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Comparison of Urgency, Weak Stream, Incomplete Emptying and Nocturia Score with International Prostate Symptom Score in Symptomatic Men with Benign Enlargement of Prostate

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ABSTRACT

Introduction: Assessment of lower urinary tract symptoms (LUTS) in benign enlargement of prostate (BEP) patients is necessary to initiate and assess treatment. International Prostate Symptom Score (IPSS) is common, but it takes time and many patients have difficulty in understanding. A new score-Urgency, Weak Stream, Incomplete Emptying and Nocturia (UWIN Score), presumed to be easier and well understood has been introduced.

Objectives: The aim of the study was to compare UWIN Score with the IPSS in symptomatic men with BEP in our institution.

Methodology: In this cross-sectional study, 40 patients with LUTS diagnosed with BEP clinically, were enrolled. Symptom evaluation was done in all with both UWIN score and IPSS. The UWIN score and IPSS were compared with each other and with prostate volume.

Results: The mean age and prostate volume were 67±8.9 years and 46±19.5 gm respectively. Time taken and assistance required to complete UWIN score was significantly less ($p < 0.001$) compared to IPSS. Total UWIN score correlated with total IPSS ($\rho = +0.77$; $p < 0.001$). The Quality of life (QoL) domain of UWIN score also correlated with QoL domain of IPSS ($\rho = 0.542$; $p < 0.001$). There was no correlation of both UWIN score ($\rho = 0.15$) and IPSS ($\rho = 0.03$) with prostate size.

Conclusion: UWIN score was equally effective as IPSS in assessing LUTS in symptomatic men with BEP. UWIN score was easier to understand, fast, requiring lesser help even in patients with poor educational status.

INTRODUCTION

Benign Prostatic Hyperplasia (BPH) is the commonest tumor and morbid condition in male starting after the age of 40 years and prevalence is about 90% by 85 years of age. However; only 15%-30% of them will have symptoms.^{1,2} Symptoms related to BPH are collectively known as LUTS which is not specific to BPH. Further, all patients with BPH and LUTS may not have prostate enlargement, which may appear in the absence of LUTS.³

Benign enlargement of prostate (BEP) is the clinical condition resulting from histological diagnosis of BPH. The symptoms related to it are divided into voiding and storage symptoms. The voiding symptoms include intermittency, dribbling, hesitancy, poor urinary flow and incomplete emptying. The storage symptoms are frequency, urgency, urge incontinence and nocturia.⁴ The symptoms are bothersome and the impact differ among individuals so the degree of bother and interference in daily activities should be considered in choosing therapy.^{5,6}

The urodynamic study (UDS) is the standard for assessing bladder outlet obstruction (BOO) due to BPH.⁷ But, UDS being an invasive procedure, may not be performed in all. It do have procedure related morbidity.⁸Uroflowmetry is a component of UDS which measures the maximal urinary flow rate (Qmax) in ml/s which is also nonspecific.

Because measurements of LUTS are cornerstone in evaluating the success of treatment clinically as well as in research, it is important to develop objective measures of such subjective phenomena.⁹ The severity of LUTS related to BPH can be measured from the patient’s aspects reliably by a number of validated questionnaires. They include Danish Prostate Symptom Score (DPSS), International Prostate Symptom Score (IPSS) and the International Continence Society (ICS) male questionnaire. Similarly, the degree of bothersome can be measured with scoring symptoms such as BPH impact index. In clinical practice, these questionnaires can be used to evaluate symptoms severity, choose mode of treatment and to follow up. These symptoms are also related to decrease in quality of life (QoL) subjectively.

The American Urological Association-7 (AUA-7) symptom index was adopted by the World Health Organization (WHO) as the IPSS after the addition of one disease-related quality of life question.¹⁰ The AUA-7 index has been validated and recommended as objective measure of LUTS.^{11,12}

In IPSS, 7 questions representing LUTS are assessed in the points ranging from 0-5 in increasing severity with total score ranges from 0 to 35 with the idea of converting subjective symptoms into numbers that can be used to assess treatment efficacy.¹³

There are few pitfalls in the use of IPSS. The IPSS scores among patients are not comparable due to individual variation. Patients with low level of education have difficulty completing IPSS. It is postulated that a minimum American educational standard of grade VI is required to interpret IPSS.¹⁴ A study conducted at Atlanta concluded with inverse relationship between questionnaire and symptom interpretation which was more for frequency and urgency. About 58% of patients with less than 9 years of education misinterpreted their total score by ≥4 points and 21% by ≥ 10 points.^{15,16} Because of difficulty in understanding IPSS questions, even patients with higher education seek help from medical personnel to explain the questions leading to bias on patient’s response. Similar problem is with the patients who cannot read and write. Further, translation of IPSS into other languages requires separate validation due to variation in the interpretation.^{17,18}

To overcome these issues with the IPSS, various scoring systems came in use. One such scoring system introduced recently uses UWIN (urgency, weak stream, incomplete emptying and nocturia) score.^{15,19,20,21} UWIN score is modified AUA-SS/IPSS which includes 4 of the 7 questions with QoL index. The score range is 0-3 making a total score of 0- 12 compared to 0-35 of AUA-SS/IPSS. The QoL index score also ranges from 0-2 compared to 0-6 of IPSS.²²

There is no published data on prevalence of BPH in Nepalese

population. But with increasing life expectancy, incidence can be expected to rise in similar proportions. One important aspect of management of BEP is evaluation of symptom severity and evaluating symptoms with the help of various scoring systems in our setting is cumbersome. Language barrier in certain circumstances may hinder symptom evaluation of LUTS. Similarly, literacy level of Nepalese male population is in the range of 75%.²³ This figure may be lower in elderly population and those belonging to low socioeconomic conditions and coming from hilly region. This probably impacts the patient’s understanding and interpretation of language used in scoring form. Considering difficulty in completing IPSS and the time involved, UWIN score needs evaluation in our setting. Since UWIN score is a proven tool with similar efficacy to evaluate symptoms, this can probably prove to be equally good in our setting too.

OBJECTIVES

The aim of this study was to compare UWIN score and IPSS in evaluating patients with BEP having LUTS in Nepalese setting

METHODS

This was a cross-sectional study conducted in the Department of Urology of Tribhuvan University Teaching Hospital, Kathmandu, Nepal from May 2015 to April 2016. Patients presenting with LUTS and provisionally diagnosed as BEP were included. The study was approved by Institutional Review Board, Institute of Medicine.

Sample size calculation²⁴: Based on a similar study done by Gupta et al. in IOM, TU in the year 2014 (unpublished data).

- Probability of Type I error(α)= 0.01
- Power(1-β)= 0.9
- Correlation coefficient rho(ρ)= 0.6
- Sample size= 34
- Drop Out= 15% (5)
- So, Total patients required= 39

Parameters

Level	Power	
α	1-β	ρ
0.01	0.9	0.6

$$n = 4 \left[\frac{Z_{\alpha} + Z_{\beta}}{\ln \left(\frac{1+\rho}{1-\rho} \right)} \right]^2 + 3 = 30.09305174$$

$$n = 4 \left[\frac{Z_{\alpha/2} + Z_{\beta}}{\ln \left(\frac{1+\rho}{1-\rho} \right)} \right]^2 + 3 = 33.96949491$$

Required sample size	One tail	Two tail
	31	34

This study included patients with BEP presenting with LUTS and

We excluded the patients with Diabetes mellitus, with indwelling catheter for more than 30 days, with suprapubic catheter, with history of previous prostatic and/or urethral surgery and diagnosed or suspected with other causes of LUTS like Cerebrovascular accidents (CVA), Urinary tract infection (UTI) etc.

Patients admitted with the diagnosis of BEP suspected by clinical symptoms and examination and confirmed by transabdominal ultrasound were enrolled in the study. Complete history including patient’s educational level and occupation was taken. Then the patients were assessed using two symptom scoring systems. Translated Nepali version of IPSS questionnaire and UWIN questionnaire were used. Demographic characteristics of the patients were recorded in preformed proforma including routine investigations. Investigations included transabdominal ultrasonography, serum PSA (selected cases), serum creatinine, urine routine and microscopy and culture and sensitivity. Other supplemental tests were used for individual cases to rule out other diseases. They were given to complete IPSS and UWIN score. The need of assistance required, and time taken to complete the questionnaires were recorded.

Because the IPSS is scored from 0-5 and the UWIN score from 0-3, both the scores were scaled in 0-1 range to equate the measures by dividing the score by the maximum total IPSS (35) or UWIN score (12).

Similarly, QoL score was scaled on 0-1 by dividing the score by 6 in IPSS and by 2 in UWIN score.

Statistical Package for Social Sciences (SPSS) 20.0 version was used for data analysis. Data was analyzed using t-tests for continuous data and chi-square test and Fischer Exact test for categorical data. A 1% level of significance was used for all statistical testing. Spearman correlation coefficient (ρ) was used for correlation analysis.

RESULTS

Fifty-two patients were included in the study. Twelve were excluded due to various reasons and finally 40 patients were included in the study (Figure 1).

Table 2: Distribution of descriptive statistics of scoring

Variable	Voiding symptoms	Storage symptoms	Total	0-1 scale	QoL	QoL index 0-1 scale
IPSS (Mean±SD)	12.6±5.3	10.4±3.6	23.0±7.7	0.65±0.22	5.05±0.98	0.84±0.16
UWIN score (Mean±SD)	4.6±1.6	5.1±1.1	9.7±2.2	0.80±0.18	1.90±0.30	0.95±0.15

The correlation between UWIN score and IPSS was good ($\rho = 0.77, p < 0.001$) [Fig.2]

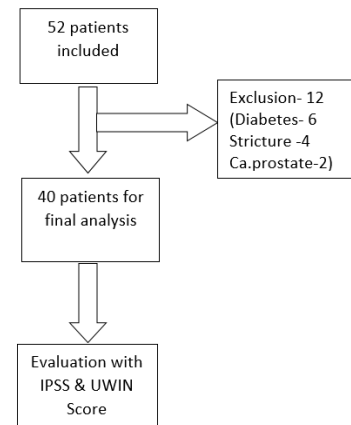


Fig 1: Flow diagram of the study procedure

Mean age was 67.2±8.9 years. Number of patients by age group distribution was 8 (20%) in 51-60 years, 18(45%) in 61-70 years, 11 (27.5%) in 71-80 years and 3(7.5%) above 80 years.

Distribution of patients by education level was 5 with no education, 10 with <8 grade of education, 10 with 8-12 grade of education and 15 with >12 grade of education.

The baseline parameters in the study population are shown in the table below.

Table 1: Distribution of participants mean and SD of various baseline parameters

Variable	Mean ± SD	Range
Prostate size(gm)	46.5±19.5	24-96
Creatinine(μmol/L)	92.5±18.2	55-125
Blood sugar(mmol/L)	5.3±1.0	3.3-7.2
IVPP(mm)	6.7± 5.4	0-16
PVRU(ml)	60.5±91.8	0-360

The IPSS and UWIN score characteristics are represented in the Table 2.

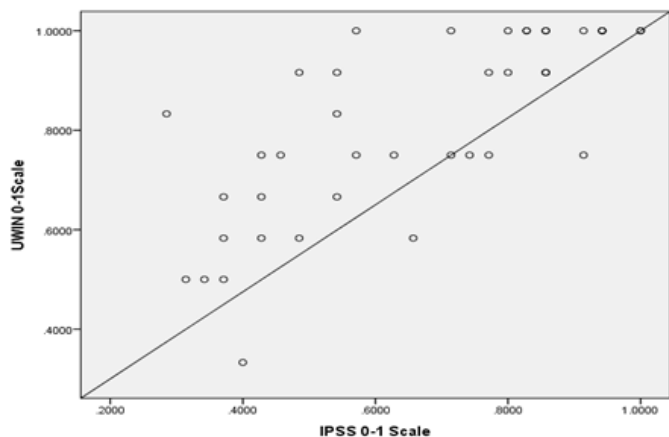


Fig 2: Correlation between UWIN score and IPSS ($\rho = 0.77$)

Similarly, QoL index of UWIN score also correlated with QoL index of IPSS ($\rho = 0.542, p < 0.001$) as shown in the figure 3.

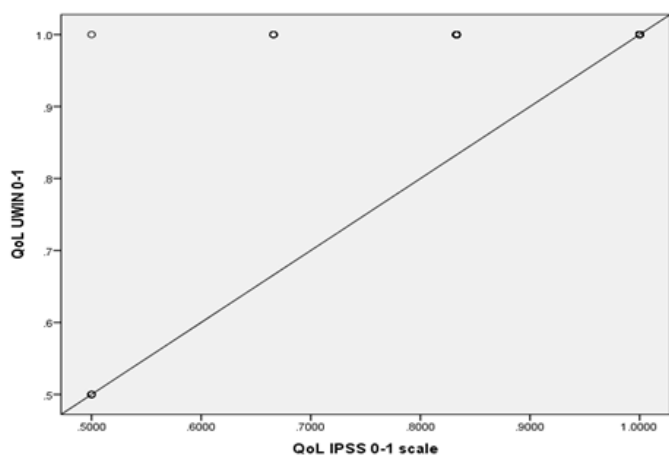


Fig 3: Correlation of QoL index UWIN score with QoL domain

The IPSS did not correlate with the prostate size ($\rho = 0.03, p = 0.81$) as shown in the figure 4.

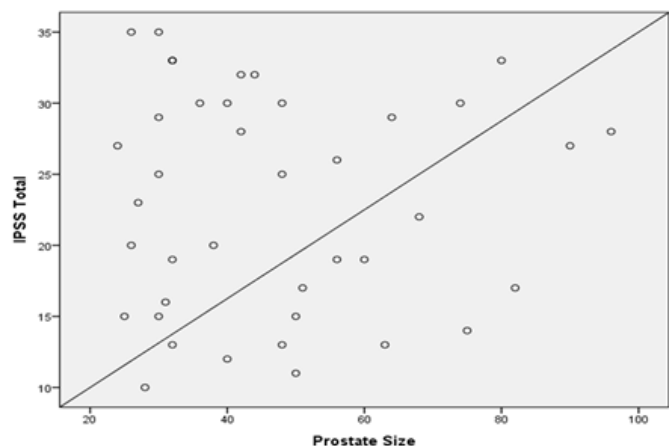


Fig 4: Correlation of IPSS with prostate size ($\rho = 0.03$) of IPSS ($\rho = 0.542$)

Similarly, UWIN score also did not correlate with prostate size ($\rho = 0.15, p = 0.34$) as shown in the figure 5 below.

$\rho = 0.15, p = 0.34$) as shown in the figure 5 below.

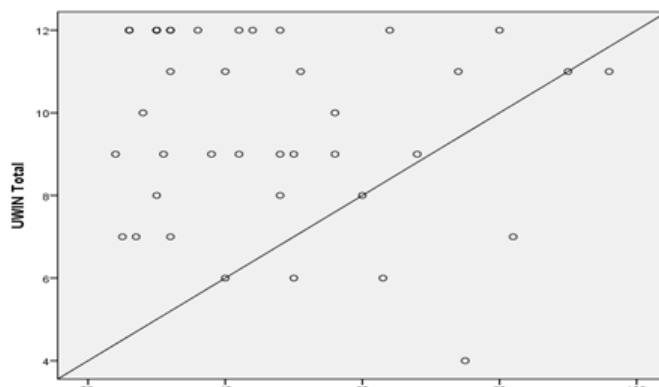


Fig 5: Correlation of UWIN score with prostate size.

Patients with no education (5) required assistance by doctor to complete both score. While patients with fewer than 8 years of education (10), all required assistant to complete IPSS, 50 % (5/10) of them required assistant to complete UWIN score ($p < 0.001$). Among patients with high school education, 90 % (9/10) required assistant to complete IPSS but 20 % (2/10) to complete UWIN score ($p < 0.001$). Similarly patients with college education, 90 % (9/10) required assistant to complete IPSS but only 10 % (1/10) to complete UWIN score ($p < 0.001$) [Table 3].

Table 3: Comparison of patients for assistance required to complete the scores

Education	Assistance Reqd. IPSS	Assistance Reqd. UWIN score	p-value
< 8 Grade	100%	50%	<0.001
8-12 Grade	90%	20%	<0.001
>12 Grade	90%	10%	<0.001

The mean time taken to complete the score for IPSS was 7.10 ± 2.27 minutes and 3.23 ± 1.16 minutes for UWIN score ($p < 0.001$).

DISCUSSION

Elderly males develop BEP. Most of patients in this study were in their 70s (45%) followed by 80s (27.5%). This is in consistent with the incidence of BEP in literature (incidence greater than 50% in men in their 60s and as high as 90% by age 85).^{1,2}

Mean IPSS was 23 in this study indicating majority of patients were in severe symptoms group of IPSS. Other studies have shown IPSS ranging from 17 to 21.7 (moderate to severe symptoms groups). But those who were undergoing surgery for BEP had higher IPSS.²⁵⁻²⁷ Mean UWIN score was 9.70 which also categorized patients into severe symptoms.

In this study, UWIN score positively correlated with IPSS ($\rho = 0.77, p < 0.001$) and QoL index of UWIN also positively correlated with QoL domain of IPSS ($\rho = 0.542, p < 0.001$). The results are comparable with the study of Khadijah et al²². ($\rho = 0.89, p < 0.001$ for score and $\rho = 0.87, p < 0.001$ for QoL). Similarly, Mallaya et al²⁸ found 85% and 87% correlation for scores and QoL domain

respectively in 294 patients.

When correlating with prostate volume with symptom score, IPSS ($p = 0.03$) did not correlate well. This is consistent with other studies correlating IPSS with prostate size. In the study conducted by Agrawal et al²⁹ with 100 patients, IPSS did not correlate with prostate size ($p = 0.19, p = 0.57$). Similar result was noted in the study by Udeh et al³⁰ with 120 patients ($p = 0.003, p > 0.05$). Similarly UWIN score ($p = 0.15$) also did not correlate with prostate volume. Other available studies using UWIN score have not correlated the score with prostate volume.^{22,28}

Education level influences symptom scores during patient assessment. A study done in South Africa, found about one third of population to had below 7th standard education and 4.2% had no education while comparing IPSS with another scoring system.³¹ The literacy rate in Nepal is low.¹⁴ In the present study, 12.5% of the patients had no education and 25% had education below 8 years. All patients with education below 8 years required assistance to complete IPSS but 50% to complete UWIN score. Even patients with above 8 years of required assistance in 90% to complete IPSS while only 10%-20% to complete UWIN score. Johnson et al reported that 58% of patients with education below 9 years and 28% of patients with education level more than 12 years misreported IPSS.¹⁵ Similarly, in the study by van der walt, patient with < 7 grade education, 87% required assistance to complete IPSS and > 10 grade education, 24% required assistance to complete IPSS.³¹ These differences in need of assistance in completing IPSS among educated patients can be due to the difference in education system and culture in our part of the world. Mallaya et al also found that IPSS required more assistance (61% vs 43%, $p < 0.001$) to complete than UWIN score.²⁸

Time taken to complete symptom score forms is another equally important aspect. In the present study, analysis showed that time taken to complete UWIN score was significantly shorter than IPSS. Similar finding was noted in the study of Mallaya et al (11.2 vs 4.8 minutes, $p < 0.001$).²⁸ This is reflective of shorter form and easy understanding of UWIN score by patients.

CONCLUSION

UWIN score was equally effective as IPSS in assessing LUTS in symptomatic men with BEP. UWIN score was easier to understand, fast, requiring lesser help even in patients with poor educational status.

RECOMMENDATION

We recommend multicentric study with greater number of patients.

LIMITATION OF THE STUDY

This study is limited by being single centre so the results can not be generalized to Nepalese population. Proper scientific validation of Nepali version of IPSS and UWIN score are needed.

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FINANCIAL DISCLOSURE

We did not receive financial support for this study by any means.

CONFLICT OF INTEREST

None, declared.

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