

Comparison between visual prostate symptom score and international prostate symptom score in males older than 40 years in rural Indonesia

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Purpose: To evaluate the effect of education and literacy status on completion of the Visual Prostate Symptom Score (VPSS) and the International Prostate Symptom Score (IPSS) in males aged over 40 years in a rural Indonesian area.

Methods: We enrolled 103 men who had visited Tc-Hillers Maumere Hospital. Four questions related to frequency, nocturia, weak stream, and quality of life (QoL) were presented by pictogram in the VPSS. Data on age, educational level, and literacy status were analyzed to determine associations with the capability to complete the IPSS and the VPSS questionnaires. Correlation test was used to identify correlation between the VPSS and the IPSS.

Results: The median age of the 103 respondents was 60 years. A total of 69 patients (67.0%) were able to read, 99 patients (96.1%) understood the Indonesian language, and 52 patients (50.5%) had an education grade > 9. The IPSS was completed without assistance by 55 patients (53.4%) and the VPSS by 82 patients (79.6%). None of the patients who could not read could complete the IPSS without assistance, whereas 15 patients (44.1%) who could not read could complete the VPSS without assistance ($P < 0.001$). In the analysis of education level, 40 of 51 patients (78.4%) with an education grade ≤ 9 required assistance to complete the IPSS compared with 8 of 52 patients (15.4%) with an education grade > 9 ($P > 0.001$). In the same groups, 19 of 51 patients (37.3%) compared with 2 of 52 patients (3.8%) required assistance to complete the VPSS ($P < 0.001$). Total VPSS, VPSS obstructive symptoms, VPSS irritative symptoms, and VPSS QoL scores significantly correlated with the total IPSS, IPSS obstructive symptoms, IPSS irritative symptoms, and IPSS QoL, respectively (correlation coefficient, P -value: 0.675, < 0.001 ; 0.503, < 0.001 ; 0.731, < 0.001 ; and 0.823, < 0.001 , respectively).

Conclusions: The VPSS correlated significantly with the IPSS and could be completed without assistance by a greater proportion of men with low levels of education. The VPSS might be useful in evaluating men with lower urinary tract symptoms in rural Indonesian areas with a high level of illiteracy and low level of education.

Keywords: Aged, Lower urinary tract symptoms, Male, Nocturia, Prostate

INTRODUCTION

The World Health Organization agreed to use the symptom index for benign prostatic hyperplasia (BPH) developed by the American Urological Association (AUA) in 1992 as a worldwide system assessment tool. That assessment tool is called

the International Prostate Symptom Score (IPSS). The IPSS is a validated questionnaire for evaluating lower urinary tract symptoms (LUTS) in men with BPH [1].

Previous study has shown that the IPSS questionnaire is a valid measurement of disease severity in well-educated and literate patient populations. A patient with low education and

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literacy, however, cannot correctly self-report his symptoms by use of the IPSS questionnaire [2]. Thus, in developing countries, where the level of illiteracy is high, administration of the IPSS becomes problematic [3]. Furthermore, the majority of men with BPH are aged 60 to 80 years and have visual and cognitive impairment [4]. Because of the complexity of the IPSS, the patient often asks the doctor or nurses for an explanation of the question. This could introduce a bias in the patients' responses [5]. Study has shown, however, that there is no difference in the information obtained between self-administration and physician administration of the IPSS [6]. The IPSS questionnaire printed in a small font size also causes difficulty in elderly men with visual impairment.

To overcome the problems with the IPSS, van der Walt et al. [7] developed a Visual Prostate Symptom Score (VPSS) representing frequency, nocturia, and weak stream. The fourth pictogram is about the quality of life (QoL) of patients regarding their urinary symptoms. The VPSS has advantages because it is simpler and easier to understand, especially for elderly men [8]. Studies in African and Korean populations have shown that a greater proportion of patients can complete the VPSS without assistance [8,9]. Previous studies showed significant correlations between total VPSS and total IPSS, QoL VPSS and QoL IPSS, VPSS irritative symptoms and IPSS irritative symptoms, and VPSS obstructive symptoms and IPSS obstructive symptoms. In a population with greater language diversity and limited education, the VPSS takes significantly less time to complete than the IPSS [10].

Limited data are available regarding the applicability of the VPSS in different cultural and population backgrounds. There are no data about the applicability of the VPSS in an Indonesian population, especially in a rural area. Until now, the VPSS had been tested only in a selected group with LUTS in a tertiary teaching hospital. The present study was therefore conducted to compare the IPSS and VPSS in a rural Indonesian area in a secondary hospital setting.

MATERIALS AND METHODS

This study was conducted in Tc-Hillers Hospital (one of the public hospitals in the rural area of Nusa Tenggara Timur, Indonesia). This study enrolled 103 male patients over 40 years of age who visited the outpatient clinic during the time period of January to April 2014.

Patients were requested to complete the validated Indonesian version of the IPSS questionnaire, which consist of 7 questions: Q1, incomplete emptying; Q2, frequency; Q3, intermittency; Q4, urgency; Q5, weak stream; Q6, straining; and Q7,

nocturia. The total score of the IPSS was obtained by summing all 7 questions; the sum of Q2, Q4, and Q7 related to irritative symptoms; and the sum of Q1, Q3, and Q5 related to obstructive symptoms. Q8 was related to the QoL of patients because of their urinary symptoms.

The patients were also requested to complete the VPSS questionnaire. The VPSS consists of 4 pictograms to evaluate the following domains: Q1, frequency; Q2, nocturia; Q3, force of urinary stream; and Q4, QoL of patients. The sum of Q1 and Q2 related to irritative symptoms, and Q3 represented obstructive symptoms (Fig. 1).

The demographic characteristics of the respondents was evaluated, including age, level of education, income, literacy status, and ability to speak the Indonesian language. Evalua-

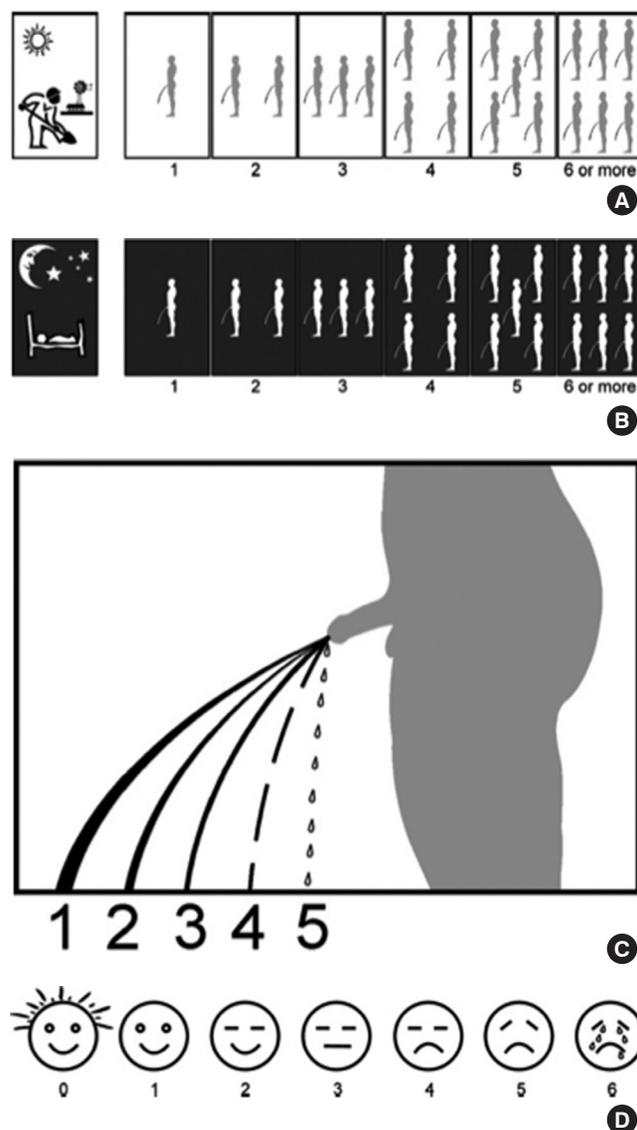


Fig. 1. Visual Prostate Symptom Score (VPSS) consisting of pictogram to evaluate (A) frequency, (B) nocturia, (C) force of the urinary stream, and (D) quality of life.

tion of how the respondent completed the VPSS and IPSS was performed by a physician concerning whether the respondent could complete the questionnaire with or without assistance.

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

The characteristics of the patients included in this study are shown in Table 1. The patients' median age was 60 years. Sixty-seven percent of patients were able to read; most of the pa-

Table 1. Patient characteristics

Characteristic	Value
Age (yr)	60.00 (51.00–69.00)
Literate	69/103 (67.0)
Understand Indonesian language	99/103 (96.1)
Education grade >9	52/103 (50.5)
IPSS	
Total	10.00 (6.00–17.00)
Obstructive	3.00 (1.00–8.00)
Irritative	6.00 (4.00–10.00)
QoL	2.00 (1.00–3.00)
VPSS	
Total	9.00 (7.00–11.00)
Obstructive	2.00 (2.00–3.00)
Irritative	7.00 (5.00–8.00)
QoL	2.00 (1.00–3.00)

Values are represented as median (interquartile range) or number (%). IPSS, International Prostate Symptom Score; QoL, quality of life; VPSS, Visual Prostate Symptom Score.

Table 2. Characteristic of patients in completing VPSS and IPSS

Variable	VPSS			IPSS		
	Requiring assistance	Without assistance	<i>P</i> -value	Requiring assistance	Without assistance	<i>P</i> -value
Total	21 (20.4)	82 (79.6)		48 (46.6)	55 (53.4)	
Level of education			<0.001			<0.001
Grade ≤ 9	19 (37.3)	32 (62.7)		40 (78.4)	11 (21.6)	
Grade > 9	2 (3.8)	50 (96.2)		8 (15.4)	44 (84.6)	
Literacy status			<0.001			<0.001
Literacy	2 (2.9)	67 (97.1)		14 (20.3)	55 (79.7)	
Illiteracy	19 (55.9)	15 (44.1)		34 (100)	0 (0)	
Understand Indonesian language			0.184			0.029
Yes	19 (19.2)	80 (80.8)		44 (44.4)	55 (55.6)	
No	2 (50)	2 (50)		4 (100)	0 (0)	

Values are represented as number (%). IPSS, International Prostate Symptom Score; VPSS, Visual Prostate Symptom Score.

tients (96.1%) could understand the Indonesian language. The proportion of patients with an education grade >9 (50.5%) was the same as the proportion of respondents with an education grade ≤9 (49.5%). The median total IPSS was 10.00, and 66 of 103 patients (64.1%) had moderate to severe LUTS on the basis of the IPSS. The median total VPSS, obstructive VPSS, irritative VPSS, and QoL VPSS were 9.00, 2.00, 7.00, and 2.00, respectively.

The proportion of patients completing the VPSS without assistance was greater than the proportion completing the IPSS without assistance. The questionnaire was completed without assistance by 55 of 103 patients (53.4%) for the IPSS vs. 82 of 103 patients (79.6%) for the VPSS (*P*<0.001). In the group of literate patients, the proportion of patients requiring assistance was greater for the IPSS (20.3%) than for the VPSS (2.9%). None of the illiterate patients completed the IPSS without assistance, whereas 44.1% of the illiterate patients completed the VPSS without assistance. Literacy status was statistically significantly associated with completing the VPSS and the IPSS.

Comparing patients who understood the Indonesian language with those who did not understand the Indonesian language, 44 of 99 cases (44.4%) vs. 4 of 4 cases (100%) required assistance to complete the IPSS, respectively (*P*=0.184). In the same groups, 19 of 99 cases (19.2%) vs. 2 of 4 cases (50%) required assistance to complete the VPSS (*P*=0.029). The proportion of patients completing the VPSS was greater than the proportion completing the IPSS in both the group with an education grade ≤9 and the group with an education grade >9. However, a significantly greater number of patients with an education grade >9 completed the VPSS and the IPSS without assistance. Level of education was statistically significant for completing the VPSS and the IPSS (Table 2).

Table 3. Correlation between VPSS and IPSS

Spearman's rank correlation	Correlation coefficient (<i>r</i>)	<i>P</i> -value
Total VPSS vs. total IPSS	+0.675	<0.001
VPSS QoL score vs. IPSS QoL score	+0.823	<0.001
Total VPSS score vs. VPSS QoL score	+0.470	<0.001
Total IPSS score vs. IPSS QoL score	+0.666	<0.001
Obstructive symptom: VPSS vs. IPSS	+0.503	<0.001
Irritative symptom: VPSS vs. IPSS	+0.731	<0.001
Frequency: VPSS Q1 vs. IPSS Q2	+0.494	<0.001
Nocturia: VPSS Q2 vs. IPSS Q7	+0.952	<0.001
Weak stream: VPSS Q3 vs. IPSS Q5	+0.572	<0.001

VPSS, Visual Prostate Symptom Score; IPSS, International Prostate Symptom Score; QoL, quality of life; Q, question.

The results of the correlation analysis between the VPSS and the IPSS are shown in Table 3. There were statistically significant strong correlations between total VPSS and total IPSS. A significant correlation was also found between VPSS obstructive symptoms and IPSS obstructive symptoms and between VPSS irritative symptoms and IPSS irritative symptoms. In addition, QoL assessed by the VPSS and the IPSS showed a very strong correlation. Furthermore, there were statistically positive correlations between VPSS and IPSS questions related to frequency, nocturia, and force of urinary stream.

DISCUSSION

The IPSS consists of 7 questions that evaluate storage and voiding symptoms in patients with BPH. The patient has to choose 1 to 6 answers indicating the severity of the symptoms. The total score from the 7 questions ranges from 0 to 35 and indicates the severity of LUTS, from mild to severe. Symptom scores of less than or equal to 7 are classified as mild symptoms, symptom scores from 8 to 19 are classified as moderate symptoms, and symptom scores of greater than or equal to 20 are classified as severe symptoms [11]. The eighth question of the IPSS is about QoL. Studies have shown that QoL is the single best predictor of treatment improvement [12].

The IPSS is a worldwide scoring instrument used for the assessment of the severity of symptoms in men with LUTS [13]. The complexity of the IPSS questionnaire causes problems with patients with a low educational level, however [5]. The highest level of inaccuracies is associated with frequency and urgency symptoms, particularly in patients with fewer than 12 years of education. Additionally, patients with fewer than 9 years of education are 21 times as likely to misrepresent their symptoms as are patients with more than 12 years of education. A patient with a low level of education may also

misrepresent his symptoms to a higher degree, resulting in the patient receiving inappropriate treatment [14].

A study by Cam et al. [15] showed that 34% of patients with a low (elementary school) educational level returned the IPSS questionnaire completely unmarked. Patients with a low educational level often misrepresent their symptom score [2]. A study from van der Walt et al. [7] found that patients with an education grade ≤ 7 required assistance to complete the IPSS in 87% of cases compared with 24% of patients with an education grade ≥ 10 . It is evident from the data in this study that more patients with an education grade ≤ 9 needed assistance in completing the IPSS compared with patients with an education grade > 9 . A previous study revealed that a sixth-grade reading level (American educational standards) was required to read and understand the questions in the IPSS questionnaire. Some of the words in the IPSS questionnaire are not usually encountered until a higher level of education [16].

Our study found that none of the illiterate patients were able to complete the IPSS questionnaire without assistance. Illiteracy has been found to be a major problem in completing the IPSS in developing countries [3]. Our study found that 33% of patients were illiterate. Our results agree with those of another study showing that illiterate patients need the help of professional medical personnel to complete the IPSS [2]. Some studies have suggested that there are no differences between the results of a self-administered IPSS and an IPSS administered with the help of medical personnel [6]. Those studies suggest, therefore, that the results of illiterate patients completing the IPSS questionnaire with assistance can be used and do not impair the scientific quality of the questionnaire. However, getting help from a physician, a nurse, or a family member to complete the IPSS might introduce the risk of bias [7].

Language is an additional obstacle in completing the IPSS. The IPSS has been translated into an Indonesian language version and this questionnaire has been validated. However, a problem with introducing the IPSS questionnaire into a rural Indonesian area was that many of the patients did not understand the Indonesian language. In our study, 4 of 103 patients (3.9%) did not understand the Indonesian language and required translation to a local language by the patient's family. This increased the risk of bias of the interpreter and might influence the patients' responses about their LUTS.

This study found that fewer patients required assistance to complete the VPSS than the IPSS. By education level, 3.8% of patients with an education grade > 9 required assistance to complete the VPSS in patients compared with 37.3% of patients with an education grade ≤ 9 . These study results are consistent with those of previous studies [7,9,17]. Depending

on their education levels, between 8% and 32% of patients require assistance completing the VPSS [7]. In addition, fewer patients required assistance in completing the VPSS than the IPSS among illiterate patients and patients who did not understand the Indonesian language. A study from Namibia suggested that the VPSS took less time to complete than the IPSS, especially in men with limited education [10]. The VPSS may have some advantages over the IPSS, because it can be seen and understood easily because of the schematic pictogram and intuitive questions [9].

A study in a Namibian population that enrolled 100 men with LUTS showed a significant correlation between total VPSS and IPSS scores (correlation coefficient = 0.863, $P < 0.0001$). This correlation was stronger in groups with lower levels of education [10]. A significant positive correlation was also found between QoL in the VPSS and the IPSS. In urethral stricture patients, a significant correlation was shown between total VPSS and total IPSS (correlation coefficient = 0.845, $P < 0.001$) [17]. Another study with 96 LUTS patients reported the same result: that total VPSS and total IPSS have a significant correlation (correlation coefficient = 0.6227, $P < 0.001$). That study also suggested that there was a correlation between individual VPSS parameters and their IPSS counterparts [7]. A study in a Korean population revealed a significant positive correlation between the VPSS and the IPSS assessed at the initial visit and after treatment. Our study results are consistent with earlier findings [9]. Our study was conducted in a different cultural population and different clinical setting. Some of the previous studies were conducted in tertiary urology clinic settings among patients with LUTS. However, our study was conducted in a general clinic to which patients came with or without LUTS. There was a significant correlation between total VPSS and total IPSS, and between VPSS QoL and IPSS QoL. Additionally, obstructive and irritative symptoms evaluated by using the VPSS correlated with assessments using the IPSS.

In conclusion, our study revealed a significant correlation between the VPSS and the IPSS. The VPSS could be completed without assistance by a greater proportion of men with a low level of education. The VPSS might be useful in evaluating men with LUTS in rural Indonesian areas with a high level of illiteracy and a low level of education.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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