CORRELATION BETWEEN VISUAL PROSTATE SYMPTOM SCORE & INTERNATIONAL PROSTATE SYMPTOM SCORE IN EVALUATION OF MEN WITH BPH: A PROSPECTIVE STUDY FROM AN NORTH EAST INDIAN POPULATION

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ABSTRACT

Introduction: The international prostate symptom score (IPSS) is widely used to assess the severity of lower urinary tract symptoms (LUTS), but is very complicated & difficult to comprehend. Visual Prostate Symptom Score (VPSS) was introduced to overcome the drawbacks of the International Prostate Symptom Score (IPSS).

Materials & Methods: This was a prospectively designed study conducted at Regional Institute of Medical Sciences, Imphal. A total of 200 patients who presented to the urology outpatient department with LUTS due to BPH were enrolled in the study. All patients were given both questionnaires. The correlation test was used to assess the correlation between two symptom scores and various parameters. Observations with a P value < 0.05 were considered statistically significant.

Results: Of 200 patients, 61% of them were above the age of 60 years; mean $\pm$ standard deviation age was 62.72 ± 9.11 (range 48–84 years). Total time taken to complete IPSS & VPSS were 589.30 ± 190.74 sec & 175.35 ± 62.59 sec respectively. There was a statistically significant difference in the number of patients requiring assistance to fill the questionnaires according to their education level. There was a positive correlation between IPSS total score and VPSS total score ($r = 0.54$; $P < 0.001$), IPSS QoL versus VPSS QoL ($r = 0.53$; $P < 0.001$). A negative correlation was observed between total VPSS and Qmax ($r = -0.719$; $P < 0.001$), total IPSS and Qmax ($r = -0.654$; $P < 0.001$). All VPSS questions showed statistically significant correlation with the corresponding IPSS questions.

Conclusion: VPSS can be used as a better alternative to IPSS which is easier, more compliant, takes lesser time and even can be understood by a less educated person.

KEYWORDS

INTRODUCTION

Benign prostatic hyperplasia is one of the most common conditions among aging men, making BPH a leading source of healthcare problem of old age.¹ In a study by McVary, it was estimated that 90% of men between 45 and 80 years of age will have some types of symptoms due to BPH.²

These symptoms complex are nonspecific and are identified by a variety of terms collectively called lower urinary tract symptoms [LUTS].³ Although LUTS secondary to BPH (LUTS/BPH) are often not life-threatening conditions, they significantly affect the quality of life (QoL) subsequently leading to psychological sequel that may result in depression or anxiety.⁴ Understanding the symptom complex and grading of the symptoms of BPH is necessary to establish a proper guideline for treatment and also to assess the efficacy of treatment at its various stages. In view of all these concerns, various symptom scores and symptom index have been developed.

The international prostate symptom score (IPSS) is widely used to assess the severity of lower urinary tract symptoms (LUTS) in men with bladder outlet obstruction (BOO) and to evaluate the response to medical or surgical therapy for BPH.⁵ An important problem with the IPSS is that, many patients find it difficult to comprehend. Studies showed that 30–70% of men could not complete the IPSS because they found the questions difficult to understand, and this problem was more common in men with a lower level of education. In many previous studies, IPSS has been translated to native language to ease understanding by the patients & to comprehend better.⁶

To overcome the difficulties with IPSS, van der Walt et al developed visual prostate symptom score (VPSS) in 2011 which consist of pictograms to assess the LUTS. The VPSS differs from the IPSS in presenting the AUA questionnaire in a pictorial format enabling the old and often illiterate men to assess their urinary problems in a much easier and a reliable manner. Moreover, a new concept of QoL added in the VPSS helps to better understand the symptoms and its effect on patient's day-to-day life.⁷

So, this study was aimed at comparing these two scores, IPSS and VPSS in north east Indian population and their efficacy were measured by the uroflowmetric analysis of patients.

MATERIALS & METHODS:

This study was conducted by the department of urology, Regional

Institute of Medical Sciences, Imphal over a period of 2 years from December 2017 to November 2019, after obtaining approval from the institutional ethics committee. Prospectively patients were screened after obtaining written informed consent in a language in which the patients were fluent to read and understand.

The aim of the study was to evaluate the correlation between VPSS & IPSS in men with LUTS due to BPH. The IPSS & VPSS were translated into Manipuri language and was validated.

The primary objective was to evaluate the time taken to complete each of the scoring system and the ease with which they can be completed. The secondary objective was to validate the efficacy of each scoring system using Uroflowmetric parameters.

After obtaining demographical details and medical history from the patients, they were provided with charts (IPSS and VPSS) to complete.

Figure 1:

International Prostate Symptom Score

Patient Name: _____ Date of birth: _____ Date completed: _____

In the past month:	Not at All	Less than 1 in 5 Times	Less than Half the Time	About Half the Time	More than Half the Time	Almost Always	Your score
1. Incomplete Emptying How often have you had the sensation of not emptying your bladder?	0	1	2	3	4	5	
2. Frequency How often have you had to urinate less than every two hours?	0	1	2	3	4	5	
3. Intermittency How often have you found you stopped and started again several times when you urinated?	0	1	2	3	4	5	
4. Urgency How often have you found it difficult to postpone urination?	0	1	2	3	4	5	
5. Weak Stream How often have you had a weak urinary stream?	0	1	2	3	4	5	
6. Straining How often have you had to strain to start urination?	0	1	2	3	4	5	
7. Nocturia How many times did you typically get up at night to urinate?	None	1 Time	2 Times	3 Times	4 Times	5 Times	
Total I-PSS Score							

Score: 1–7: Mild 8–19: Moderate 20–35: Severe

Quality of Life Due to Urinary Symptoms	Delighted	Pleased	Slightly Satisfied	Mixed	Mostly Dissatisfied	Unhappy	Terrible
If you were to spend the rest of your life with your urinary condition just the way it is now, how would you feel about that?	0	1	2	3	4	5	6

The symptoms were then classified into: Mildly symptomatic: Score from 0 to 7, Moderately symptomatic: Score from 8 to 19, Severely symptomatic: Score from 20 to 35. A separate question for QoL was also present in the IPSS questionnaire, and the degree of impairment of QoL noted from 0 to 6.

Figure 2:

Maximum score on VPSS was 23 and the symptoms divided into three categories: Mildly symptomatic: <8, Moderately symptomatic: 9–16, Severely symptomatic: 17–23.

Patients' educational status, time taken to complete the IPSS and VPSS, any assistance required to complete the charts, and Q_{max} and Q_{avg} were noted.

Data were collected on a pre-approved pro forma, transferred to Microsoft Excel worksheets (2007), and analyzed. Chi-square test, Fisher's exact test, and binominal test were used to find significant difference with respect to categorical data. Pearson's correlation was used for correlation analysis between components, where " r " is correlation coefficient. Tables and figures were used as appropriate. $P < 0.05$ was taken statistically significant.

RESULTS:

The characteristics of the patients included in this study are presented in Table 1. The patients' mean age was 62.72 years (range, 48–84 years). All patients were divided into two groups based on their education level. Patients with education level $< 10^{\text{th}}$ standard were included in Group A and those with education level $> 10^{\text{th}}$ standard in Group B.

Table 1 Patients Characteristics.

Characteristics	Value
Age (yrs)	62.72 (48–84)
Education level	
Grade $< 10^{\text{th}}$ (Group A)	131/200 (65.5%)
Grade $> 10^{\text{th}}$ (Group B)	69/200 (34.5%)

While completing IPSS Questionnaire 111 out of 131 subjects in Group A needed assistance that constituted 84.7% and while completing VPSS Questionnaire only 44 subjects i.e 35.6% in Group A needed assistance ($P < 0.001$). There was no statistical difference in Group B patients for assistance required to fill the Questionnaire. The average time taken to fill both VPSS and IPSS Questionnaire were compared using Student's paired 't' test. The mean time taken to fill IPSS and VPSS Questionnaire were 589.30 $\pm$ 190.74 and 175.35 $\pm$ 62.59 seconds respectively ($P < 0.001$).

Table 2:

		IPSS	VPSS	P VALUE
Time taken		589.30 $\pm$ 190.74	175.35 $\pm$ 62.59	<0.001
Assistance required	A. $< 10^{\text{th}}$ std (n=131)	111 (84.7%)	44 (35.6%)	<0.001
	B. $> 10^{\text{th}}$ std (n=69)	25 (36.2%)	19 (27.5%)	0.36

Correlation between IPSS & VPSS Questionnaire is shown in Table 3. Total IPSS had a positive correlation of 0.54 with Total VPSS. Similarly, there was positive correlation of 0.67 for nocturia, 0.64 for stream, 0.57 for frequency & 0.53 for QOL between IPSS and VPSS respectively.

Table 3:

Correlation Parameters	Coefficient (r)	P Value
Total score by IPSS vs Total score by VPSS	0.54	< 0.001

Frequency score by IPSS vs Day time frequency score by VPSS	0.57	< 0.001
Nocturia score by IPSS vs Night time frequency score by VPSS	0.67	< 0.001
Weak stream score by IPSS vs Weak stream score by VPSS	0.64	< 0.001
QOL score by IPSS vs QOL score by VPSS	0.53	< 0.001

VPSS has showed statistically significant positive correlation with IPSS in the study population ($r = +0.54$, $P < 0.001$). [Figure 3]

Figure 3:

Pearson Correlation Coefficient between scoring systems and Q_{max} of uroflowmetry is showed in Table 4. There was a significant negative correlation of 0.654 for Total IPSS & 0.719 for Total VPSS. Individual questions like weak stream and QOL of IPSS & VPSS had significant negative correlation with Q_{max} .

Table 4:

Correlation parameters	Coefficient	P Value
Total score by IPSS vs Q_{max}	- 0.654	< 0.001
Total score by VPSS vs Q_{max}	-0.719	< 0.001
Weak stream score by IPSS vs Q_{max}	-0.670	< 0.001
Weak stream score by VPSS vs Q_{max}	-0.722	< 0.001
QOL score by IPSS vs Q_{max}	-0.705	< 0.001
QOL score by VPSS vs Q_{max}	-0.732	< 0.001

DISCUSSION:

The IPSS is currently a standard tool for the assessment of the severity of symptoms in men with LUTS. The American Urological Association guideline has recommended IPSS as a mandatory test in the evaluation and follow up of LUTS and benign prostatic hyperplasia (BPH).⁸ It has been translated into more than 30 languages worldwide and studies have been done to validate these translated versions.⁹ However, the complexity of IPSS causes problems for patients with low educational status who tend to misinterpret their scores, more often to a higher degree, possibly predisposing them to unnecessary intervention.^{10,11,12}

Study done at Emory University (Atlanta, GA) revealed that for each symptom score question there was an inverse relationship between educational level and symptom misinterpretation.¹³ Patients with low educational status often need assistance to complete IPSS questionnaire. Using medical personnel to assist the patient in completing IPSS introduces potential bias and imposes an additional burden on the medical staff.¹⁴

Since its introduction in 2011, VPSS is used globally to assess LUTS, is validated and has been found to correlate well with IPSS.¹⁵ The clinical utility of VPSS has been documented internationally. It is found to be useful in patients with lower levels of education.¹⁶ The pictorial representation helps in easy understanding and completion of the chart without assistance.^{17,18} Ability to complete the chart without assistance is most helpful for patients with limited education and in places with limited resources.¹⁹ VPSS has been used in the Indian population, and found to be useful for the people residing in rural areas, and illiterates, or those with lesser education.²⁰ Also, there is a suggestion that VPSS can replace IPSS to evaluate LUTS in elderly men.²¹

In this study, it was easier for the patients to fill the VPSS questionnaire as compared to that of IPSS. Out of 200 patients, 84.7% patients with education status $< 10^{\text{th}}$ standard needed assistance to complete IPSS

whereas only 35.6% of them needed assistance to complete VPSS ($p < 0.001$). In patients who had education $> 10^{\text{th}}$ grade, 36.2% required assistance to complete IPSS & 27.5% of them for VPSS. van der Walt et al. in their study reported that the questionnaire was completed without any assistance by 51 of 96 men (53%) for the IPSS. Difference appreciated could be due to high rate of illiteracy in our country. However, the patients completing VPSS questionnaire without assistance is comparable in both studies, i.e., in this study 83% and van der Walt et al. study 82% as 79 of 96 men (82%). The patient of every age group found it easier to complete the VPSS questionnaire without assistance.²²

Language barrier in understanding IPSS is well documented.²³ We translated the questionnaire into Manipuri language and was validated. VPSS, on the other hand, is independent of linguistic limitations due to its pictorial representation, which makes it easy to understand.

Misreporting of IPSS, if administered to patients with an education level $< 10^{\text{th}}$ grade, is high. On the other hand, completion of VPSS was easy, and 93.91% of the patients completed without assistance ($P = 0.000$). These observations support the use of VPSS in the less educated population, and as a greater proportion of our elderly patients have lower educational levels, they may be better evaluated with VPSS rather than IPSS.

Our study revealed that less time is required to complete VPSS (1-3 minutes) compared to that for IPSS (4-10 minutes). Wessels and Heyns²⁴ also reported that less time is required to complete the VPSS (118 s vs. 215 s). This is of particular interest in institutions with busy clinical schedule and allows for rapid evaluation on men with LUTS.

There have been previous studies from Namibia, Turkish society, Korean populations, and Indonesian populations that have evaluated the correlation between the IPSS and VPSS.^{25,26,27,28} They all found a positive correlation between IPSS total score and VPSS total score. Similarly, a positive correlation was observed between VPSS total score and VPSS QoL, IPSS total versus IPSS QoL, and IPSS QoL versus VPSS QoL. Both total VPSS and total IPSS showed a negative correlation with Q_{max} . All VPSS questions showed a statistically significant correlation with the corresponding IPSS questions: poor stream, VPSS Q3 versus IPSS Q5; nocturia, VPSS Q2 versus IPSS Q7; and frequency, VPSS Q1 versus IPSS Q2. Our results were found to be consistent with all these studies.

There was a positive correlation between IPSS and VPSS total scores in this study ($r = 0.54$ and $P < 0.001$). This proved VPSS to be equally effective in quantifying the LUTS of BPH when compared with IPSS. The result of the present study was consistent with the study of van der Walt et al.⁷ and Heyns et al. In study by Heyns, IPSS and VPSS scores showed a correlation of 0.73 ($P < 0.001$).²⁹

With questions about the practical application of IPSS,³⁰ VPSS offers advantages such as less bias, easy completion by those with limited education, and minimal or no requirement of assistance, making it more acceptable in evaluating a patient with BEP. As there are very few urologists available in the country, even a general practitioner can complete the evaluation using VPSS. It can prove useful in primary health care centres where the patients can be evaluated with ease and based on the results, a patient can be referred for further management, if required.

Misinterpretation of IPSS in Indian patients was reported by Jindal et al.³¹ Our study supports the observation that pictorial representation of symptoms by VPSS help patients to complete the form without assistance, resulting in less/minimal bias. Our study further confirmed that VPSS is a reliable tool for symptom assessment in patients with BEP and correlates well with IPSS ($p < 0.001$).

Because this study included data from a single institution, a potential selection bias may have occurred. Nevertheless, our study results are valuable because limited data are available from rural Indian populations to elucidate an association between the VPSS and IPSS.³² Clarity of images and requirement of additional images (urgency) has been stated as a minor drawback and we too agree with these suggestions based on our clinical experience.³³

CONCLUSION:

This study was conducted to find the correlation between IPSS &

VPSS in North East Indian population presenting with lower urinary tract symptoms. There was a statistically significant positive correlation between IPSS & VPSS. A significant negative correlation was found between IPSS, VPSS and the uroflowmetric parameters indicating that VPSS is as good as IPSS which is universally accepted. VPSS can be completed by a greater number of patients without assistance even with low education level. Time taken to complete VPSS is much less than IPSS saving precious time of both the patients and treating doctor.

Hence to conclude, VPSS can be used as a better alternative to IPSS which is easier, more compliant, takes lesser time and even can be understood by a less educated person.

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