

Original Article

## Effect of administration mode (patient vs physician) and patient's educational level on the Turkish version of the International Prostate Symptom Score

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### Abstract

**Objectives:** To compare the effectiveness of the International Prostate Symptom Score (IPSS) when administered by the physician to when self-administered by the patient. The effect of the patient's educational level on the IPSS was also evaluated.

**Methods:** One hundred and seven previously untreated patients with symptomatic benign prostatic hyperplasia (BPH) completed the Turkish version of the International Prostate Symptom Score (Turkish I-PSS) and quality of life (QOL) questionnaires during a single office visit, first on their own and then with an interviewing physician. The patients were categorized into three groups according to their educational levels. Paired *t*-tests were performed to compare the total IPSS (tIPSS) and QOL results between the two testing modes. IPSS and QOL scores resulting from both modes were compared using a kappa test. Differences between the physician-assisted and self-administered scores among the different educational groups were further compared using a one-way ANOVA test and Post Hoc Multiple Comparisons. To compare the objective effectiveness of tIPSS and QOL between the two testing modes, we selected the positive actual state, which was maximum urine flow ( $Q_{max}$ ) of 15 mL/s or less and constructed receiver operating characteristics (ROC) curves for all patients. This estimation was constructed for each educational level.

**Results:** There were no statistical differences in IPSS and QOL values obtained by the patients or physicians ( $P > 0.05$ ). The ROC areas for tIPSS were 0.94 and 0.93, and the ROC areas for QOL scores were 0.97 and 0.91 for information obtained by physicians and patients, respectively. When IPSS answers and QOL scores were evaluated separately, consistency was found across both modes of administration. However, there were lower levels of consistency in answers to IPSS questions 2, 5 and 6 ( $P = 0.59$ ; 0.42; 0.52, respectively). There was no significant difference among the aforementioned data in the educational groups.

**Conclusion:** Although the total IPSS and QOL scores were not affected by the different modes of administration, we recommend that the physicians should evaluate answers to questions 2, 5 and 6 carefully. The present study demonstrates that the educational level did not affect the IPSS and QOL when administered either by the physician or the patient.

**Key words** education, International Prostate Symptom Score, mode of administration, ROC curves.

## Introduction

Lower urinary tract symptoms (LUTS), suggestive of benign prostatic obstruction (BPO), also referred as symptomatic benign prostatic hyperplasia (BPH), is a very common disease in elderly men.<sup>1,2</sup> Histologically, BPH has been reported in 50% of all men by 60 years of age, and in nearly 100% of men older than 80 years.<sup>3</sup> Benign prostatic hyperplasia causes morbidity through associated storage (frequency, urgency, urge incontinence, nocturia) and voiding symptoms (hesitancy, weak stream, intermittence, incomplete emptying). Although BPH is not a life-threatening illness, it adversely affects quality of life. The majority of patients seek medical care because of these symptoms. Therefore, many urologists use symptoms to diagnose BPH, while the most common indication for treatment is to relieve these symptoms.<sup>4,5</sup>

The International Prostate Symptom Score (IPSS), previously known as the American Urological Association Symptom Index (AUA-SI), is the most widely used symptom score in the assessment and follow-up of patients with LUTS and BPH.<sup>6</sup> Symptom-guided treatment is considered as the most logical approach to the patient care. However, previous scoring systems were not always evaluated for their reliability, validity and sensitivity to change.<sup>7,8</sup> Thus, IPSS was developed, evaluated and validated considering all these factors.<sup>6</sup>

The goals in the present study were to compare the effectiveness of the IPSS when administered by the physician to when self-administered by the patient, and to evaluate the effect of the patient's educational level on the IPSS. We also measured the objective effectiveness of the different modes of administration.

## Methods

### Patients

The study population consisted of 107 consecutive, previously untreated patients with symptomatic BPH, who were admitted to our clinic. The medical history of each patient was evaluated in detail to rule out other causes of voiding dysfunction. All patients underwent a digital rectal and focused neurological examination. Urinalysis by dipstick or microscopic examination of sediment, measurement of serum creatinine, serum prostatic specific antigen (PSA) levels and uroflowmetry were ordered. Patients were excluded if they had undergone a previous prostate operation, or experienced prostate cancer or bladder disease.

The Turkish IPSS and quality of life (QOL) questionnaires were completed twice during the same office visit: first by the patient alone and then with the interviewing physician. Each patient was interviewed by the same physician (M.B.). The patients were categorized according to the following educational levels: primary school (group I,  $n=37$ ); high school (group II,  $n=34$ ); and university graduates (group III,  $n=36$ ).

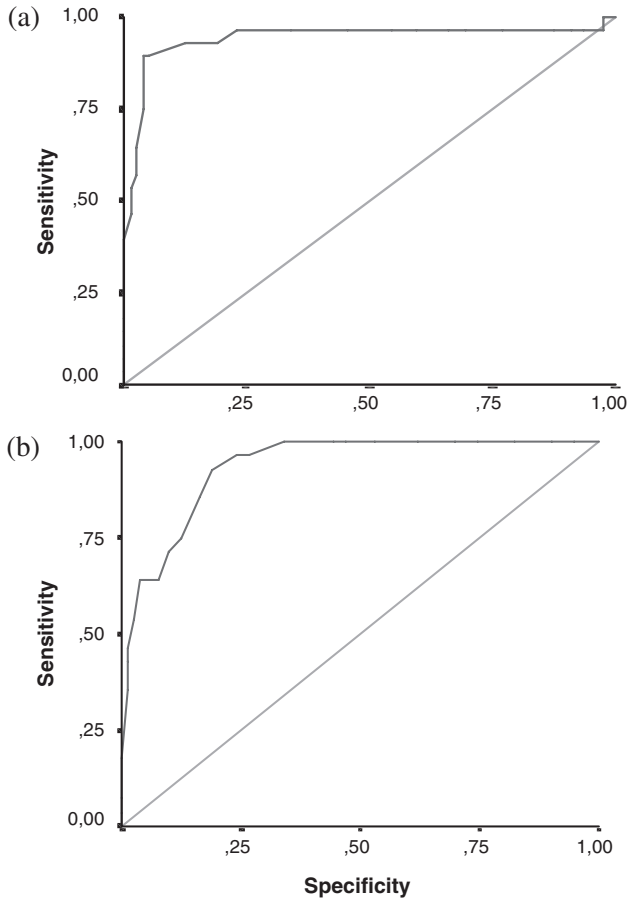
### Calculations and statistics

We performed a paired *t*-test to compare tIPSS and QOL between the two modes of administration. Both answers to each question were compared using the Kappa test which accounts for observer disagreement (different observers classifying individual subjects into the same category) by comparing agreement against that which might be expected by chance.<sup>9</sup> The Kappa test removes chance-corrected proportional agreement. Its values range from +1 (perfect agreement), 0 (no agreement above that expected by chance) and -1 (complete disagreement). Any differences between the self-administered and physician-assisted scores among educational groups I, II and III were further compared using a one-way ANOVA test and Post Hoc Multiple Comparisons.

To compare the objective effectiveness of tIPSS and QOL of both administration modes, we selected the positive actual state, which was maximum urine flow ( $Q_{max}$ ) of 15 mL/s or less. According to this positive actual state, we constructed receiver operating characteristics (ROC) curves of physician-administration and self-administration including tIPSS and QOL for all patients. This estimation was constructed for each educational level. The method developed by Hanley and McNeil was applied to determine whether two ROC curves were significantly different between the physician-administration and self-administration modes.<sup>10</sup>

## Results

The mean age of the patients was  $54 \pm 4.9$  years (range 43–74 years). The mean total symptom score was  $13.47 \pm 6.74$  (range 5–30) for physician-assisted administration, and  $13.09 \pm 6.31$  (range 6–30) for patient-only administration, while mean QOL scores were  $2.62 \pm 1.52$  (range 0–6) and  $2.63 \pm 1.51$  (range 0–6), for each administration mode respectively. ROC areas for tIPSS were  $0.94 \pm 0.03$  for physician-assisted information and  $0.93 \pm 0.02$  for patient-only information, while ROC areas for QOL scores were  $0.97 \pm 0.01$  physician-



**Fig. 1** Receiver operating characteristics curve for total International Prostate Symptom Score (tIPSS) administered by (a) the physician and (b) the patient. There was no significant difference in tIPSS values obtained by the patients or physician ( $P > 0.05$ ).

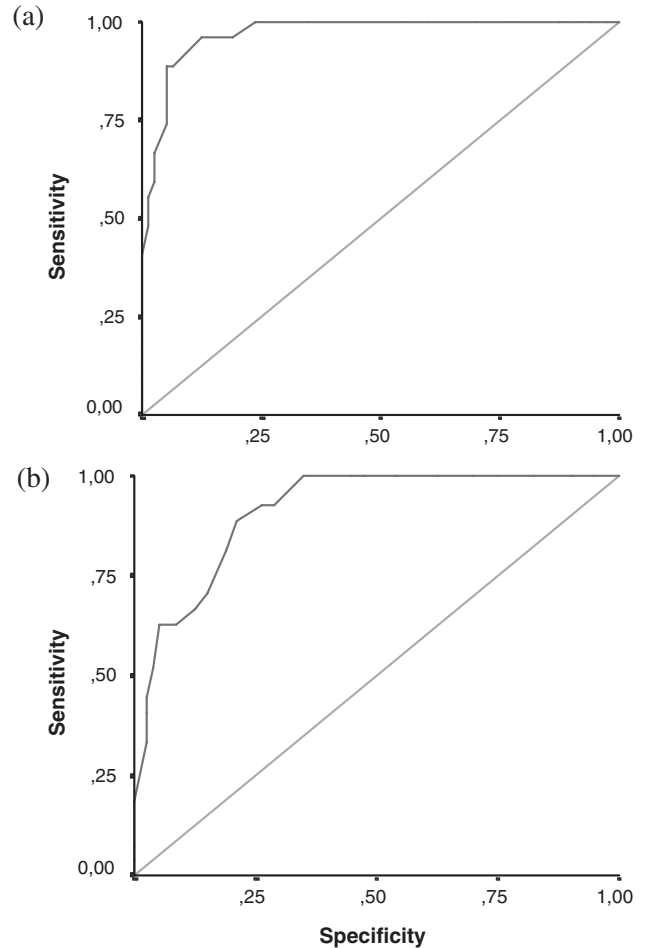
**Table 1** Kappa measure of agreement between questions administered by the physician and by patients alone

Question	Kappa measure of agreement
1	0.62
2	0.59
3	0.60
4	0.60
5	0.42
6	0.52
7	0.80
QOL	0.71

QOL, quality of life.

assisted information and  $0.91 \pm 0.02$  for patient-only information (Figs 1 and 2).

There was no significant difference in tIPSS and QOL values obtained by either administration mode



**Fig. 2** Receiver operating characteristics curve (ROC) for quality of life (QOL) assessed by (a) the physician and (b) the patient. There was no significant difference in QOL values obtained by the patients or physician ( $P > 0.05$ ).

( $P > 0.05$ ). Moreover, the ROC areas for tIPSS and QOL did not differ significantly in any educational group between either administration mode ( $P > 0.05$ ). When results were evaluated separately, consistency was found across all IPSS answers and QOL scores obtained by both administration modes. However, consistency of Kappa values was lower in data obtained from IPSS questions 2 (repeated urination), 5 (reduced stream) and 6 (strain to start) ( $P = 0.59, 0.42, 0.52$ , respectively) (Table 1). According to the educational groups, there was no significant difference between the physician and self-administered scores (Table 2).

## Discussion

The symptoms of BPH are the most common reason for patients with BPH to seek medical care. The level of

**Table 2** Comparison of differences between the physician-assisted and self-administered scores among educational groups I, II and III, using a one-way ANOVA test

Question	<i>P</i> -value*
1	0.22
2	0.91
3	0.67
4	0.46
5	0.27
6	0.38
7	0.29
Total IPSS	0.48
QOL	0.96

\*There was no difference among the groups in Post Hoc Multiple Comparisons.

IPSS, International Prostate Symptom Score; QOL, quality of life.

symptoms and their discomfort to patients are important indicators of the need for medical intervention and the means to evaluate the success of the intervention.<sup>5</sup> The IPSS is the most widely administered tool for the subjective quantification of the patient's symptoms in the evaluation of BPH.<sup>11</sup> To obtain information about patients with BPH in different countries, the International Consensus on Urological Diseases (ICUD) recommended that BPH should be compared in different regions using the same case definition.<sup>12,13</sup> With this aim, the AUA-SI was adopted by IUUD in 1991 and termed as IPSS.<sup>6</sup> The total score of IPSS questions 2 (repeated urination), 4 (urge) and 7 (nocturia) represented the filling components of the IPSS, while the total score of questions 1 (incomplete emptying), 3 (intermittency), 5 (reduced stream) and 6 (strain to start) represented the voiding components. While the presentations and publications that use the IPSS are numerous, several investigators have criticized it as not being specific to BPH.<sup>14–16</sup>

In statistical standpoint, Barry *et al.* reported that the IPSS accurately discriminated patients with symptomatic BPH from controls (receiver operating characteristic area=0.85–0.87).<sup>6</sup> The IPSS was shown to be consistent internally (Cronbach's alpha=0.85) and demonstrated a high reliability index with a patient-administered questionnaire test–retest correlation of 0.93. It also correlated well with other more exhaustive scores as well as with patients' global ratings of their urinary difficulties.

Over the last few years, the IPSS has been the most widely-used assessment tool in BPH treatment trials, and validated translations in multiple languages have made it applicable virtually worldwide.<sup>17</sup> The IPSS questionnaire is translated by the Turkish Urological

Association, it has been recently validated for the Turkish language and culture, since the Turkish IPSS has been used in Turkey for five years.

Several studies have suggested similar results with self-administration and interviewer-assisted administration of the IPSS.<sup>18,19</sup> Plante *et al.* showed that there was no difference in the information gathered from tIPSS and QOL scores when it was obtained by the patient alone or with a physician's assistance.<sup>19</sup> However, Rhodes *et al.* suggested that higher scores might be obtained through self-assessment.<sup>20</sup>

In the present study, we evaluated each IPSS question and found consistency in all answers and QOL scores across both modes of administration. Although there was no difference in overall evaluation of tIPSS, we found lower levels of consistency in answers to questions 2 (repeated urination), 5 (reduced stream) and 6 (strain to start) (agreement kappa=0.59, 0.42, and 0.52, respectively) than the others. The lower levels of consistency may be due to either the Turkish validation of IPSS or the patient population used in this study. Although the total IPSS and QOL scores were not affected by the different modes of administration, we recommend that the physicians should evaluate these questions carefully.

Illiterate patients were not able to answer the questionnaire, but with the help of a professional medical individual, the IPSS could be extended to this group of patients without impairing the quality of the results.<sup>21</sup> Moon *et al.* have applied the IPSS to 2245 men participating in cancer awareness week, and found that the index was not affected by educational and ethnic differences (72% white and 13% African–American participants).<sup>22</sup> Similarly, in over 2000 men participating in the Hytrin Community Assessment Trial, the mean IPSS was not significantly different when the patients were stratified by educational or socioeconomic status.<sup>23</sup> In the studies conducted by Plante *et al.*<sup>19</sup> and Rhodes *et al.*<sup>20</sup> the educational level and the different modes of administration were not compared among the patients. In the present study, in addition to the different modes of administration, the effect of different levels of education upon IPSS was also evaluated. Our study demonstrated that the educational level did not affect the IPSS and QOL when administered by the physician or the patient alone.

Although the correlation between scoring system and  $Q_{\max}$  for BPH is not always consistent, the  $Q_{\max}$  is an important non-invasive quantitative criterion for evaluation of BPH.<sup>23–25</sup> We selected the positive actual state ( $Q_{\max}$  15 mL/s or less) and constructed ROC curves for physician-assisted administration and self-administration, including tIPSS and QOL, for all

patients. This estimation was also applied to each educational level. The  $Q_{\max}$  value was used to evaluate the effectiveness of tIPSS and QOL values obtained by physicians and patients. We demonstrated that the ROC areas of tIPSS and QOL values obtained by the patients and physician were not affected by the educational level of the patients.

In conclusion, even though IPSS is used for the evaluation of BPH and the application of treatments, it is not a completely reliable method. Evaluation of IPSS along with consideration of quality of life provides more reliable information than the evaluation of IPSS alone. Lower consistency among scores for some questions suggested that the results obtained by the physicians were more favorable than the results obtained by the patients alone, although there was no overall difference. Physician-assisted assessment would, therefore, be more helpful in efficiently diagnosing and treating BPH.

## References

- Garraway WM, Collins GN, Lee RJ. High prevalence of benign prostatic hypertrophy in the community. *Lancet* 1991; **338**: 469–71.
- Chute CG, Panser LA, Girman CJ *et al*. The prevalence of prostatism: A population-based survey of urinary symptoms. *J. Urol.* 1993; **150**: 85–9.
- Garraway WM, Kirby RS. Benign prostatic hyperplasia: Effects on quality of life and impact on treatment decisions. *Urology* 1994; **44**: 629–36.
- Reynard J, Abrams P. Symptoms and symptoms score in BPH. *Scand. J. Urol. Nephrol.* 1994; **157**: 137–45.
- Kaplan SA, Olsson CA, Te AE. The American Urological Association symptom score in the evaluation of men with lower urinary tract symptoms: at 2 years of followup, does it work? *J. Urol.* 1996; **155**: 1971–4.
- Barry MJ, Fowler FJ Jr, 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**: 1549–57.
- Lukacs B, McCarthy C, Leplege A, Comet D. Development and validation of quality of life scale associated with health status specific for benign hypertrophy of the prostate and including a sexuality evaluation scale. *French Prog. Urol.* 1994; **4**: 688–99.
- Sagnier PP, MacFarlane G, Teillac P, Botto H, Richard F, Boyle P. Impact of symptoms of prostatism on level of bother and quality of life of men in the French community. *J. Urol.* 1995; **153**: 669–73.
- Blackman NJ, Koval JJ. Interval estimation for Cohen’s kappa as a measure of agreement. *Stat. Med.* 2000; **19** (5): 723–41.
- Hanley JA, McNeil BJ. The meaning and use of the area under a receiver operating characteristic (ROC) curve. *Radiology* 1982; **143**: 29–36.
- Denis L, McConnell J, Yoshida O *et al*. 4th International Consultation on BPH. Recommendations of the International Scientific Committee: The evaluation and treatment of lower urinary symptoms (LUTS) suggestive of benign prostatic obstruction. In: *Proceedings of the 4th International Consultation on Benign Prostatic Hyperplasia (BPH)*. Denis L, Griffiths K, Khoury S (eds). Plymouth, Plymbridge Distributors, 1998; 669–84.
- Boyle P. Cultural and linguistic validation of questionnaires for use in international studies: The nine-item BPH-specific quality of life scale. *Eur. Urol.* 1997; **32**: 50–2.
- O’Leary M. The importance of standardisation and validation of symptom scores and quality of life: The urologist’s point of view. *Eur. Urol.* 1997; **32**: 48–9.
- Lepor H, Machi G. Comparison of AUA symptom index in unselected males and females between fifty-five and seventy-nine years of age. *Urology* 1993; **42**: 36–40.
- Chancellor MB, Rivas DA. American Urological Association symptom index for women with voiding symptoms: Lack of index specificity for benign prostatic hyperplasia. *J. Urol.* 1993; **150**: 1706–8.
- Chai TC, Belville WD, McGuire EJ, Nyquist L. Specificity of the American Urological Association voiding symptom index: Comparison of unselected and selected samples of both sexes. *J. Urol.* 1993; **150**: 1710–3.
- Badia X, Garcia-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**: 129–40.
- Barry MJ, Fowler FJ, Chang Y, Liss CL, Wilson H, Stek M Jr. The American Urological Association symptom index: Does mode of administration affect its psychometric properties? *J. Urol.* 1995; **154**: 1056–9.
- Plante M, Corcos J, Gregoire I, Belanger MF, Brock G, Rossingol M. The International Prostate Symptom Score. Physician versus self-administration in the quantification of symptomatology. *Urology* 1996; **47**: 326–8.
- Rhodes T, Girman CJ, Jacobsen SJ *et al*. Does the mode of questionnaire administration affect the reporting of urinary symptoms? *Urology* 1995; **46**: 341–5.
- Netto NR Jr, de Lima ML. The influence of patient education level on the International Prostatic Symptom Score. *J. Urol.* 1995; **154**: 97–9.
- Moon TD, Brannan W, Stone NN *et al*. Effect of age, educational status, ethnicity and geographic location on prostatic symptom scores. *J. Urol.* 1994; **152**: 1498–500.
- Koyanagi T, Artibani W, Correa R *et al*. Initial diagnostic evaluation of men with lower urinary tract symptoms. In: *Proceedings of the 4th International Consultation on Benign Prostatic Hyperplasia (BPH)*. Denis L, Griffiths K, Khoury S *et al*. (eds). Plymouth, Plymbridge Distributors, 1998; 181–264.
- Jepsen JV, Bruskevitz RC. Comprehensive patient evaluation for benign prostatic hyperplasia. *Urology* 1998; **51** (Suppl. 4A): 13–8.
- Neal DE, Ramsden PD, Sharples L, Smith A, Powell PH, Styles RA, Webb RJ. Outcome of elective prostatectomy. *BMJ* 1989; **299**: 762–7.