parameters were made.

Results

Mean age of the patients was 63.85 years and mean prostate volume was 31.67 gm. Both the results of the total VPSS vs. total IPSS ($r = 0.96$, $p = 0.001$) and the VPSS QoL vs. IPSS QoL score ($r = 0.97$, $p = 0.001$) showed a high positive connection. There were statistically significant positive correlations between the results of the following tests: VPSS weak stream vs IPSS weak stream ($r = 0.87$, $p < 0.001$), VPSS daytime frequency vs IPSS daytime frequency ($r = 0.89$, $p < 0.001$), VPSS nocturia vs IPSS nocturia ($r = 0.92$, $p < 0.001$), VPSS total vs VPSS QoL score ($r = 0.88$, $p < 0.001$), IPSS total vs IPSS QoL score ($r = 0.91$, $p < 0.001$).

Conclusions

When patients with BEP presents with LUTS, the VPSS is a simple and reliable tool to evaluate the severity of the symptoms. Its usefulness in assessing LUTS in patients with lower educational status is an additional benefit.

Keywords: BEP; IPSS; VPSS.

INTRODUCTION

In middle-aged or older men, lower urinary tract symptoms (LUTS) are common.[1] To evaluate LUTS secondary to Benign Enlargement of Prostate(BEP), The International Prostate Scoring System (IPSS) is a useful and validated questionnaire.[2,3] In well-educated and literate populations, IPSS questionnaire is a valid measurement of disease severity; however, illiterate or patients with limited education cannot correctly self-report his symptoms.[4] Thus, administration of the IPSS in developing countries becomes problematic because of higher illiteracy level.[5] Furthermore, as majority of men with BEP are aged and mostly with visual and cognitive impairment, patients often ask for assistance from a health care professional which could introduce a bias.[6,7] To overcome problems with the IPSS, a Visual Prostate Score System (VPSS) was introduced with pictograms representing frequency, nocturia and weak stream. [8] The fourth pictogram is a visual scale for quality of life (QoL) of patients to assess the burden of urinary symptoms. So VPSS is simpler and easier to understand, especially for elderly men. A new improvised VPSS score has added a new severity grading system to VPSS, similar to IPSS and

Correspondence: Dr. Bhusan Raj Timilsina, Department of Urology, College of Medical Sciences-Teaching Hospital, Bharatpur, Chitwan, Nepal. Email: bhusantimilsina827@gmail.com, Phone: +977-9851130744. **Article received**: 2024-08-29. **Article accepted**: 2024-12-04. **Article published**: 2024-12-31.

the term 'stream score' for the image showing stream of urine in VPSS.[9] It can be very advantageous in our scenario with majority of the population having lower level of education. This study aims to determine the feasibility of VPSS score by evaluating the correlation between VPSS and IPSS scores and the uroflowmetry parameters in men with LUTS.[10]

METHODS

A comparative cross-sectional study was conducted at College of Medical Sciences, Bharatpur Chitwan (a tertiary care teaching Hospital) from December 2023 to April 2024, after receiving ethical approval from the Institutional Review Board of COMS-TH (Ref No. 2023-184). The total of 58 patients were enrolled, male patients visiting the outpatient clinic fitting the inclusion criteria having LUTS and diagnosed with BEP. Those patients who presented with symptoms of LUTS but had other medical conditions like urinary tract infection, past surgical history of prostate or with Foley's catheter in-situ were excluded from this study. Written informed consent was obtained from all patients. The total sample size was calculated using $[(Z\alpha+Z\beta)/C]2 + 3$ where, threshold probability for rejecting the null hypothesis, i.e. Type I error rate = α = 5% = 0.05, probability of failing to reject the null hypothesis under the alternative hypothesis, i.e. Type II error rate = β = 20% = 0.20, the standard normal deviate for $\alpha = Z\alpha = 1.96$, the standard normal deviate for $\beta = Z\beta = 0.8416$, the expected correlation coefficient = r, $C = 0.5 * \ln[(1+r)/(1-r)]$. Gupta did a study in 2015,[11] and found, total IPSS was significantly correlated with total VPSS (r= +0.36; p=0.007). Thus, keeping this value of correlation in above equations, $C = 0.5 * \ln[(1+r)/(1-r)] = 0.3769$,

Total sample size = $N = [(Z\alpha+Z\beta)/C]2 + 3 = 58$

Demographic characteristics of age, sex, occupation, religion, address, residency, ecological zone and literacy status were recorded. A thorough history was taken from all the patients followed by detailed general and systemic examination including a digital

Table 1. IPSS in Nepali language.

पछिल्लो महिना	हुदै हैन	५ पटकमा १ भन्दा कम	आधा समय भन्दा कम	लगभग आधा समय	आधा भन्दा बढि समय	लगभग आधा	तपाईको अंक
१. अपूर्ण खाली हुने अनुभव, तपाईलाई तपाईको मूत्राशय खाली नगरेको अनुभूती कति पटक भएको छ?	०	१	२	३	४	५	
२.पटक पटक पिसाब हुनु, तपाईले प्रत्येक दुई घण्टा भन्दा कममा कति पटक पिसाब फेर्नुभएको छ?	०	१	२	३	४	५	
३. पिसाब गदा 1-3, 5, 7, 8, 12-15 अन्तरविराम, तपाईले पिसाब गर्दा धेरै पटक रोकेको र फेरी शुरु गरेको तपाईले कति पटक फेला पार्नुभयो ?	०	१	२	३	४	५	
४.पिसाब खप्न नसक्नु, तपाईंलाई पिसाब स्थगित गर्न कति पटक गाह्रो भएको छ?	०	१	२	३	४	५	
५. कमजोर स्ट्रिम तपाईलाई कति पटक कमजोर मूत्र प्रवाह भएको छ?	०	१	२	३	४	५	
६. पिसाब फेर्दा कन्नु पर्ने पिसाब सुरु गर्न कति चोटी तनाव गर्नु परेको छ?	०	१	२	३	४	५	
	कुनै पनि छैन	१ समय	२ पटक	३ पटक	४ पटक	५ पटक	
७. नोक्चुरिया तपाई सामान्यता राति पिसाब गर्न कति पटक उठ्नुभयो ?	०	१	२	३	४	५	
कुल I-PSS स्कोर							

पिसाबका लक्षणहरुको कारण जीवनको गुणस्तर	हर्षित	खुसी भयो	प्राय : सन्तुष्ट	मिश्रित	प्राय : असन्तुष्ट	दुखी	भ्यानक
यदि तपाईं तपाईको बाँकी जीवन तपाईको पिसाबको अवस्था संग अहिले जस्तै बिताउनु भएको छ भने, तपाईं यसलाई कस्तो महसुस गर्नुहुन्छ?	०	१	२	३	४	५	६

rectal examination with an empty bladder to evaluate the size of prostate, surface and consistency. They were requested to complete the IPSS questionnaire translated into Nepalese comprising 7 questions for symptoms where severity of each was noted from 0-5, with the scores then totaled and a separate question for QoL scored from 0-6. The established severity grading for IPSS, for mild symptoms it's from 0-7, moderate symptoms from 8-19, severe symptoms from 20-35.

They were then requested to complete the VPSS questionnaire comprising four pictograms to evaluate the symptoms of BPH where daytime and nighttime frequency had a score of 1–6 each and stream score was from 1-5. The severity grading was done as follows: mild score: Score from 1-3, moderate score: Score from 4-9, Severe score: Score from 10-17. Uroflowmetry parameters were recorded and Ultrasonogram of abdomen done. All the data were collected on pre-approved pro-forma, and analyzed. Spearman's test was used for correlation analysis. A two-tailed p-value <0.05 was accepted as statistically significant.

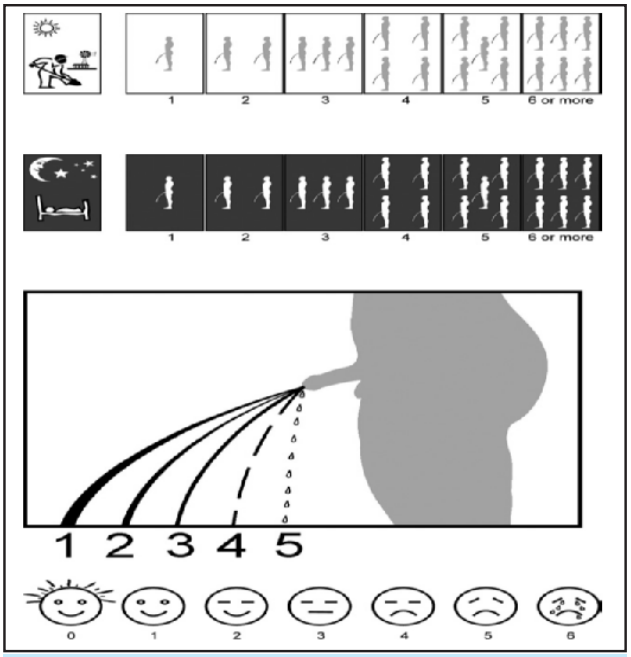

Figure 1. Visual prostate symptoms score.

RESULTS

Fifty-eight patients with LUTS due to BEP were included in the study. The mean ± standard deviation age at presentation was 63.85 years ± 10.69 (range: 40-80 years). The median VPSS score was 9 with VPSS QoL 3. Similarly, the median IPSS score was 16 with IPSS QoL 3 (Table 2).

Table 2. Showing mean and SD of different variables.

Variable	Mean	SD	Minimum	Median	Maximum
Age (years)	63.85	10.69	40	65	80
Voiding Volume (ml)	338.2	149.4	180	281	720
Maximum flow rate (ml/s) (Q_{max})	12.15	5.49	4.9	10.65	30.2
Post-void residual urine (ml)	40.69	26.74	0	30	122
VPSS Score	9.19	3.71	3	9	17
IPSS Score	17.45	6.89	5	16	31

The mean Maximum Flow rate (Q_{max}) was 12.15 sec, average flow rate (Q_{av}) was 8.36 sec and voiding time was 42.59 sec. Post voidal Ultrasonogram showed an average of 40.69 ml post void residual volume. Age correlated negatively with Q_{max} ($r = -0.09$, $p = 0.50$) but was not statistically significant. Age correlated positively with both total VPSS ($r = 0.11$, $p = 0.42$) and total IPSS ($r = 0.09$, $P = 0.49$) but were not statistically significant.

Significant negative correlation was seen between total VPSS and Q_{max} ($r = -0.89$, $p < 0.001$) as well as total IPSS and Q_{max} ($r = -0.87$, $p < 0.001$). The VPSS weak stream score also correlated negatively with Q_{max} ($r = -0.86$, $P < 0.001$) as did the IPSS weak stream score with Q_{max} ($r = -0.78$, $p < 0.001$). There was strong positive correlation between the results of total VPSS vs total IPSS ($r = 0.96$, $p < 0.001$) as well as the VPSS QoL vs IPSS QoL score ($r = 0.97$, $p < 0.001$).There were statistically significant positive correlations between the results of; VPSS weak stream vs IPSS weak stream ($r = 0.87$, $p < 0.001$), VPSS daytime frequency vs IPSS frequency ($r = 0.89$, $p < 0.001$), VPSS nocturia vs IPSS nocturia ($r = 0.92$, $p < 0.001$), VPSS total vs VPSS QoL score ($r = 0.88$, $p < 0.001$), IPSS total vs IPSS QoL score ($r = 0.91$, $p < 0.001$) (Table 3).

DISCUSSION

In this study we evaluated the correlation between the newly developed VPSS and well validated IPSS systems in assessing the severity of LUTS in patients with BEP to determine feasibility of VPSS in our setting. Symptom scoring tools are strongly suggested by guidelines for the evaluation of LUTS.[16] IPSS is well accepted as a standard questionnaire to evaluate

Table 3. Comparison of IPSS and VPSS.		
Parameters	**Spearman's correlation coefficient (rho)**	**p-value**
Total VPSS Vs Maximum flow rate	-0.89	<0.001
Total IPSS Vs Maximum flow rate	-0.87	<0.001
VPSS Weak Stream Vs Maximum flow rate	-0.86	<0.001
IPSS Weak Stream Vs Maximum flow rate	-0.78	<0.001
Total VPSS Vs VPSS QoL	0.88	<0.001
Total IPSS Vs IPSS QoL	0.91	<0.001
Total IPSS Vs Total VPSS	0.96	<0.001
IPSS QoL Vs VPSS QoL	0.97	<0.001
Frequency VPSS Vs Frequency IPSS	0.89	<0.001
Nocturia VPSS Vs Nocturia IPSS	0.92	<0.001
Weak Stream VPSS Vs Weak Stream IPSS	0.87	<0.001

LUTS and is widely used.[2, 3] But there are limitations to it and previous studies have shown that patients with low educational level and older age have difficulties completing IPSS without assistance.[4, 17] The concept of VPSS was developed on this observation and first used in a study conducted by van der Walt et al in 2011.[8] This study showed significant correlation between VPSS and IPSS in assessment of LUTS and further reported how VPSS is more feasible to evaluate LUTS in men with lower education levels compared to IPSS. Patients easily understand a simple diagram depicting a urinating man in which the patient can designate the force of the urinary stream similar to his own to complete the chart without assistance.[14, 15] Capability to complete the chart without assistance is most valuable for patients with low levels of education and in resource limited settings as ours.[18] The median IPSS score in the present study was 16 with mean IPSS QoL 3.60. IPSS total score and IPSS weak stream score shows significant negative correlation with uroflowmetry parameter of Q_{max}. Median VPSS score was 9 with mean VPSS QoL 3.59. There is significant negative correlation between both VPSS total score and VPSS weak stream score with Q_{max}. Comparison between IPSS total and VPSS total score shows significant positive correlation. Likewise, the questions of IPSS about frequency, nocturia and weak stream also have significant positive correlation with the respective pictograms in VPSS. Unlike IPSS, VPSS doesn't address symptoms of urgency, intermittency and straining, but without significant difference in total score outcome. The results are in line with previous studies which have shown similar positive correlation between IPSS and VPSS.[7, 8, 10, 14] With the IPSS questionnaire's comprehension and practical application still being questioned. [18] VPSS with advantage of having no linguistic barrier, pictorial representation and easy comp rehension can be very useful in our scenario where most of the population have lower education levels.

CONCLUSIONS

The VPSS questionnaire has a significant positive correlation with the IPSS questionnaire with the later having limitations in the older age groups and lower education levels owing to its complexity. VPSS, can be more practical to evaluate LUTS in such population who are the majority in our setting and can overcome the limitations of the IPSS questionnaire.

Limitations: Limitation of the study include is that it does not evaluating correlation of educational background and ability of patient to complete IPSS form. Future researcher can evaluate educational level and understanding of IPSS, self assessment and filling-up of IPSS form. This study doesn't consider educational background and understanding of patient's assistance on IPSS system considering health care professional being the assistance.

Conflict of interest: None

Funding: None

REFERENCES

1. Cornu J-N, Cussenot O, Haab F, Lukacs B. A Widespread Population Study of Actual Medical Management of Lower Urinary Tract Symptoms Related to Benign Prostatic Hyperplasia Across Europe and Beyond Official Clinical Guidelines. European Urology. 2010;58(3):450-6. [DOI]
2. Barry MJ, Fowler FJ, Jr., O'Leary MP, Bruskewitz RC, Holtgrewe HL, Mebust WK, Cockett AT. The American Urological Association symptom index for benign prostatic hyperplasia. The Measurement Committee of the American Urological Association. J Urol. 1992;148(5):1549-57; discussion 64. [DOI]

3. Lukacs B, Grange JC, Comet D. One-year follow-up of 2829 patients with moderate to severe lower urinary tract symptoms treated with alfuzosin in general practice according to IPSS and a health-related quality-of-life questionnaire. BPM Group in General Practice. Urology. 2000;55(4):540-6. [DOI]

4. Netto Jr NR, de Lima ML. The influence of patient education level on the International Prostatic Symptom Score. The Journal of urology. 1995;154(1):97-9. [DOI]

5. Ogwuche EI, Dakum NK, Amu CO, Dung ED, Udeh E, Ramyil VM. Problems with administration of international prostate symptom score in a developing community. Ann Afr Med. 2013;12(3):171-3. [DOI]

6. Cam K. How useful is a visual prostate symptom score for patients? Nature Reviews Urology. 2011;8(10):536-7. [DOI]

7. Taneja Y, Ram P, Kumar S, Raj K, Singh CK, Dhaked SK, Jaipuria J. Comparison of Visual Prostate Symptom Score and International Prostate Symptom Score in the evaluation of men with benign prostatic hyperplasia: A prospective study from an Indian population. Prostate Int. 2017;5(4):158-61. [DOI]

8. van der Walt CL, Heyns CF, Groeneveld AE, Edlin RS, van Vuuren SP. Prospective comparison of a new visual prostate symptom score versus the international prostate symptom score in men with lower urinary tract symptoms. Urology. 2011;78(1):17-20.[DOI]

9. Heyns C, Van der Walt C, Groeneveld A. Correlation between a new visual prostate symptom score (VPSS) and uroflowmetry parameters in men with lower urinary tract symptoms. South African Medical Journal. 2012;102(4):237-40.[DOI]

10. Sanman K, Shetty R, Adapala RR, Patil S, Prabhu GL, Venugopal P. Can new, improvised visual prostate symptom score replace the international prostate symptom score? Indian perspective. Indian Journal of Urology. 2020;36(2):123-9. [DOI]

11. Gupta DK. Evaluation of 'Visual prostate symptom score'in men with benign enlargement of prostate in a tertiary care center in midwestern Nepal. Journal of Society of Surgeons of Nepal. 2015;18(2):6-10. [DOI]

12. MacDiarmid SA, Goodson TC, Holmes TM, Martin PR, Doyle RB. An assessment of the comprehension of the American Urological Association Symptom Index. J Urol. 1998;159(3):873-4. [DOI]

13. McVary KT, Roehrborn CG, Avins AL, Barry MJ, Bruskewitz RC, Donnell RF, et al. Update on AUA guideline on the management of benign prostatic hyperplasia. J Urol. 2011;185(5):1793-803.[DOI]

14. Putra I, Hamid A, Rasyid N, Mochtar CA, Umbas R. Comparison of Visual Prostate Symptom Score with the International Prostate Symptom Score and uroflowmetry parameters in assessing men with lower urinary tract symptoms in Dr. Cipto Mangunkusumo National General Hospital, Indonesia. Prostate Int. 2019;7(3):91-5. [DOI]

15. Stothers L, Macnab A, Bajunirwe F, Mutabazi S, Lobatt C. Comprehension and construct validity of the Visual Prostate Symptom Score (VPSS) by men with obstructive lower urinary tract symptoms in rural Africa. Can Urol Assoc J. 2017;11(11):E405-E8.[DOI]

16. Netto Jr NR, de Lima ML, de Andrade EFM, Apuzzo F, da Silva MB, Davidzon IM, et al. Latin American study on patient acceptance of the International Prostate Symptom Score (IPSS) in the evaluation of symptomatic benign prostatic hyperplasia. Urology. 1997;49(1):46-9. [DOI]

17. Memon MA, Ather MH. Relationship between visual prostate score (VPSS) and maximum flow rate (Qmax) in men with urinary tract symptoms. International braz j urol. 2016;42(02):321-6.[DOI]

18. Galán ML, Borda AP, Osés EM, González LL, Sánchez AB. The validity of the IPSS questionnaire in a sample of 262 patients with benign prostatic hyperplasia. Archivos espanoles de urologia. 1997;50(8):847-53. [DOI]

Citation: Timilsina BR, Kafle A, Ghimire R, Giri S, Mahaseth N, Sah NP, Pradhan S, KC SR. Visual Prostate Symptom Score: Questioning Its Feasibility in The Scenario of a Tertiary Health Care Center of Central Nepal. JCMS Nepal. 2024; 20(4): 322-027.