*African Urology* 2024;4:12-15
https://doi.org/10.36303/AUJ.0120


AFRICAN UROLOGY
ISSN 2710-2750 EISSN 2710-2750

ORIGINAL RESEARCH

# Evaluation of the accuracy of the International Prostate Symptom Score in the assessment of lower urinary tract symptoms due to benign prostatic enlargement when translated into Shona

**KT Macheka, TI Mangwiro**

*Department of Surgery, Parirenyatwa Hospital, University of Zimbabwe, Zimbabwe*

*Corresponding author, email: kmacheka@yahoo.co.uk*

**Purpose**: The main objective of the study was to validate the translated Shona version of the International Prostate Symptom Score (IPSS) questionnaire in men with lower urinary tract symptoms (LUTS) due to benign prostate enlargement (BPE).

**Methods**: A cross-sectional study was done on 128 participants with LUTS due to BPE attending urology clinics at two teaching hospitals over five months (February to June 2018). The sample size was statistically calculated using MediCal software, assuming a correlation of 0.6, 99% power, and a 5% margin of error. The patients were randomised to answer either a translated Shona IPSS and Visual Prostate Symptom Score (VPSS) questionnaire or the English IPSS and VPSS questionnaire. A Pearson correlation coefficient was used to evaluate how the Shona and English IPSS compared to the VPSS. The patients were asked if they were literate and required assistance answering the questionnaire.

**Results**: Approximately 6.2% of the patients were illiterate with 64.1% having primary school education only. Of all the patients, 36.7% had between four and seven years of primary school education. The correlation between the English and Shona IPSS was compared to the VPSS. The results showed that both the Shona ($r$ = 0.90, $p \leq 0.001$) and English ($r$ = 0.79, $p \leq 0.001$) IPSS were positively related to the VPSS questionnaire. However, the Shona IPSS was more positively related to the VPSS questionnaire than the English IPSS. The relations were statistically significant ($p \leq 0.001$).

**Conclusion**: There is a statistically significant correlation between the Shona IPSS and the VPSS questionnaire. The Shona IPSS was not affected by the patient's level of education.

**Keywords**: International Prostate Symptom Score, Visual Prostate Symptom Score, lower urinary tract symptoms, prostate, Shona language

## Introduction

Benign prostatic hyperplasia (BPH) has resulted in troublesome LUTS in elderly men since time immemorial while the exact mechanism causing these bothersome symptoms is not yet fully understood.[1,2] It was only in the 19th century that BPH was identified as a disease warranting treatment.

Bladder symptoms are also known as LUTS. LUTS are classified into three groups by the International Continence Society (ICS), described as storage, voiding, and post-micturition symptoms.[3] Storage symptoms are the ones a patient experiences during the storage phase of the bladder and include frequency and nocturia. Voiding symptoms are experienced during the micturition phase and include symptoms of hesitancy, a weak stream, and straining when passing urine. Post-micturition symptoms are experienced immediately after urination and include incomplete emptying and post-micturition dribbling.

The IPSS was developed by the American Urological Association (AUA) as a tool to evaluate LUTS in men.[4] It initially consisted of seven questions with an eighth question enquiring about quality of life subsequently added. It was initially called the AUA Symptom Index (AUA-SI). After its adoption by the World Health Organization (WHO), it became known as the IPSS.

The IPSS questionnaire has been translated into other languages, including Spanish, French, Dutch, and German, as well as various Asian languages like Korean, Thai, and Japanese.[5-7] Use after translation has had variable success; however, certain words and phrases from the IPSS do not translate well into other languages. Either there are no equivalent phrases to express the same meaning or the words do not exist. This has been a major challenge encountered by scholars in translating the IPSS questionnaire and can be a difficult hurdle to overcome.

The IPSS is affected by the level of literacy. It has been shown that a Grade 6 reading level (American education standard) is needed to read and understand the IPSS questionnaire.[8] Low levels of literacy are a common occurrence in developing countries. Patients with a low level of literacy find it difficult to fill in the IPSS.[9,10] These patients frequently require the assistance of healthcare practitioners to fill out the questionnaire. A study by Badia et al.[11] investigated the effects of various sociodemographic variables, including the level of education on the IPSS in 666 patients with BPH. They noted in this study that a low level of education did not have a significant effect on symptom scores. However, the effect of the level of education became significant when associated with pain, anxiety, and depression.[11] Moon et al.[12] noted that the level of education did not have any effect on answering the English IPSS. However, in his

study, the group of patients with limited education was so small that important differences may have been missed.

A pictogram, known as the VPSS, was developed at Stellenbosch University by van der Walt et al.[13] to assess LUTS in men. The VPSS questionnaire is a pictogram consisting of pictures evaluating LUTS. The VPSS pictogram was validated as a good questionnaire when it was used to evaluate LUTS in men who spoke different languages from Namibia. Heyns et al.[14] used the VPSS in Namibia and accurately graded various LUTS secondary to bladder outlet obstruction (BOO) among male patients from different ethnic tribes. The patients spoke different languages but their LUTS could be assessed with a high degree of accuracy.[14]

## Aim of the study

The main objective of the study was to validate the translated Shona version of the IPSS in men with LUTS due to BPE.

## Materials and methods

This study is a cross-sectional study involving men presenting to urology clinics at two tertiary teaching hospitals with LUTS due to BPE. The study was conducted over five months, from February to June 2018, with a total of 128 patients seen at the urology outpatient department at Parirenyatwa and Harare Teaching Hospitals. The English IPSS was translated into a local language, Shona, for the first time in Zimbabwe. The purpose of the study was to evaluate if it is easier for patients to answer questions regarding their LUTS when translated into a local language they understand. The study would determine if the level of education affects the ability of patients to answer the English and Shona IPSS in our population.

The English IPSS was translated into a local language, Shona. Language experts from the Linguistics Department at the University of Zimbabwe assisted in translating the questionnaire from English to Shona. The translated Shona questionnaire was translated back to the original language (a process known as reverse translation) by an independent translator. Reverse translation was necessary to make sure the core meaning of the original English questionnaire was not lost in translation. A pre-test procedure was done on a test sample of 10 patients at the urology clinic. The original and translated questionnaires were compared and linguistic differences were discussed with language experts until a consensus was reached.

Informed consent was obtained from the study participants and a face-to-face interview was conducted with relevant historical data obtained using a structured questionnaire. The questionnaire also enquired about patient literacy levels.

Participants in this study were over the age of 50 and did not have an indwelling urinary catheter. Patients were given either a Shona IPSS and the VPSS or an English IPSS and the VPSS. The study participants were randomised as follows: all patients who presented and met the study criteria in a specific week were given the same questionnaire, i.e. they were all given the Shona IPSS and VPSS and patients presenting the following week and meeting the study criteria were given the English IPSS and VPSS. This weekly alternating between the Shona and English IPSS was done until all study participants required to achieve the sample size were recruited. In this study, the VPSS was used as the standard comparative tool to which the English and Shona IPSS were compared.

The results of the VPSS were compared to the Shona and English IPSS scores. A Pearson correlation coefficient was used to evaluate how the Shona and English IPSS questionnaires compared to the VPSS questionnaire.

### *Sample size calculation*

The sample size was calculated to be able to detect a true correlation of at least 0.6 between the IPSS in English, the IPSS in Shona, and the VPSS with a level of significance of 0.05 and a power of 99%. A minimum sample size of 41 patients in each arm was required for the study. The total number of study participants recruited was 128. The sample size was calculated using MediCal software.

### *Statistical analysis*

Data was entered using Entryware software and analysed using Statistical Package for Social Sciences (SPSS) window version 21 (IBM Statistics). Categorical variables were expressed as percentages while continuous variables were presented as means, or standard deviation (SD), or median and interquartile ranges. The variables representing the total IPSS were correlated to measure the level of similarity. Thus, statistical analysis was performed with Student's t-test (paired or unpaired, as appropriate) for parametric data, Spearman's rank test for correlations, and chi-square/Fisher's exact test for contingency tables, using SPSS software. A two-tailed *p*-value of 0.05 was accepted as statistically significant.

## Results

Just over 6.2% of all study participants were illiterate and had never been to school. Of all study participants, 64.1% received only primary school education with a minority (3.9%) having university education. On further stratification, 36.7% of all participants received between four and seven years of education (Table I).

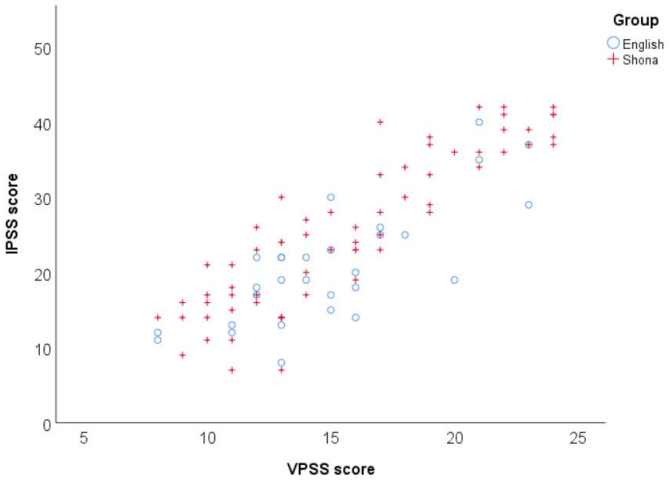


Figure 1: Correlation of English and Shona IPSS and VPSS questionnaire

Table I: Level of education of patients

| | | Shona | | English | | Total | | *p*-value |
|---|---|---|---|---|---|---|---|---|
| | | *n* | % | *n* | % | *n* | % | |
| Education level | Never went to school | 3 | 4.7 | 5 | 7.8 | 8 | 6.2 | 0.269 |
| | Primary | 37 | 57.8 | 45 | 70.3 | 82 | 64.1 | |
| | Secondary | 21 | 32.8 | 12 | 18.8 | 33 | 25.8 | |
| | College | 3 | 4.7 | 2 | 3.1 | 5 | 3.9 | |
| Education (years spent) | 0–3 | 16 | 25.0 | 27 | 42.2 | 43 | 33.6 | 0.155 |
| | 4–7 | 24 | 37.5 | 23 | 35.9 | 47 | 36.7 | |
| | 8–10 | 8 | 12.5 | 7 | 10.9 | 15 | 11.7 | |
| | 11–13 | 13 | 20.3 | 5 | 7.8 | 18 | 14.1 | |
| | 14 + | 3 | 4.7 | 2 | 3.1 | 5 | 3.9 | |

### *Correlation of English and Shona IPSS and VPSS questionnaire*

Figure 1 above depicts the correlation of the English and Shona IPSS and VPSS. The results show that although both Shona ($r = 0.90$, $p \leq 0.001$) and English ($r = 0.79$, $p \leq 0.001$) IPSS questionnaires were positively related to the VPSS, the Shona IPSS was more positively related to the VPSS than the English IPSS. The correlations are statistically significant ($p \leq 0.001$).

## Discussion

The prevalence of BPH in men over 50 years of age has been increasing worldwide.[1] This has been promoted by the fact that men are living longer and well into old age. Various questionnaires have been developed to evaluate LUTS with the most popular being the IPSS questionnaire.[4] The IPSS was developed by the AUA as a tool to evaluate LUTS in men.[4] It is especially useful in the follow-up of patients being managed for BPE to assess the efficacy of the treatment they are receiving.

In this study, it was observed that the level of education significantly affected the patients' capability to answer the English IPSS, but not the Shona IPSS questionnaire. Approximately 49% of patients who attended primary school and 8% of patients who attended secondary school education were unable to answer the English IPSS. These patients were able to read and write in their native Shona language but were unable to understand English. In total, they made up approximately 36% of all patients who answered the English IPSS. Ogwuche et al.[9] reported similar challenges in Nigeria where several patients were unable to answer the English IPSS due to the inability to understand the English language. In the Nigerian study, 74% were unable to read English and on further analysis, 40% could understand spoken English but could not read English. These observations highlight the importance of translating questionnaires to local languages that patients can understand and answer.

Although the level of education influenced the ability to answer the English IPSS in this study, other authors reported that the education level did not affect the ability to answer the IPSS questionnaire in their study populations. Badia et al., Netto et al., and Guzelsoy et al. observed in their study populations that patients' education level did not have a significant effect on their ability to answer the IPSS questionnaire.[11,15,16]

In this study, the correlation between the English and Shona IPSS was compared to the VPSS. The results showed that both the Shona ($r = 0.90$, $p \leq 0.001$) and English ($r = 0.79$, $p \leq 0.001$) IPSS questionnaires were positively related to the VPSS. However, the Shona IPSS was more positively related to the VPSS questionnaire than the English IPSS. The relations were statistically significant ($p \leq 0.001$). Difficulties in understanding English may have significantly affected the ability to understand and answer the English IPSS. The IPSS has been observed to be easier to answer when translated into local languages that patients understand. Setthawong et al. and Park et al. tested the Thai and Korean IPSS against the VPSS questionnaire in Thailand and South Korea respectively.[17,18] They observed that the Thai and Korean IPSS correlated well with the VPSS in their study populations and the correlation was significant. However, Setthawong et al. noted that patients in Thailand with a lower educational status found the Thai IPSS easier to answer than the VPSS.[17]

## Limitations of this study

1. Pressure flow studies are the gold standard in evaluating BOO. Due to limitations of funding, they could not be done to accurately determine the severity of bladder outlet symptoms in patients.
2. The study was conducted over a short period with a small sample size.
3. The study was conducted at two teaching hospitals. We hope to include other hospitals across the country in future studies.

## Conclusion

Questionnaires translated into local languages are useful in daily clinical practice. The Shona IPSS correlated strongly with the VPSS questionnaire. This study highlighted that the Shona IPSS questionnaire was not affected by a patient's educational level and was easier for patients to answer. It is a useful questionnaire even in patients with limited literacy levels. It is prudent for clinicians to translate the English IPSS into local languages to attain maximum benefit from its use in their given population.

### *Conflict of interest*

The authors declare no conflict of interest.

### Funding source

No funding was required.

### Ethical approval

Ethical approval was obtained from the Medical Research Council of Zimbabwe (MRCZ/B/1455).

### ORCID

KT Macheka https://orcid.org/0000-0001-7807-5238

## References

1. Napalkov P, Maisonneuve P, Boyle P. Worldwide patterns of prevalence and mortality from benign prostatic hyperplasia. Urology. 1995;46(3 Suppl A):41-6. https://doi.org/10.1016/S0090-4295(99)80249-0.
2. Barry MJ, Cockett AT, Holtgrewe HL, et al. Relationship of symptoms of prostatism to commonly used physiological and anatomical measures of the severity of benign prostatic hyperplasia. J Urol. 1993;150(2 Pt 1):351-8. https://doi.org/10.1016/S0022-5347(17)35482-4.
3. Abrams P, Cardozo L, Fall M, et al. The standardisation of terminology in lower urinary tract function: report from the standardisation sub-committee of the International Continence Society. Urology. 2003;61(1):37-49. https://doi.org/10.1016/S0090-4295(02)02243-4.
4. Barry M, Fowler Jr FJ, O'Leary MP, et al. 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. https://doi.org/10.1016/S0022-5347(17)36966-5.
5. Badía X, García-Losa M, Dal-Ré R. Ten-language translation and harmonization of the International Prostate Symptom Score: developing a methodology for multinational clinical trials. Eur Urol. 1997;31(2):129-40. https://doi.org/10.1159/000474438.
6. Badìa X, Garcìa-Losa M, Dal-Ré R, Carballido J, Serra M. Validation of a harmonized Spanish version of the IPSS: evidence of equivalence with the original American scale. International Prostate Symptom Score. Urology. 1998;52(4):614-20. https://doi.org/10.1016/S0090-4295(98)00204-0.
7. Homma Y, Kawabe K, Tsukamoto T, et al. Epidemiologic survey of lower urinary tract symptoms in Asia and Australia using the international prostate symptom score. Int J Urol. 1997;4(1):40-6. https://doi.org/10.1111/j.1442-2042.1997.tb00138.x.
8. 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. https://doi.org/10.1016/S0022-5347(01)63758-3.
9. Ogwuche EI, Dakum NK, Amu CO, et al. Problems with administration of international prostate symptom score in a developing community. Ann Afr Med. 2013;12(3):171-3. https://doi.org/10.4103/1596-3519.117628.
10. Oztürk MÎ, Koca O, Keleş MO, et al. International prostate symptom score: really appreciated by all patients or not? Urol J. 2011;8(3):227-30.
11. Badia X, Rodríguez F, Carballido J, et al. Influence of sociodemographic and health status variables on the American Urological Association symptom scores in patients with lower urinary tract symptoms. Urology. 2001;57(1):71-7. https://doi.org/10.1016/S0090-4295(00)00894-3.
12. Moon TD, Brannan W, Stone NN, et al. Effect of age, educational status, ethnicity and geographic location on prostate symptom scores. J Urol. 1994;152(5 Pt 1):1498-500. https://doi.org/10.1016/S0022-5347(17)32455-2.
13. Van der Walt CLE, Heyns CF, Groeneveld AE, Edlin RS, van Vuuren SPJ. 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. https://doi.org/10.1016/j.urology.2011.01.065.
14. Heyns CF, Steenkamp BA, Chiswo J, et al. Evaluation of the visual prostate symptom score in a male population with great language diversity and limited education: a study from Namibia. S Afr Med J. 2014;104(5):353-7. https://doi.org/10.7196/SAMJ.7917.
15. Netto Júnior NR, de Lima ML. The influence of patient education level on the International Prostatic Symptom Score. J Urol. 1995;154(1):97-9. https://doi.org/10.1016/S0022-5347(01)67238-0.
16. Guzelsoy M, Aydos MM, Coban S, et al. Comparison of the effectiveness of IPSS and VPSS without any help in LUTS patients: a prospective study. Aging Male. 2018;21(3):193-9. https://doi.org/10.1080/13685538.2017.1414178.
17. Setthawong V, Mahawong P, Pattanachindakun N, et al. To investigate the correlation between the visual prostate symptom score, the international prostate symptom score, and uroflowmetry parameters in adult Thai males of different educational levels. Prostate Int. 2018;6(3):115-8. https://doi.org/10.1016/j.prnil.2017.12.001.
18. Park YW, Lee JH. Correlation between the visual prostate symptom score and international prostate symptom score in patients with lower urinary tract symptoms. Int Neurourol J. 2014;18(1):37-41. https://doi.org/10.5213/inj.2014.18.1.37.