

Reliability of Thai-Version Overactive Bladder Symptom Scores (OABSS) Questionnaire and the Correlations of OABSS with Voiding Diary, International Prostate Symptom Score (IPSS), and Patient Perception of Bladder Condition (PPBC) Questionnaires

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Background: Overactive bladder (OAB) is defined by subjective symptoms such as urgency, frequency, and urge incontinence, rather than objective measures. Using questionnaires like OABSS can help in diagnosis and evaluation of patients' symptoms for further assessment.

Objective: To evaluate test-retest reliability of OABSS in 2-week interval and to evaluate the correlation of OABSS with voiding diary, IPSS, and PPBC.

Material and Method: Between August 2009 and January 2011, 56 Thai women aged more than 18 years, attending urogynecology clinic at King Chulalongkorn Memorial Hospital were recruited in the study. They were diagnosed as having the overactive bladder with these criteria, symptoms of urinary frequency, urgency with or without urge incontinence, for more than three months, and at least one episode of urgency with or without incontinence in last three days. After giving the written informed consents, the patients were instructed to complete the voiding diary before starting the study and at the second visit (two weeks apart). The Thai version of self-answered questionnaires (OABSS, IPSS, and PBC) were also given at 0- and 2-week visit. The questionnaires were translated by one linguist from the Language Institute, Chulalongkorn University, Thailand, and translated back by another linguist to English. The content and language validity were checked by one urogynecologist at our department. The study was conducted after the protocol was approval by the Institutional Review Board (IRB).

Results: The test-retest reliabilities (intraclass correlation) of the OABSS, PPBC, and IPSS total score were 0.88, 0.44, and 0.85. The overall Cronbach's alpha of OABSS was 0.31 and 0.41 at 0- and 2-week respectively.

Conclusion: Thai version of OABSS was reliable, valid, and related to the abnormal voiding symptoms. Further use of Thai version OABSS questionnaire was advocated for both clinical study and clinical practice in Thai women with OAB.

Keywords: Thai version, OABSS, IPSS, PPBC

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Overactive bladder (OAB) is defined as a symptom syndrome of urinary urgency, with or without urgency incontinence, usually with urinary frequency and nocturia, in the absence of infection or other obvious pathologic features⁽¹⁾. The OAB, especially OAB with incontinence, has a negative impact on the quality of life (QOL) of patients, interfering with daily activities, travel, and sleep/vitality⁽²⁾. Epidemiologic studies have demonstrated that OAB is found at frequencies of 12.4% to 53.1%, depending on the

target population and definition of OAB^(3,4). The OAB syndrome is treated with behavior therapy, electrostimulation, and, most commonly, antimuscarinic agents⁽⁵⁾.

Because OAB is defined by subjective symptoms, rather than objective measures, the patient's perspective is important in managing OAB. Many clinicians use only the history of symptoms during the interview in the clinic to diagnose the OAB; this can lead to wrong diagnosis due to misunderstanding or not questions not covering all symptoms of OAB. Using standardized questionnaires can solve these problems. To capture the patient's perspective, i.e., symptoms and their impact on QOL, several patient-reported outcome instruments are available, including

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the Overactive Bladder Questionnaire (OAB-q), Patient Perception of Bladder Condition (PPBC), Urgency Questionnaire (UQ), and the Primary OAB Symptom Questionnaire (POSQ)⁽⁶⁾. The PPBC was a simple single question questionnaire, easy to use, that was designed to evaluate the overall bothersome, but it was not specific to OAB⁽⁷⁾. Most of available measures do not evaluate OAB symptoms, rather than the effect in daily life resulting from the symptoms. Exceptionally, the Overactive Bladder Symptom Composite Score (OAB-SCS)⁽⁸⁾ can quantify symptoms in a single score, but it requires recording in a voiding diary, which limits the range of use. The International Prostate Symptom Score (IPSS) was one of the questionnaires that designed for evaluation of men with lower urinary tracts symptom that related to benign prostate hyperplasia but this questionnaire can also be used in women with OAB symptoms as it captured the similar symptoms^(9,10). Homma et al⁽¹¹⁾ developed and validated a new assessment tool for OAB symptoms, Overactive Bladder Symptom Score (OABSS). The OABSS evaluates symptoms per se from patient's viewpoint, and does not require diary recording. The responsiveness to treatment was confirmed in Japanese patients⁽¹²⁾. The English version of OABSS was reported with the intraclass correlation coefficient of the total OABSS score of 0.74 (weighted kappa coefficients of individual item score, 0.55 to 0.84) and that the Cronbach's alpha coefficient of 0.56⁽¹³⁾.

OABSS has some advantage over other scales for OAB symptoms, but it has also one concern that it was developed with Japanese language and validated based on Japanese patient data only. In order to use OABSS outside Japan, it needs to be translated into the local language and validated based on the local patient data.

The aims of the present study were to evaluate test-retest reliability of OABSS in 2-week interval and to evaluate the correlation of OABSS with voiding diary, IPSS, and PPBC.

Material and Method

Between August 2009 and January 2011, 56 Thai women aged more than 18 years, attending urogynecology clinic at King Chulalongkorn Memorial Hospital were recruited in the study. They were diagnosed as having the OAB with these criteria, symptoms of urinary frequency, urgency with or without urge incontinence for more than three months and at least one episode of urgency with or without incontinence in last three days. The patients must be

able to complete the 3-day micturition diary correctly. The exclusion criteria were significant stress incontinence or mixed stress/urge incontinence where stress is the predominant factor as determined by the investigator, patient with indwelling catheters or practicing intermittent self-catheterization, evidence of a symptomatic urinary tract infection, chronic inflammation such as interstitial cystitis, bladder stones, previous pelvic radiation therapy or previous or current malignant disease of the pelvic organs, drug or non-drug treatment for OAB was started, quit, or changed in four weeks, diagnosed as having any neurological bladder disease, and diabetic neuropathy.

The demographic data were recorded. After giving the written informed consents, all were instructed to complete the voiding diary, all cases were instructed to complete the voiding diary with all these measures: number of micturition per day, number of incontinence episodes per day, number of urgency episodes per day, number of nocturia episodes per day, total voided volume per day before starting the study and at the second visit (2 weeks apart). The Thai version of self-answered questionnaires (OABSS, IPSS, and PBC) were also given at 0- and 2-week visit.

Instruments

The OABSS⁽¹²⁾ comprised of four item scores, based on the self-administered questionnaire about four symptoms, daytime frequency, nighttime frequency, urgency, and urgency incontinence. The symptoms were rated on the Likert scale with a highest score of 2, 3, 4, and 5, respectively. The total score of the OABSS ranges from 0 to 15, indicating the higher the score, the more severe the symptoms.

The PPBC⁽⁸⁾ was a single-item questionnaire evaluating the patient's subjective perception of current urinary problems. Responses were rated on a 6-point Likert scale (from 1 = "no problems at all" to 6 = "many severe problems").

The IPSS⁽⁹⁾ was the questionnaire with seven questions evaluating the severity of lower urinary tract symptoms related to benign prostatic hyperplasia, and a single question concerning QOL related to the bothersome due to lower urinary tract symptoms. The first seven questions (IPSS total) are rated on a 6-point Likert scale ranging from 0 = "not at all" or "none" to 5 = "almost always". The last question (IPSS QOL) is rated on a 7-point Likert scale ranging from "delighted" to "terrible". The first seven questions scores were summed up, ranging from 0 to 35. The last question was transformed into a scale from 0 to 100.

The OABSS and PPBC questionnaires were translated by one linguist from the Language Institute, Chulalongkorn University, Thailand, and translated back by the other linguist to English. The content and language validity were checked by one urogynecologist at our department. The study was conducted after the protocol was approved by the Institutional Review Board (IRB).

Statistical analysis

The reliability tests of the Thai version of questionnaires (OABSS, IPSS, and PPBC) were analyzed by using test-retest reliability, weight Kappa score, and Cronbach's alpha. The correlation of OABSS to other measures was analyzed by using Spearman's correlation coefficient. The SPSS version 17.0 was used for statistical analysis. The sample size estimation was calculated based on the test-retest reliability of OABSS total score from pilot study ($p = 0.84$). With $\alpha = 0.05$, accepted error = 0.10. The estimated sample size was 51.6 and with 10 per cent in case of loss to follow-up. The total sample size required was 56 cases.

Results

The mean \pm SD of age and BMI were 60.4 \pm 9.6 years, and 23.6 \pm 3.9 kg/m². Most women (48.0%) had the symptoms of OAB between three months and one year. Most women had the urgency episode three to five times in last three days before visit (Table 1).

There was no drop out at the second week of the study. The mean \pm SD micturition per day, incontinence episodes per day, urgency episodes per day, nocturia episodes per day, and total voided volume per day from voiding diary were similar at both 0- and

2-week (Table 2). The mean \pm SD of total OABSS score at 0-week was 7.4 \pm 2.6, similar to the 2-week (7.3 \pm 2.8) score.

The mean \pm SD of total IPSS score at 0-week was 10.8 \pm 5.3, similar to the 2-week (10.1 \pm 5.4) score. (Table 2). For PPBC questionnaire, most women reported severe problems suffered by bladder condition (55.4% at 0-week, 46.4% at 2-week) (Table 2). The weight Kappa of each item score of OABSS (item 1-4) ranged from 0.45 to 0.72 (Table 3). The overall correlation coefficients of OABSS analyzed by items are shown in Table 4. The overall Cronbach's alpha was 0.31 and 0.41 at 0- and 2-week respectively (Table 4). However, when sub-group analysis was included into OAB with urge incontinence (wet) and OAB without urge incontinence (dry) group, the Cronbach's alpha was higher in the wet group (0.71 and 0.66 at 0- and 2-week) than in dry group (0.10 and 0.28 at 0- and 2-week).

The test-retest reliabilities (intraclass correlation) of the OABSS, PPBC, and IPSS total score were 0.88, 0.44, and 0.85. The parameter of three days voiding diary had an intraclass correlation ranging from 0.39 to 0.82 (Table 5).

Discussion

From the present study, we found the OABSS was reliable as the intraclass correlation coefficient was 0.88 (~0.9). The value of more than 0.7 was required for the clinical study and value of more than 0.9 was required for the clinical use⁽¹⁴⁾. Hence, the Thai version of OABSS questionnaire can be used in both clinical study and clinical practice. The weighted Kappa score of the five items of OABSS questions ranged from 0.45 to 0.72, which were classified as in the moderate satisfaction agreement⁽¹⁵⁾. The Cronbach's alpha of the OABSS is 0.31 and 0.41, which was quite low, referred to the low internal consistency. This could explain by the poor correlation of the OABSS item scores as seen in the Table 4. The Cronbach's alpha was related to the correlations between the individual items, as well as the number of items in the questionnaire⁽¹⁶⁾. However, when the score was subdivided in to OAB wet and OAB dry, the Cronbach's alpha became higher in the OAB wet (0.71 and 0.6 at 0- and 2-week), when compared to the OAB dry (0.10 and 0.28 at 0- and 2-week). This could be interpreted as the OABSS had the higher internal consistency if we tested in the OAB women with urge incontinence, which usually had worse quality of life. This was due to the better correlation of the item scores. However, for the nature of OABSS questions, they were not

Table 1. Background characteristics of patients (56 cases)

| Characteristics | Value |
|--|----------------|
| Number of patients, n (%) | 56 (100) |
| Age at informed consent, mean \pm SD | 60.4 \pm 9.6 |
| BMI, mean \pm SD | 23.6 \pm 3.9 |
| Duration of OAB, n (%) | |
| 3 months to 1 year | 27 (48.2) |
| 1 to 5 years | 23 (41.1) |
| More than 5 years | 6 (10.7) |
| Number of episodes of urgency with or without incontinence in the past 3 days, n (%) | |
| 1 or 2 | 15 (26.8) |
| 3 to 5 | 22 (39.3) |
| 6 or more | 19 (33.9) |

BMI = body mass index; OAB = overactive bladder

Table 2. Summary statistics of scores

| Questionnaire | Score | Visit | | |
|-------------------------|--|-------------------------|-------------|------------|
| | | Week 0 | Week 2 | |
| Number of patients | | 56 (100%) | 56 (100%) | |
| 3-day micturition diary | Number of micturition per day, mean ± SD | 12.1±3.9 | 11.0±3.1 | |
| | Number of incontinence episodes per day, mean ± SD | 1.1±2.3 | 0.7±2.5 | |
| | Number of urgency episodes per day, mean ± SD | 5.1±4.3 | 4.4±3.3 | |
| | Number of nocturia episodes per day, mean ± SD | 2.1±1.2 | 1.8±1.0 | |
| | Total voided volume per day, mean ± SD | 2,173±907.6 | 1,897±648.3 | |
| | Number of pads used per day, mean ± SD | 0.0±0.0 | 0.0±0.0 | |
| OABSS | Daytime frequency | 7 or less | 4 (7.1%) | 7 (12.5%) |
| | | 8 to 14 | 44 (78.6%) | 41 (73.2%) |
| | | 15 or more | 8 (14.3%) | 8 (14.3%) |
| | | Mean | 1.1 | 1.0 |
| | Nighttime frequency | 0 | 1 (1.8%) | 3 (5.4%) |
| | | 1 | 12 (21.4%) | 12 (21.4%) |
| | | 2 | 20 (35.7%) | 19 (33.9%) |
| | | 3 or more | 23 (41.1%) | 22 (39.3%) |
| | | Mean | 1.1 | 1.0 |
| | Urgency | Not at all | 5 (8.9%) | 4 (7.1%) |
| | | Less than once a week | 8 (14.3%) | 8 (14.3%) |
| | | Once a week or more | 11 (19.6%) | 14 (25.0%) |
| | | About once a week | 6 (10.7%) | 7 (12.5%) |
| | | 2 to 4 times a day | 23 (41.1%) | 19 (33.9%) |
| | | 5 times a day or more | 3 (5.4%) | 4 (7.1%) |
| | | Mean | 2.8 | 2.7 |
| | Urgency incontinence | Not at all | 19 (33.9%) | 20 (35.7%) |
| | | Less than once a week | 17 (30.4%) | 12 (21.4%) |
| | | Once a week or more | 6 (10.7%) | 8 (14.3%) |
| | | About once a week | 6 (10.7%) | 9 (16.1%) |
| | | 2 to 4 times a day | 6 (10.7%) | 5 (8.9%) |
| | | 5 times a day or more | 2 (3.6%) | 2 (3.6%) |
| | Mean | 1.4 | 1.5 | |
| | OABSS total score (sum of 1-4) | Mean ± SD | 7.4±2.6 | 7.3±2.8 |
| | | None: 0-2 | 1 (1.8%) | 1 (1.8%) |
| | | Mild: 3-5 | 12 (21.4%) | 16 (28.6%) |
| | | Moderate: 6-11 | 38 (67.9%) | 34 (60.7%) |
| Severe: 12 or more | | 5 (8.9%) | 5 (8.9%) | |
| Internal consistency | Cronbach's alpha | 0.31 | 0.41 | |
| IPSS | Incomplete emptying | Not at all | 15 (26.8%) | 19 (33.9%) |
| | | Less than 1 time in 5 | 22 (39.3%) | 25 (44.6%) |
| | | Less than half the time | 6 (10.7%) | 3 (5.4%) |
| | | About half the time | 7 (12.5%) | 3 (5.4%) |
| | | More than half the time | 0 (0.0%) | 1 (1.8%) |
| | | Almost always | 6 (10.7%) | 5 (8.9%) |
| | | Mean | 1.5 | 1.2 |
| | Frequency | Not at all | 1 (1.8%) | 2 (3.6%) |
| | | Less than 1 time in 5 | 11 (19.6%) | 14 (25.0%) |
| | | Less than half the time | 15 (26.8%) | 14 (25.0%) |
| | | About half the time | 13 (23.2%) | 17 (30.4%) |
| | | More than half the time | 8 (14.3%) | 2 (3.6%) |
| | | Almost always | 8 (14.3%) | 7 (12.5%) |
| | | Mean | 2.7 | 2.4 |

OABSS = Overactive Bladder Symptom Score; IPSS = International Prostate Symptom Score; PPBC = Patient Perception of Bladder Condition

Table 2. (cont.)

| Questionnaire | Score | Visit | | |
|---|----------------------|--------------------------------------|------------|------------|
| | | Week 0 | Week 2 | |
| IPSS | Intermittency | Not at all | 24 (42.9%) | 28 (50.0%) |
| | | Less than 1 time in 5 | 18 (32.1%) | 16 (28.6%) |
| | | Less than half the time | 5 (8.9%) | 2 (3.6%) |
| | | About half the time | 6 (10.7%) | 6 (10.7%) |
| | | More than half the time | 0 (0.0%) | 1 (1.8%) |
| | | Almost always | 3 (5.4%) | 3 (5.4%) |
| | | Mean | 1.1 | 1.0 |
| | Urgency | Not at all | 10 (17.9%) | 10 (17.9%) |
| | | Less than 1 time in 5 | 20 (35.7%) | 22 (39.3%) |
| | | Less than half the time | 8 (14.3%) | 9 (16.1%) |
| | | About half the time | 11 (19.6%) | 10 (17.9%) |
| | | More than half the time | 6 (10.7%) | 2 (3.6%) |
| | | Almost always | 1 (1.8%) | 3 (5.4%) |
| | | Mean | 1.8 | 1.7 |
| | Weak stream | Not at all | 32 (57.1%) | 30 (53.6%) |
| | | Less than 1 time in 5 | 13 (23.2%) | 17 (30.4%) |
| | | Less than half the time | 5 (8.9%) | 3 (5.4%) |
| | | About half the time | 3 (5.4%) | 3 (5.4%) |
| | | More than half the time | 1 (1.8%) | 1 (1.8%) |
| | | Almost always | 2 (3.6%) | 2 (3.6%) |
| | | Mean | 0.8 | 0.8 |
| | Straining | Not at all | 44 (78.6%) | 42 (75.0%) |
| | | Less than 1 time in 5 | 8 (14.3%) | 10 (17.9%) |
| | | Less than half the time | 2 (3.6%) | 2 (3.6%) |
| | | About half the time | 1 (1.8%) | 1 (1.8%) |
| | | More than half the time | 1 (1.8%) | 1 (1.8%) |
| | | Almost always | 0 (0.0%) | 0 (0.0%) |
| | | Mean | 0.3 | 0.4 |
| | Nocturia | None | 1 (1.8%) | 0 (0.0%) |
| | | 1 time | 11 (19.6%) | 10 (17.9%) |
| | | 2 times | 19 (33.9%) | 21 (37.5%) |
| | | 3 times | 14 (25.0%) | 14 (25.0%) |
| 4 times | | 4 (7.1%) | 8 (14.3%) | |
| 5 times or more | | 7 (12.5%) | 3 (5.4%) | |
| Mean | | 2.5 | 2.5 | |
| Quality of life due to urinary symptoms | Delighted | 0 (0.0%) | 0 (0.0%) | |
| | Pleased | 0 (0.0%) | 1 (1.8%) | |
| | Mostly satisfied | 5 (8.9%) | 8 (14.3%) | |
| | Mixed | 6 (10.7%) | 10 (17.9%) | |
| | Mostly dissatisfied | 16 (28.6%) | 13 (23.2%) | |
| | Unhappy | 27 (48.2%) | 24 (42.9%) | |
| | Terrible | 2 (3.6%) | 0 (0.0%) | |
| Mean | 4.3 | 4.3 | | |
| Total IPSS score (sum of 1-7) | Mean (SD) | 10.8 (5.3) | 10.1 (5.4) | |
| | | | | |
| PPBC | My bladder condition | Does not cause me any problem at all | 0 (0.0%) | 2 (3.6%) |
| | | Causes me some very minor problems | 2 (3.6%) | 3 (5.4%) |
| | | Causes me some minor problems | 8 (14.3%) | 9 (16.1%) |
| | | Causes me (some) moderate problems | 12 (21.4%) | 16 (28.6%) |
| | | Causes me severe problems | 31 (55.4%) | 26 (46.4%) |
| | | Causes me many severe problems | 3 (5.4%) | 0 (0.0%) |
| | | Mean | 4.4 | 4.1 |

OABSS = Overactive Bladder Symptom Score; IPSS = International Prostate Symptom Score; PPBC = Patient Perception of Bladder Condition

Table 3. Test-retest reliability (weighted Kappa): OABSS item scores

| OABSS items | Week 0 | Week 2 | | | | | | Total | Weighted Kappa (95% CI) |
|----------------------|-----------------------|--------|----|----|----|----|---|-------|----------------------------|
| | | 0 | 1 | 2 | 3 | 4 | 5 | | |
| Daytime frequency | 7 or less | 2 | 2 | 0 | - | - | - | 4 | 0.45 (0.197, 0.707) |
| | 8-14 | 4 | 37 | 3 | - | - | - | 44 | |
| | 15 or more | 1 | 2 | 5 | - | - | - | 8 | |
| | Total | 7 | 41 | 8 | - | - | - | 56 | |
| Nighttime frequency | 0 | 1 | 0 | 0 | 0 | - | - | 1 | 0.67 (0.52, 0.82) |
| | 1 | 2 | 8 | 2 | 0 | - | - | 12 | |
| | 2 | 0 | 2 | 14 | 4 | - | - | 20 | |
| | 3 or more | 0 | 2 | 3 | 18 | - | - | 23 | |
| | Total | 3 | 12 | 19 | 22 | - | - | 56 | |
| Urgency | Not at all | 4 | 1 | 0 | 0 | 0 | 0 | 5 | 0.62 (0.46, 0.78) |
| | Less than once a week | 0 | 3 | 4 | 0 | 1 | 0 | 8 | |
| | Once a week or more | 0 | 2 | 6 | 0 | 3 | 0 | 11 | |
| | About once a day | 0 | 0 | 1 | 4 | 0 | 1 | 6 | |
| | 2 to 4 times a day | 0 | 2 | 3 | 3 | 15 | 0 | 23 | |
| | 5 times a day or more | 0 | 0 | 0 | 0 | 0 | 3 | 3 | |
| | Total | 4 | 8 | 14 | 7 | 19 | 4 | 56 | |
| Urgency incontinence | Not at all | 17 | 2 | 0 | 0 | 0 | 0 | 19 | 0.72 (0.60, 0.83) |
| | Less than once a week | 2 | 9 | 3 | 3 | 0 | 0 | 17 | |
| | Once a week or more | 1 | 1 | 2 | 2 | 0 | 0 | 6 | |
| | About once a day | 0 | 0 | 1 | 3 | 2 | 0 | 6 | |
| | 2 to 4 times a day | 0 | 0 | 2 | 1 | 3 | 0 | 6 | |
| | 5 times a day or more | 0 | 0 | 0 | 0 | 0 | 2 | 2 | |
| | Total | 20 | 12 | 8 | 9 | 5 | 2 | 56 | |

Table 4. Correlation coefficients of OABSS item scores and Cronbach's alpha

| Patients | Week | OABSS items | Pearson's correlation coefficients | | | | Cronbach's alpha |
|------------|------|----------------------|------------------------------------|--------|--------|--------|------------------|
| | | | Item 1 | Item 2 | Item 3 | Item 4 | |
| All | 0 | Daytime frequency | 1.00 | 0.02 | -0.35 | -0.18 | 0.31 |
| | | Nighttime frequency | - | 1.00 | 0.15 | 0.00 | |
| | | Urgency | - | - | 1.00 | 0.44 | |
| | | Urgency incontinence | - | - | - | 1.00 | |
| | 2 | Daytime frequency | 1.00 | -0.04 | 0.01 | -0.01 | 0.41 |
| | | Nighttime frequency | - | 1.00 | 0.29 | 0.10 | |
| | | Urgency | - | - | 1.00 | 0.32 | |
| | | Urgency incontinence | - | - | - | 1.00 | |
| OAB-wet(a) | 0 | Daytime frequency | 1.00 | 0.12 | 0.26 | 0.21 | 0.71 |
| | | Nighttime frequency | - | 1.00 | 0.50 | 0.27 | |
| | | Urgency | - | - | 1.00 | 0.76 | |
| | | Urgency incontinence | - | - | - | 1.00 | |
| | 2 | Daytime frequency | 1.00 | -0.04 | 0.33 | 0.22 | 0.66 |
| | | Nighttime frequency | - | 1.00 | 0.48 | 0.18 | |
| | | Urgency | - | - | 1.00 | 0.62 | |
| | | Urgency incontinence | - | - | - | 1.00 | |
| OAB-dry(b) | 0 | Daytime frequency | 1.00 | -0.14 | -0.11 | 0.03 | 0.10 |
| | | Nighttime frequency | - | 1.00 | 0.16 | -0.08 | |
| | | Urgency | - | - | 1.00 | 0.10 | |
| | | Urgency incontinence | - | - | - | 1.00 | |
| | 2 | Daytime frequency | 1.00 | -0.01 | -0.13 | 0.05 | 0.28 |
| | | Nighttime frequency | - | 1.00 | 0.20 | 0.04 | |
| | | Urgency | - | - | 1.00 | 0.21 | |
| | | Urgency incontinence | - | - | - | 1.00 | |

(a) Patients with one or more incontinence episodes in 3-day micturition diary

(b) Patients without incontinence episodes in 3-day micturition diary

Table 5. Test-retest reliability (intraclass correlation) of each measurement

| Test | Test-retest reliability | |
|--|-------------------------|------------|
| | Intraclass correlation | 95% CI |
| OABSS: total score | 0.88 | 0.78, 0.92 |
| PPBC: total score | 0.40 | 0.16, 0.60 |
| IPSS: total score | 0.85 | 0.76, 0.91 |
| Three-day Micturition diary | | |
| Micturition per day | 0.60 | 0.40, 0.74 |
| Numbers of incontinence episodes per day | 0.82 | 0.71, 0.89 |
| Number of urgency episodes per day | 0.82 | 0.69, 0.88 |
| Number of nocturia episodes per day | 0.39 | 0.15, 0.59 |
| Total voided volume per day | 0.53 | 0.31, 0.69 |

Table 6. Correlation of OABSS total score with other measures

| Measurements | Correlation coefficient | |
|--|---|---------|
| | Spearman's rank correlation coefficient (r) | p-value |
| IPSS: total score | | |
| 0 week | 0.16 | 0.24 |
| 2 week | 0.28 | 0.04* |
| IPSS: total score | | |
| 0 week | 0.10 | 0.45 |
| 2 week | 0.13 | 0.36 |
| PPBC: total score | | |
| 0 week | -0.05 | 0.74 |
| 2 week | 0.12 | 0.39 |
| Three-day micturition diary | | |
| Micturition per day | | |
| 0 week | -0.02 | 0.91 |
| 2 week | 0.10 | 0.48 |
| Numbers of incontinence episodes per day | | |
| 0 week | 0.49 | <0.001* |
| 2 week | 0.20 | 0.14 |
| Number of urgency episodes per day | | |
| 0 week | 0.38 | 0.004* |
| 2 week | 0.26 | 0.06 |
| Number of nocturia episodes per day | | |
| 0 week | 0.17 | 0.20 |
| 2 week | 0.24 | 0.08 |
| Total voided volume per day | | |
| 0 week | 0.02 | 0.87 |
| 2 week | -0.14 | 0.29 |

* p-value <0.05

related to each other. OAB was a combination of symptoms for one diagnosis. The second explanation was the small numbers of OABSS questionnaire items (only four items). The Cronbach's alpha was likely to be low in the questionnaire with small number of questions. These could explain the low value of Cronbach's alpha in the present study.

Thai version of PPBC questionnaire had very low intraclass correlation. This can be explained as there was only one question about the items that bothers them in this questionnaire. Women with OAB might perceive the facts differently at the 0- and 2-week period. Even if the PPBC is simple and required less time, due to the low intraclass correlation, the OABSS should be considered instead.

From the present study, the Thai version of IPSS had the test-retest reliability coefficient of 0.85, which was high, and similar to the OABSS. The IPSS was designed firstly for the man with benign prostate hypertrophy problem, but some questions such as frequency, urgency, and nocturia were also suitable to use for the OAB symptoms in women. In addition, during the analysis and preparation of this manuscript, there was a report of psychometric test (reliability test) of Thai version of IPSS published in June 2014⁽¹⁷⁾. This study of the Thai version of IPSS questionnaire was done in male patients only and found a similar high value of Cronbach's alpha (0.77) and the test-retest reliability was 0.96⁽¹⁷⁾. From this evidence, the Thai version of IPSS was suitable for both male and female. The weakness of this study was that this study only studied the correlation of the OABSS to the IPSS and PPBC, which were the symptoms questionnaires, not the questionnaires designed for the quality of life such as OAB-q, etc. Therefore, the generalization for the comparison to the quality of life dimension was limited and needs further study. This study's objective was the reliability of the OABSS and the comparison to the OAB symptoms. In addition, this study compared the OABSS to the other standard questionnaires like IPSS, PPBC for the further use of OABSS in the clinic or future researches. The time to conduct the study was almost 18 months due to the strict criteria of the OAB diagnosis. The patients must have the urgency (at least once in three days) and frequency by the voiding diary record. As for the diagnosis of OAB used in clinical practice, there was no strict time and frequency of the urgency, just the urgency with or without urge incontinence, frequency, and nocturia. However, for the clinical research, the evidence of urgency by voiding diary records was important. We

found that the characteristic of the patients were similar throughout the study.

The OABSS correlated moderately with the IPSS total score at 2-week but not to the IPSS QOL score and PPBC. Thai women with OAB, who had many symptoms from high OABSS scores, may not have a poor quality of life. This is because the quality of life depends on many factors apart from the numbers of symptom, such as the base line character, profession, daily activity, etc. The IPSS QOL score and PPBC were designed to focus at the issues and quality of life affected by OAB. Therefore, the OABSS score related to the IPSS total score but not to the QOL score. When correlated the OABSS scores with voiding diary, the OABSS scores were correlated with numbers of incontinence episodes per day and number of urgency episodes per day. The sample size calculation for the correlation test was recalculated to check for the adequacy and found that the sample size was adequate. From the present study, OABSS was correlated to the abnormal voiding symptoms of OAB (from voiding diary and standard symptom questionnaires like IPSS).

The Thai version of OABSS was reliable, valid, and related to the voiding symptoms. Further use of Thai version OABSS questionnaire is advocated in both clinical study and clinical practice in women with OAB.

Conclusion

Thai version of OABSS was reliable valid, and related to the voiding symptoms. Further use of Thai version OABSS questionnaire is advocated in both clinical study and clinical practice in Thai women with OAB.

What is already known on this topic?

The OABSS is already well established as a useful tool for the diagnosis and evaluation of OAB treatment in women. This questionnaire is well accepted and used in clinical practice and research. The questions are very well arranged and scored. The psychometric analysis had already been done and reported of very high reliability and validity. To use the Thai language version with psychometric will be very useful for future treatment and research in Thai women with OAB.

What this study adds?

This study adds the psychometric test of the Thai version of OABSS, PPBC, and confirms the usefulness of the OABSS when correlated with the

standard voiding diary. Future study concerning OAB diagnosis and treatment will be helped by using Thai version of OABSS.

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Potential conflicts of interest

None.

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Appendix 1. Questionnaires Thai version of Overactive Bladder Symptom Score (OABSS)

| คำถาม | ความถี่ | คะแนน |
|---|-----------------------------------|-------|
| 1. ปกติท่านปัสสาวะกี่ครั้งในหนึ่งวัน ตั้งแต่หลังตื่นนอนในตอนเช้าถึงก่อนนอนตอนกลางคืน | น้อยกว่าหรือเท่ากับ 7 ครั้ง | 0 |
| | 8-14 ครั้ง | 1 |
| | เท่ากับหรือมากกว่า 15 ครั้ง | 2 |
| 2. ปกติท่านต้องตื่นมาปัสสาวะตอนกลางคืนกี่ครั้งนับตั้งแต่ก่อนนอนหลับแล้วถึงตื่นนอนในตอนเช้า | 0 ครั้ง | 0 |
| | 1 ครั้ง | 1 |
| | 2 ครั้ง | 2 |
| | เท่ากับหรือมากกว่า 3 ครั้ง | 3 |
| 3. บ่อยแค่ไหนที่ท่านรู้สึกปวดปัสสาวะอย่างทันทีทันใด ที่ไม่สามารถกลั้นไว้ได้ | ไม่มีเลย | 0 |
| | น้อยกว่าสี่ปีดห้ละครั้ง | 1 |
| | เท่ากับหรือมากกว่าสี่ปีดห้ละครั้ง | 2 |
| | 1 ครั้งต่อวัน | 3 |
| | 2 ถึง 4 ครั้งต่อวัน | 4 |
| เท่ากับหรือมากกว่า 5 ครั้งต่อวัน | 5 | |
| 4. บ่อยแค่ไหนที่ท่านมีปัสสาวะเล็ดราดในขณะที่ท่านรู้สึกปวดปัสสาวะอย่างทันทีทันใด ที่ไม่สามารถกลั้นไว้ได้ | ไม่มีเลย | 0 |
| | น้อยกว่าสี่ปีดห้ละครั้ง | 1 |
| | เท่ากับหรือมากกว่าสี่ปีดห้ละครั้ง | 2 |
| | 1 ครั้งต่อวัน | 3 |
| | 2 ถึง 4 ครั้งต่อวัน | 4 |
| เท่ากับหรือมากกว่า 5 ครั้งต่อวัน | 5 | |

รวมคะแนน =

Appendix 2. Questionnaires Thai version of International Prostate Symptoms Score (IPSS)

| คำถาม | ความถี่ |
|---|--|
| 1. ปัสสาวะได้ไม่หมด ในช่วงหนึ่งเดือนที่ผ่านมา บ่อยแค่ไหนที่ท่านรู้สึกว่ามีปัสสาวะได้ไม่หมด หรือ รู้สึกว่าปัสสาวะยังเหลือค้าง หลังจากที่ท่านปัสสาวะเสร็จแล้ว | 0 ไม่มีเลย 1 น้อยกว่าร้อยละ 20 ของจำนวนครั้งที่ปัสสาวะ 2 น้อยกว่าครึ่งหนึ่งของจำนวนครั้งที่ปัสสาวะ 3 ประมาณครึ่งหนึ่งของจำนวนครั้งที่ปัสสาวะ 4 มากกว่าครึ่งหนึ่งของจำนวนครั้งที่ปัสสาวะ 5 เกือบตลอดเวลา |
| 2. ปัสสาวะบ่อย ในช่วงหนึ่งเดือนที่ผ่านมา บ่อยแค่ไหนที่ท่านต้องถ่ายปัสสาวะซ้ำอีกหลังจากที่ถ่ายปัสสาวะครั้งที่แล้วไปไม่ถึง ถึง 2 ชั่วโมง | 0 ไม่มีเลย 1 น้อยกว่าร้อยละ 20 ของจำนวนครั้งที่ปัสสาวะ 2 น้อยกว่าครึ่งหนึ่งของจำนวนครั้งที่ปัสสาวะ 3 ประมาณครึ่งหนึ่งของจำนวนครั้งที่ปัสสาวะ 4 มากกว่าครึ่งหนึ่งของจำนวนครั้งที่ปัสสาวะ 5 เกือบตลอดเวลา |
| 3. ปัสสาวะกะปริดกะปรอย ในช่วงหนึ่งเดือนที่ผ่านมา บ่อยแค่ไหนที่ท่านไม่สามารถถ่ายปัสสาวะให้เสร็จในทีเดียว แต่จะต้องถ่ายปัสสาวะ เป็นช่วงๆ ใหญ่ๆ ทยอยๆ | 0 ไม่มีเลย 1 น้อยกว่าร้อยละ 20 ของจำนวนครั้งที่ปัสสาวะ 2 น้อยกว่าครึ่งหนึ่งของจำนวนครั้งที่ปัสสาวะ 3 ประมาณครึ่งหนึ่งของจำนวนครั้งที่ปัสสาวะ 4 มากกว่าครึ่งหนึ่งของจำนวนครั้งที่ปัสสาวะ 5 เกือบตลอดเวลา |
| 4. ปวดรีบ ในช่วงหนึ่งเดือนที่ผ่านมา ยากแค่ไหนที่ท่านพบว่าเมื่อท่านปวดปัสสาวะแล้วไม่สามารถรอได้ | 0 ไม่มีเลย 1 น้อยกว่าร้อยละ 20 ของจำนวนครั้งที่ปัสสาวะ 2 น้อยกว่าครึ่งหนึ่งของจำนวนครั้งที่ปัสสาวะ 3 ประมาณครึ่งหนึ่งของจำนวนครั้งที่ปัสสาวะ 4 มากกว่าครึ่งหนึ่งของจำนวนครั้งที่ปัสสาวะ 5 เกือบตลอดเวลา |
| 5. ปัสสาวะไหลซ้ำ ในช่วงหนึ่งเดือนที่ผ่านมา บ่อยแค่ไหนที่ท่านรู้สึกว่ามีปัสสาวะไหลซ้ำ ไม่พุ่ง | 0 ไม่มีเลย 1 น้อยกว่าร้อยละ 20 ของจำนวนครั้งที่ปัสสาวะ 2 น้อยกว่าครึ่งหนึ่งของจำนวนครั้งที่ปัสสาวะ 3 ประมาณครึ่งหนึ่งของจำนวนครั้งที่ปัสสาวะ 4 มากกว่าครึ่งหนึ่งของจำนวนครั้งที่ปัสสาวะ 5 เกือบตลอดเวลา |
| 6. ปัสสาวะต้องเบ่ง ในช่วงหนึ่งเดือนที่ผ่านมา บ่อยแค่ไหนที่ท่านต้องออกแรงเบ่งก่อนจะเริ่มถ่ายปัสสาวะ | 0 ไม่มีเลย 1 น้อยกว่าร้อยละ 20 ของจำนวนครั้งที่ปัสสาวะ 2 น้อยกว่าครึ่งหนึ่งของจำนวนครั้งที่ปัสสาวะ 3 ประมาณครึ่งหนึ่งของจำนวนครั้งที่ปัสสาวะ 4 มากกว่าครึ่งหนึ่งของจำนวนครั้งที่ปัสสาวะ 5 เกือบตลอดเวลา |
| 7. ปัสสาวะบ่อยเวลากลางคืน ในช่วงหนึ่งเดือนที่ผ่านมา ท่านต้องตื่นขึ้นมาถ่ายปัสสาวะกี่ครั้ง นับตั้งแต่หลังเข้านอนถึงตื่นนอนในตอนเช้า | 0 ไม่มีเลย 1 หนึ่งครั้ง 2 สองครั้ง 3 สามครั้ง 4 สี่ครั้ง 5 ห้าครั้งหรือมากกว่า |
| 8. คุณภาพชีวิตเนื่องจากอาการของระบบทางเดินปัสสาวะ ถ้าท่านต้องใช้ชีวิตที่เหลืออยู่พร้อมกับอาการทางระบบปัสสาวะที่ท่านเป็นอยู่ในขณะนี้ ท่านจะรู้สึกอย่างไร | 0 พอใจมาก 1 พอใจปานกลาง 2 รู้สึกระหว่างพอใจกับไม่พอใจ 3 ไม่พอใจ 4 ไม่มีความสุข 5 แย่มากที่สุด |

รวมคะแนน (ข้อ 1-7 เป็นคะแนนรวมของ IPSS score) =

รวมคะแนน (ข้อ 8 เป็นคะแนนเฉพาะ ค่าคุณภาพชีวิตของ IPSS) =

Appendix 3. Questionnaires Thai version of Patient Perception of Bladder Condition (PPBC)

ข้อใดต่อไปนี้เป็นบอกรถึงภาวะของกระเพาะปัสสาวะของคุณในตอนนี้ได้ดีที่สุด? ภาวะของกระเพาะปัสสาวะของฉันทัน (กรุณาเลือกข้อเดียว)

1. ไม่มีปัญหา
2. ทำให้ฉันทันเกิดปัญหาน้อยมาก
3. ทำให้ฉันทันเกิดปัญหาเล็กน้อย
4. ทำให้ฉันทันเกิดปัญหาปานกลาง
5. ทำให้ฉันทันเกิดปัญหาหนัก
6. ทำให้ฉันทันเกิดปัญหาอย่างมากที่สุด

ความเที่ยงตรงของแบบสอบถามอาการโรคกระเพาะปัสสาวะไวเกิน (OABSS) ฉบับภาษาไทย และความสัมพันธ์ของแบบสอบถาม OABSS กับแบบบันทึกปัสสาวะ แบบสอบถาม International Prostate Symptom Score (IPSS) และแบบสอบถาม Patient Perception of Bladder Condition (PPBC)

สุวิทย์ บุญยะเวชชีวิน

ภูมิหลัง: โรคกระเพาะปัสสาวะไวเกินนิยามโดยอาการของผู้ป่วยเป็นหลักมิใช่การตรวจวัดจากผู้อื่น การใช้แบบสอบถาม เช่น OABSS จะสามารถช่วยในการวินิจฉัยและประเมินอาการของผู้ป่วยได้ดีขึ้น

วัตถุประสงค์: เพื่อศึกษาค่า test-retest reliability ของแบบสอบถาม OABSS ห่างกันสองสัปดาห์ และเพื่อศึกษาค่าความสัมพันธ์ของ OABSS กับ แบบบันทึกปัสสาวะ, IPSS และ PPBC

วัตถุประสงค์และวิธีการ: ระหว่างเดือนสิงหาคม พ.ศ. 2552 ถึง มกราคม พ.ศ. 2554 สตรีไทยจำนวน 56 คน ที่มารับการรักษาที่คลินิกนรีเวชทางเดินปัสสาวะ โรงพยาบาลจุฬาลงกรณ์ ได้รับคัดเลือกเข้าในการศึกษา โดยรับการวินิจฉัยว่าเป็นโรคกระเพาะปัสสาวะไวเกิน โดยมีเกณฑ์คือ มีอาการปัสสาวะรึบ ปัสสาวะบ่อย โดยมีหรือไม่มีอาการปัสสาวะรด โดยต้องมีอาการมากกว่า 3 เดือน และมีอาการปวดปัสสาวะรึบอย่างน้อย 1 ครั้ง ใน 3 วัน โดยจะมีปัสสาวะเล็ดรดด้วยหรือไม่ก็ได้ โดยหลังจากให้ความยินยอมแล้ว ผู้ป่วยทุกรายจะได้รับการสอนการบันทึกข้อมูลแบบบันทึกปัสสาวะ 2 ครั้ง ครั้งแรกก่อนการศึกษา และครั้งที่ 2 ในอีก 2 สัปดาห์ถัดไป และทำการแจกแบบสอบถาม OABSS, IPSS และ PBC ฉบับภาษาไทย ในสัปดาห์ที่ 0 และ 2 โดยที่แบบสอบถามทั้งหมดจะถูกแปลเป็นไทยและแปลกลับเป็นภาษาอังกฤษโดยนักภาษาศาสตร์จากสถาบันภาษา จุฬาลงกรณ์มหาวิทยาลัย และทำการตรวจสอบความเที่ยงตรงของแบบสอบถามหลังแปลกลับโดยแพทย์เฉพาะทางสาขานรีเวชทางเดินปัสสาวะอีกหนึ่งคนจากภาควิชาสูติศาสตร์-นรีเวชวิทยา เริ่มทำการศึกษานี้หลังได้รับการอนุมัติจากกรรมการจริยธรรม

ผลการศึกษา: ค่า test-retest reliabilities (intraclass correlation) ของแบบสอบถาม OABSS, PPBC และ IPSS ทั้งหมดคือ 0.88, 0.44 และ 0.85 ค่า Cronbach's alpha ของ OABSS คือ 0.31 และ 0.41 ที่ สัปดาห์ที่ 0 และ 2 ตามลำดับ

สรุป: แบบสอบถามฉบับภาษาไทยมีความน่าเชื่อถือและแม่นยำ และมีความสัมพันธ์กับอาการปัสสาวะที่ผิดปกติ แนะนำให้ใช้แบบสอบถามภาษาไทยในการศึกษาทางคลินิกและการรักษาผู้ป่วยทางคลินิกต่อไป