Original Article

The International Prostate Symptom Score [IPSS] Thai Version: Misunderstanding and Modification

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Objective: To explore and detect problems about misunderstanding/misinterpretation of the International Prostate Symptom Score [IPSS] Thai version and attempt to find a solution by developing a modified version.

Materials and Methods: Two exploratory surveys were conducted in populations supposed to have LUTS. In the first survey, after explanation, 49 participants were tested with the original IPSS Thai version and a new preliminary version A. They rated the level of ease-difficulty in understanding of both versions. In the second survey, with 135 respondents, three versions were tested; the original, the preliminary version A and B, without explanation given. There were observers detecting respondents' problems in completing the questionnaires. The problems were evaluated using Student's t-test, ANOVA, univariate, and multivariate analyses.

Results: In the first survey, the preliminary version A was significantly easier to understand from the ease-difficulty score, while the second survey showed no difference among all three versions. Four problems were detected, which were rating number confusion, proportional number misunderstanding, the second question misunderstanding, and preliminary versions doubt. With higher ages, more problems existed, but with higher education, fewer misunderstandings appeared. Lower educated respondents, junior high school, and primary school level or below were about 3 and 16 times more likely to experience problems, respectively. The problems were almost 6-fold more likely to occur in respondents older than 70 years. With low education and old age occurring together, problems were much more likely to appear (OR 91.00, 95% CI 10.59 to 781.63).

Conclusion: There were some misunderstandings and misinterpretation problems in the IPSS Thai version, which were more likely to occur in low educated and/or elderly responders. The validity and reliability of the modified version of Thai IPSS will be further studied.

Keywords: International Prostate Symptom Score, IPSS, Thai version, Misunderstanding/misinterpretation, Problem

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Benign prostatic hyperplasia [BPH], related lower urinary tract symptoms [LUTS] is one of the problems impacting health-related quality of life affecting 50% to 80% of men particularly older than 50 years of age[1].

The American Urological Association [AUA] created a seven-item questionnaire in 1992 to evaluate the severity of LUTS, including incomplete emptying, frequency, intermittency, urgency, weak stream, hesitancy, and nocturia. This questionnaire was adopted by WHO in 1993 adding one more item (the 8-item) on quality of life[2,3]. Each question is to be answered by marking in a check box with obvious ranking scores shown ranging from 0 (not at all) to 5 (almost always). Total scores can be graded as mild (0 to 7), moderate (8 to 19) and severe (20 to 35). The quality of life item ranges from 0 (delighted) to 6 (terrible). This 8-item International Prostate Symptom Score [IPSS] turns subjective symptoms to objective numbers and it is claimed to be a valuable tool used in clinical practices of treatment decision, disease progression monitoring, and in research trials. It is a self-administered assessing instrument to complete within 10 minutes[2]. It has been widely regarded as a valid test, showing strong positive correlation of the score and LUTS severity[3,4].

Questionnaire efficacies studies were mostly conducted in good understanding patients. However, difficulties completing this English IPSS version have been shown in some reports. Of the seven questions, in a group of urban patients in USA attending a tertiary care university clinic, 16% of those understood all, 56% understood less than a half, and 28% understood none. The agreement between self-administered and interviewer administered showed much difference

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with decreasing education level[5]. Seventy-nine percent of the patients with fewer than nine years of education misreported their total score by 4 to 10 points[6]. A recent study showed that 24% to 87% of a patient group needed assistance for completing the questionnaire even those with a high education level[7]. In India, a group of patients possessing good English communication skills showed significant misinterpretations of the questions by comparing the self-administered scores with the clinician-assisted ones[8]. In addition, elderly patients showed a tendency of decreasing ability to comprehend the IPSS[9].

Nowadays, the IPSS has been translated into several languages[10]. Only some versions have had their validity and reliability studied[11-14]. Along the same line, efficacy studies of these translated versions have been carried out mostly in good understanding population. However, information about the mis-interpretation or misunderstanding of the patients answering translated IPSS versions is limited.

In Thailand, the currently used Thai version of IPSS was translated and validated in 2014[11]. At our clinic, which serves several populations, the authors noticed difficulty or need of assistance in completing the questionnaire in some patients, even though they possessed good ability in Thai conversation. The authors hypothesized that low literacy rates and/or elderly populations may have poor understanding of the IPSS. The authors then tried to find out the underlining misunderstanding problem and attempted to modify/create an easier Thai version through many processes.

Materials and Methods

Study setting and population

The study protocol was approved by the Ethics Committee of the Faculty of Medicine, Chulalongkorn University.

Two exploratory surveys were conducted in populations supposed to have LUTS. These patients participated in the prostate health check-up charity campaign held on Thai Father's Day at King Chulalongkorn Memorial Hospital, a tertiary care university clinic. The obtained data were expected to demonstrate underlying problems that caused difficulties in the questionnaire self-administration. Inclusion criteria consisted of Thai males aged over 40 that have never been tested with this original IPSS Thai version before.

Data collection procedures

In the first survey (December 5, 2015), participants were asked to complete two versions of the IPSS. One was the original IPSS Thai version showing number of symptom-occurring frequency in the headline of each column in proportional numbers (1 in 5 times, 1 in 3 times, 1 in 2 times, and 2 in 3 times), and a newly created one (preliminary version A) designed to display the occurrence of symptoms in form of percentage with removal of the rating scale number (0: never to 5: almost) inside the check box of the table (appendix). At the bottom of both questionnaires, participants had to evaluate how easy or difficult it was to understand by checking a rating scale of 1 to 5 (1-very easy to understand, 2-easy to understand, 3-moderately understandable, 4-difficult to understand, and 5-very difficult to understand). Before answering, meanings and directions to answer were clearly explained by our clinicians (urology residents) to the participants, one by one.

In the second survey (December 5, 2016), three types of questionnaire were provided. The first two were similar to the first survey and a third one (preliminary version B) was added, showing the frequency of symptom occurrence in 10 times of urination. Before answering, physicians gave no explanations. On the contrary, participants were observed and allowed to ask questions at any time if they felt that any part of the questionnaires were difficult or confusing. Ease or difficulty to understand each version was also evaluated by a rating scale as used in the first survey. Questionnaire takers could express suggestions at the open-ended section located at the bottom of all questionnaires. Before submitting the questionnaires, the observers would check again whether they understood the questionnaires correctly.

Outcome measures and data analysis

Outcome measures were the scores indicating questionnaire ease level. Problems that were detected and open-ended suggestions were recorded.

The magnitude of problems of the 'intergroup' was evaluated in student's t-test and ANOVA. Univariate and multivariate analysis with the calculation of adjusted odds ratios [ORs] (90% CI) were used to investigate associations between participant characteristics and problems by SPSS, version 22.0.

Data of the present study led to the creation of a new questionnaire (the modified IPSS Thai version or the IPSS Thai version II).

Results

In the first exploratory survey, there were 49 males (aged 52 to 81, mean 66.9±7.57 years) with different

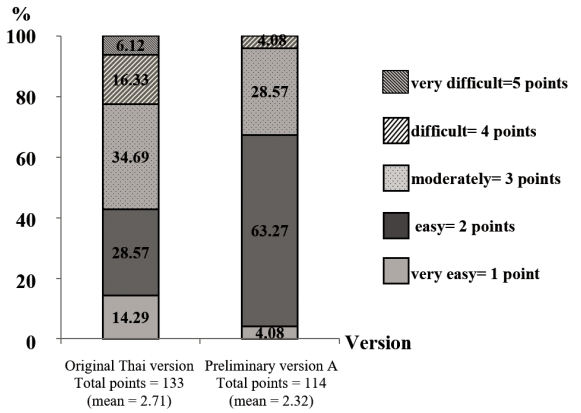

Figure 1. Percentage of the respondents showing difference score of the ease level between two versions in exploratory survey 1.

education levels, as shown in Table 1. After clear explanations from clinicians about the questionnaires, 12 participants (24.4%) preferred the original IPSS Thai version, 20 participants (40.8%) preferred the preliminary version A, and the other 17 (34.6%) did not have a preference. Scores of ease of the questionnaire were 133 and 114 (mean 2.71 and 2.32, *p*-value 0.01) for the original Thai version and the preliminary version A, respectively (Figure 1).

In the second survey, three questionnaires including the original Thai version, preliminary versions A and B were tested by 135 Thai males (aged 44 to 83, mean 65.4±7.92 years) (Table 1). The score of easy of the preliminary A tended to be better than the others, but without statistical significance. Almost half of the respondents (61 in 135, 45.1%) scored the three versions as equally understandable.

In the present survey, problems of confusion, misunderstanding and misinterpretation were detected. These problems were as follows:

Problems I: rating number confusion

Patients were confused about the rating numbers (0 to 5) inside the table of the original Thai version. These numbers were misunderstood to be the frequency of symptoms occurring in one day (for example, 1 = once per day, 2 = twice per day). These numbers were "severity score" provided for clinician interpretation.

Of the 20 participants with six years of education (primary school) or less, 13 of them (65%) showed significant confusion with this problem when compared to other education levels (Figure 2A). According to age, 19 of 38 participants (50%) in age range 71 to 90 years demonstrated this problem significantly compared to other age groups (Figure 2B).

Problem II: proportional number misunderstanding

Patients could not understand the symptom frequency displayed in proportional numbers (1 in 5 times, 1 in 3 times, 1 in 2 times, and 2 in 3 times) in the headline row of the original IPSS Thai version.

- Some patients confusedly understood that with meaning of "1 in 2 times" and rationalized that they did not have any symptoms even though they had urinated two times. Some argued with "2 in 3 times" that they might urinate more than three times a day.

- Some patients could not understand proportions.

Table 1. Participant sociodemographic characteristics of the two exploratory surveys

Variables	Exploratory survey, n (%)	
	1st survey (49)	2nd survey (135)
Age (years), range [mean ± SD]	52 to 81 [66.89±7.57]	44 to 83 [65.39±7.92]
Religion		
Buddhism	48 (97.95)	128 (94.81)
Christianity/Islam	0 (0.00)/1 (2.04)	5 (3.70)/2 (1.48)
Education		
Below primary and Primary school	12 (24.48)	20 (14.81)
Junior high school (9 years educated)	4 (8.16)	19 (14.07)
Senior high school (12 years educated)	11 (22.44)	35 (25.92)
Bachelor's degree/above	18 (36.73)/4 (8.16)	43 (31.85)/18 (13.33)
Occupation		
Government/company officer	1 (2.04)/3 (6.12)	12 (8.88)/27 (20.00)
Business owner	17 (34.69)	24 (17.37)
Retired/unemployed	7 (14.28)/21 (42.85)	14 (10.37)/58 (42.96)
Habitat		
Bangkok/boundary	No data/no data	96 (71.11)/19 (14.07)
Other provinces	No data	20 (14.81)

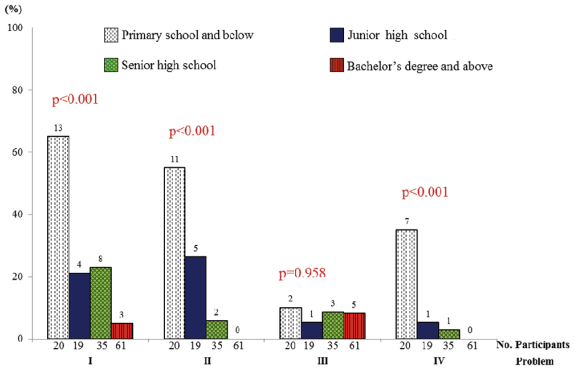

Figure 2A. Percentage of the problem in different education level.

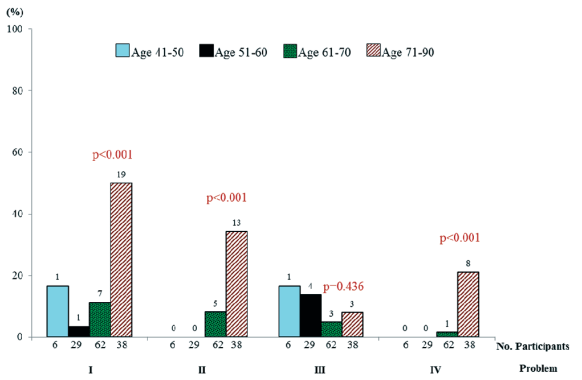

Figure 2B. Percentage of the problem in different age groups.

They asked "how much is the difference between 1 in 3 times, 1 in 2 times, and 2 in 3 times?" Some were confused to discriminate which proportion was more frequent and which was less.

- Some completely misinterpreted the "scale of proportion" to the "scale of range" such as "1 in 2 times" to "1 to 2 times" or "2 in 3 times" to "2 to 3 times".

Participants with bachelor's degree and above showed no misunderstanding of the proportional number. While those with 6 and 9 years of education (primary school and junior high school) or below, had this problem with high statistical significance (*p*-value <0.001) (Figure 2A). In addition, 34.2% in the 71 to 90 age group demonstrated this problem significantly compared to other age groups (Figure 2B).

Problem III: the second question misunderstanding

The second question in the questionnaire indicating the "Frequency" symptom was misunderstood, which could be found but without statistical significance among education level and age group (*p*-value 0.436 and 0.958, respectively) (Figure 2A, 2B). Though most participants understood this question, 26 participants (19.2%) suggested rewording the question into many different new sentences through open-ended suggestions.

Problem IV: preliminary versions doubt

Four participants asked for the meaning explanation of symptom occurrences in percentage scale (preliminary version A). Another four participants argued about the form of symptom frequency occurring in 10 times of urination (preliminary version B). Since this group mentioned that they normally urinated less than 10 times a day, they were unable to answer the questions in this version. Twenty-seven participants did not answer this preliminary version B, submitting blank papers without writing any suggestions.

Table 2 showed the results of univariate and multivariate logistic regression analyses. The higher the age groups, the more problems existed; but on the contrary, the higher the education level, the less misunderstandings appeared. Compared to respondents with at least senior high-school level (Ed H), lower educated respondents, junior high-school (Ed M), and primary school or below (Ed L) were about 3 and 16 times more likely to have any of the four problems, respectively (OR 2.95, CI 1.04 to 8.34 and OR 16.21, 95% CI 4.86 to 54.10). Corresponding ORs after adjusting for age remained statistically significant as adjusted OR of 3.47 (95% CI 1.11 to 10.89) and 17.44 (95% CI 4.78 to 63.67) for Ed M and Ed L, respectively. After controlling for education, problems were nearly 6-fold more likely to occur in respondents with ages over 70 years (Age H) compared to the younger (Age L) group (Adjusted OR 6.51, 95% CI 2.56 to 16.53). Furthermore, if the influence from low education and old age occurred at the same time (Ed LM + Age H), misunderstandings were much more likely to appear (OR 91.00, 95% CI 10.59 to 781.63) comparing to the high-educated younger population (Ed H + Age L).

Figures 3A and 3B demonstrate a newly created modified IPSS Thai version (IPSS Thai version II). The authors developed this version from the pitfalls we learned and suggestions from our open-ended part of the questionnaires. The insight that the authors gained led us to include illustrations and short explanations in answering spaces. Further study about its validity and reliability is currently in process.

Discussion

From the first survey, respondents expressed that the preliminary A was easier to understand than the

Table 2. Univariate and multivariate analyses of risk characteristics and problems

Characteristics	Investigated n	Problem I, II, III, IV* n (%)	Crude odds ratio (95% CI)	*p*-value	Adjusted odds ratio (95% CI)	*p*-value
Education						
Senior high school and above (Ed H)	96	19 (19.79)	1		1	
Junior high school (Ed M)	19	8 (42.11)	2.95 (1.04 to 8.34)	0.042	3.47 (1.11 to 10.89)	0.033
Primary school and below (Ed L)	20	16 (80.00)	16.21 (4.86 to 54.10)	<0.001	17.44 (4.78 to 63.67)	<0.001
Age						
70 years and below (Age L)	97	20 (20.62)	1		1	
Above 70 years (Age H)	38	23 (60.53)	5.90 (2.61 to 13.34)	<0.001	6.51 (2.56 to 16.53)	<0.001
Education and age						
Ed H + Age L	72	9 (12.50)	1			
Ed H + Age H	24	10 (41.67)	5.00 (1.71 to 14.59)	0.003		
Ed M + Age L	14	4 (28.57)	2.80 (0.72 to 10.84)	0.136		
Ed M + Age H	5	4 (80.00)	28.00 (2.81 to 270.26)	0.005		
Ed L + Age L	11	7 (63.64)	12.25 (2.95 to 50.33)	0.001		
Ed L + Age H	9	9 (100)	Incomputable			
Ed LM + Age L	25	11 (44.00)	5.50 (1.92 to 15.79)	<0.001		
Ed LM + Age H	14	13 (92.86)	91.00 (10.59 to 781.63)	<0.001		

CI = confidence interval

* Problems I: rating number confusion, II: proportional number misunderstanding, III: the second question misunderstanding, IV: preliminary version doubt

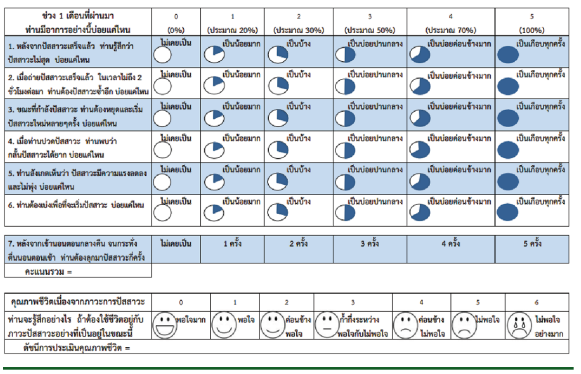

Figure 3A. Modified Thai version of the International Prostate Symptom Score (I-PSS Thai version II) in Thai.

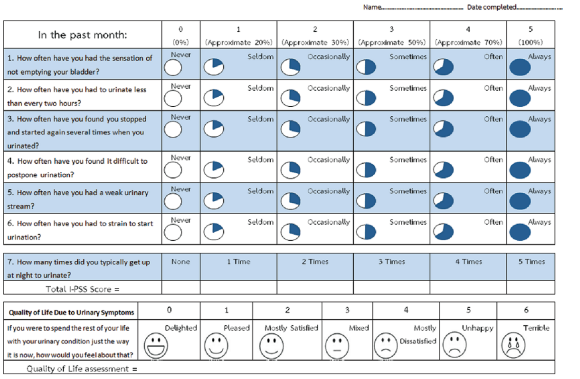

Figure 3B. Modified Thai version of the International Prostate Symptom Score (I-PSS Thai version II) in English.

original Thai version, but the second survey showed no significant difference. This was because in the first survey, meanings and directions to answer each version were explained, so the respondents understood well. This was important because to find out which version was easier to understand, the participants had to understand these questionnaires thoroughly prior to beginning. The second survey was meant to find out pitfalls of the Thai IPSS, so respondents were asked to complete it by themselves with their own understanding. Because the respondents could not fully understanding the content, they could not indicate clearly which version was easier. Through this study, the misunderstood points that could be the underlying problems making patients confused in real clinical setting were detected.

Explanation and assistance to complete the questionnaire affected respondent understanding. This is in accordance with a previous study reporting that the self-administered IPSS was in disagreement with the clinician-assisted IPSS[5,8].

In the present study, the preliminary version B is not ready for use since 27 respondents (20%) could not answer, expressing that they urinated less than 10 times a day.

Interestingly, the authors found that education level affected the misunderstanding, which was agreement with the American studies showing marked misunderstanding of patients with limited education[6]. Johnson et al reported that 60% of the low educated group completed the questionnaire without understanding it[6]. By total score evaluation, 25% of the studied group gave a mild score on IPSS but should have a moderate or severe score[15].

Johnson et al showed that patients with fewer than nine years of education were more likely to have poor understanding of the seven items of the AUA-7 (OR 102.16, 95% CI 23.93 to 436.10) resulting in symptom misclassification[5]. Additionally, 58% of low educated patients mispresented their total score by four points or more and 21% had a 10 point or more disagreement[6].

Besides the education level, the present study found that the older the participant, the more the misunderstandings occurred. A recent study reported that younger patients had higher ability to understand the AUA-7 questionnaire[5]. Moreover, the authors also found that if the influence of low education and old age took place together, misunderstandings were much more likely occur (Table 2).

The present was the first study showing the misunderstanding causes of the IPSS Thai version. Interestingly, the authors are the first to report that the number of rating scores 0 to 5 inside the table, as shown in every version of various languages, caused confusion and misunderstandings (problem I) to low educated and elderly patients. This was not found in any study. In fact, while these numbers are not for the respondents, it did bother them, leading to questionnaire misinterpretations. These numbers are for physicians to calculate symptom severity, so it would be more reasonable to put them in other places in the questionnaire. The authors were also the first to report that the proportional number at the headline row of the Thai IPSS caused confusion.

Specific question misunderstanding

A problem about the second question of the Thai IPSS was found in every education level and age group, although with a small percentage. Rewording of this question was the most suggested change made by our participants. From the literature review, misunderstanding detection of this second question of the IPSS English version was similarly found in USA[6]. The fourth question, the phrase "postpone urination", was also found to be a problem in that American study. Badia et al also found that difference in understanding each question of the IPSS from different individuals may exist[16].

Academically, a good questionnaire should be simple to understand. Importantly, the respondent is supposed to self-administer without assistance, to prevent bias from the interviewer[17]. This was the original aim of the IPSS creation, to be self-administered within 10 minutes[2]. The self-administered questionnaire is to reduce the workload of medical personnel owing to the massive numbers of LUTS patients. However, when assistance is required, it defeats the purpose.

The open-ended suggestions from our participants led to a better understanding of the problems to improve the questionnaire. Many respondents proposed simple illustrations that illustrating the meaning more clearly, more quickly. This is easier to understand than the traditional numbers or letters. Moreover, adding short explanations would be helpful. Some respondents suggested rewording the second question to be clearer and simpler.

Limitation

From our two surveys, respondents answered each version only once. There was no retest to check reproducibility. Answers of each question were not compared for agreement between versions, and the internal consistency within each version was not evaluated. The aim of the present study was to obtain useful information for the development of a new modified Thai IPSS version that would maintain the original content but would be easier to complete, particularly, for the lower educated and elderly populations.

Future study

According to a study, only 59.3% of the Thai population will finish senior high school level[18]. Furthermore, elderly population will grow dramatically in the future. Therefore, medical questionnaires need to be adjusted to meet this lower education level and elderly patient's requirement. The authors attempted to create a modified IPSS Thai version (Figure 3A, 3B) that 1) is simpler and less confusing, 2) can be self-administered, and 3) can be completed within 10 minutes. The authors intend to compare the agreement and internal consistency of this new modified Thai IPSS with the original Thai version in a further study.

Conclusion

It was found that the recently used IPSS Thai version had some problems that made responders misunderstand or misinterpret questions. With older age or less education, these problems seemed more likely to occur. Respondents preferred the presentation of the frequency of symptom occurrence in the form of percentage rather than the original one. Therefore, the authors developed a new modified version of the Thai IPSS to solve the issues we discovered, aiding low educated, and elderly patients.

What is already known on this topic?

The IPSS was created in 1992 to evaluate the severity of BPH-related LUTS. It is an important tool for treatment decision, disease monitoring, and research trials. It was intended to be self-administered and completed within 10 minutes. It is regarded as a valid test. However, patient difficulties in completing this English version were shown in various studies. The results between self- and assisted-administration showed much difference. For this English version, one factor significantly related to the misunderstanding is low education. Moreover, the elderly population showed tendencies toward decreased ability to comprehend the IPSS.

In Thailand, the Thai version of the IPSS was translated and validated in 2014, showing consistency with the original English version. Although, this Thai version is widely used all over the country, many patients have difficulties completing it and often need assistance. To date, no information about its pitfall causing misunderstandings or confusion is available.

What this study adds?

This is the first study reporting that there are some misunderstanding or misinterpretation problems in this IPSS Thai version and it points out the details of those problems. In addition, "rating number confusion (Problems I)" of the IPSS is presented for the first time in this report. This rating number is shown in the original English and various translated versions. This study also supports that factors correlated with these problems are low education level and old age. To solve these problems, the authors have created a modified version of Thai IPSS (IPSS Thai version II), which will be being studied further for its validity and reliability.

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Potential conflicts of interest

The authors declare no conflict of interest.

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