Original Article

Validation of the Questionnaire for Urinary Incontinence Diagnosis-Thai Version [QUID-Thai Version]

Sasivimol Srisukho MD[1], Chailert Phongnarisorn MD[1], Nuntana Morakote MPH[1]

[1] Department of Obstetrics and Gynecology, Faculty of Medicine, Chiang Mai University, Thailand

Objective: To translate the Questionnaire for Urinary Incontinence Diagnosis [QUID] into Thai with the goal of generating a valid Thai version of the QUID.

Materials and Methods: The QUID-Thai version was obtained from a process including translation, back-translation, comparison with versions, revision by experts, and pilot study. The content validity and reliability of the questionnaire were analyzed.

Results: The results revealed the overall IOC of the QUID-Thai version was 0.83, while the ranges of Cronbach's α coefficient were 0.90. One hundred twenty-one patients completed the QUID-Thai version. Questions 1 to 3 were used to evaluate for Stress Urinary Incontinence, while questions 4 to 6 were used to evaluate for Urgency Urinary Incontinence. The sensitivity and specificity for SUI were 73% and 82%, respectively. The sensitivity and specificity for UUI were 69% and 87%, respectively.

Conclusion: The QUID-Thai version has satisfied validity and reliability similar to the original version. The QUID is beneficial for the evaluation and diagnosis of female urinary incontinence in urology/gynecology clinical practices, primary health care settings, and epidemiological trials in Thailand.

Keywords: Screening questionnaire, Urinary incontinence, Thai

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Urinary incontinence [UI] is a common condition present in all age groups and both genders. Although the prevalence of UI is seldom reported because some patients do not disclose this condition, the estimated worldwide prevalence[1] is about 18% and tends to increase with age as high as 55%[2]. UI does not lead to death but it causes substantial disability, impaired quality of life, psychological stress, and is an economic burden[3].

Undiagnosed incontinence problems lead to significant suffering, so a simple questionnaire could help to subjectively detect this problem. The Questionnaire for Urinary Incontinence Diagnosis [QUID] is an easy-to-answer questionnaire for patients[4,5]. Bradley et al[4,5] developed a six-item questionnaire for diagnosing UI and distinguishing between urge urinary incontinence [UUI] and stress urinary incontinence [SUI]. This questionnaire is simple, with a high sensitivity and specificity.

Nowadays, the prevalence of UI is increasing in Thailand because of aging population. This condition can be diagnosed and treated appropriately to prevent disability and improve quality of life. Unfortunately, there are few diagnostic instruments for Thais[6-8]. One is Thai version of the Incontinence Quality of Life Questionnaires [Thai IQOL], which is a urinary problems-specific health-related quality-of-life questionnaire composed of 22 items[7]. The other one is the Overactive Bladder Symptom Scores [OABSS] Questionnaire that can be used for the diagnosis and evaluation of patients' symptoms for further assessment[6]. Consequently, the purposes of the present study were to translate the QUID into Thai and evaluate the validity and reliability of the QUID-Thai version in the diagnosis of patients with UI in Thai population.

Correspondence to:

Srisukho S. Department of Obstetrics and Gynecology, Faculty of Medicine, Chiang Mai University, Chiang Mai 50200, Thailand.
Phone: +66-53-935553, **Fax**: +66-53-946112
Email: sasivimol.s@cmu.ac.th

Materials and Methods

The original QUID was translated into Thai with permission from the principle investigator, Bradley et al[4,5], from the Division of Urogynecology and Reconstructive Pelvic Surgery, Department of Obstetrics and Gynecology, University of Iowa Carver College of Medicine, Iowa City, Iowa. The present study was approved by the Research Ethics Committee of the Faculty of Medicine of Chiang Mai University. The translation process was done by the

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following stages.

Translation procedure

Stage I, initial translation: Initial translation of questionnaire from English to Thai was performed by the research team. All members were Thai native and in medical/nursing profession to ensure that the medical terms were properly translated.

Stage II, back translation: The Thai version from the initial translation was submitted to The Language Institute, Chiang Mai University, for back translation into English language.

Stage III, comparison of the original english version and the back-translated version: The original version was compared with the back-translated version, item by item, to ensure the same meaning. Items that appeared to deviate from the meaning of the original version were noted.

Stage IV, revision by expert committee: The Thai version from step III and notes of inconsistency of some items were brought to the expert team, which consisted of one urologist, four gynecologists and one nurse. This latest version with revised items was then approved to be the final Thai version for use in the next step.

Stage V, test for reliability: The field test of the final version was performed in the Department of Obstetrics and Gynecology, Faculty of Medicine, Chiang Mai University, with 20 patients visiting the outpatient clinic to assess the participants' understanding of the Thai questions. The processes involved applying the questionnaire twice, two weeks apart, to the same patient. The QUID-Thai version was acceptable for real use in research subjects when reliability score was in an acceptable range.

Patients

The present study was conducted in patients visiting the urogynecology clinics with various urogynecoloic-related complaints in 2016. After completing the questionnaire, all patients were accessed, and the diagnosis was then confirmed by clinical examination following the clinical criteria of SUI, UUI, or both.

Statistical analysis

The content of the QUID-Thai version was verified using the index of item objective congruence [IOC], and the reliability of QUID-Thai version was assessed using a test-retest reliability method determined by Cronbach's α coefficient. Demographic and baseline characteristics were expressed as mean and standard deviation [SD] or median and range for continuous data and number and percentage for categorical data. The results were calculated for sensitivity and specificity. Sensitivity is the proportion of individuals who tested positive out of those who actually had the disease. Specificity is the proportion of individuals who tested negative out of those who actually did not have the disease. A receiver operator characteristic [ROC] curve was used to define the best cut-off point, to distinguish between the types of UI and to describe the accuracy of this questionnaire. The statistical package for social science (SPSS Inc., Chicago), version 22.0 was used for data analysis.

Results

Questionnaire development

A Thai version of the English QUID version is available in Appendix 1. The results revealed the overall IOC of the QUID-Thai version was 0.83, while the Cronbach's α coefficient was 0.90 (Table 1).

Main study group

One hundred twenty-one patients who completed

Table 1. Content validity and test-retest reliability of translated QUID-final version

Question	IOC	Cronbach's α coefficient
Do you leak urine (even small drops), wet yourself, or wet your pads or undergarments?	0.85	
1. When you cough or sneeze?	1	0.88
2. When you bend down or lift something up?	1	0.62
3. When you walk quickly, jog, or exercise?	0.85	0.68
4. While you are undressing in order to use the toilet?	1	0.92
5. Do you get such a strong and uncomfortable need to urinate that you leak urine (even small drops) or wet yourself before reaching the toilet?	0.57	0.63
6. Do you have to rush to the bathroom because you get a sudden, strong need to urinate?	0.71	0.68

QUID = Questionnaire for Urinary Incontinence Diagnosis; IOC = item objective congruence

the QUID-Thai version in the present study had average age of 62 years (range of 35 to 89 years). The most frequently reported highest level of education was primary school and nearly 80% of patients were postmenopausal. The other characteristics and demographics of the patients are shown in Table 2.

Questions No. 1, 2, and 3 were used to evaluate patients with SUI, while questions No. 4, 5, and 6 were used to evaluate patients with UUI. The cutoff values for diagnosis were as same as the original. The sensitivity and specificity for SUI were 73% and 82%, respectively. The sensitivity and specificity for UUI were 69% and 87%, respectively. Table 3 demonstrates a diagnostic value in determining the type of UI.

Discussion

The purpose of the present study was to translate the English version of a symptom-based questionnaire intended to classify type of UI and achieve validation of this QUID-Thai version. The results demonstrated a good validity and reliability of the QUID-Thai version for diagnosis SUI/UUI in Thai speaking patients.

The QUID was validated in other countries and this is the first study validating the QUID in Thai. The Chinese version[9], had a Cronbach index of 0.91 for SUI and 0.89 for UUI, and The Spanish version[10], had a Cronbach index of 0.94 for both, similar to the presented results and inferior to the original questionnaire of 0.85 for SUI and 0.81 for UUI. The present study regarding the accuracy of QUID-Thai version in diagnosing SUI/UUI demonstrated sensitivity, specificity, positive predictive value, and negative predictive values. With the same cutoff points, the values were comparable to the original and more strongly related to clinical signs. These results proved that the QUID-Thai version is a valid diagnostic tool of UI.

In addition, the QUID-Thai is simple, inexpensive, and takes a short time to complete. Thus, this questionnaire is suitable as a screening tool for a field survey or epidemiologic research. It is also a useful tool in primary care to identify individuals who potentially have UI for proper referral to specialists. Moreover, patients with specific UI types can be accurately assessed and can be educated to choose appropriate conservative management options[11]. Although, patients found that the QUID-Thai is easy to be completed, the QUID is limited in providing information regarding the effect on quality of life. The QUID does provide a broader picture of severity of symptoms correlating with the scores.

Other limitation of the present study was the Thai language expression itself. Although we tried to translate the questionnaire into Thai and preserve the original meaning as much as possible, it was very difficult to find the exact Thai word that fitted the meaning of question No. 5 of the original version. Therefore, the IOC of this item was the lowest among the others and made the overall IOC of the QUID-Thai version lower comparing to other versions. Additionally, all of the patients who were enrolled in the study presented with some urogynecologic symptoms in the urogynecology clinic at tertiary hospital center. This group of patients might not represent a general population. They tend to give a more positive response to the questionnaire. Therefore, there is a need for further study that include larger populations with different patient's characteristics. Finally, it is important to realize that this questionnaire is only an instrument. The definite diagnosis should be confirmed by history taking, physical examination, and

Table 2. Study group characteristics (n = 121)

Characteristic	Measurement median (range) or n (%)
Age (year)	62 (35 to 89)
Body mass index (kg/m2)	23.7 (14.0 to 32.6)
Parity	2 (0 to 9)
Educational background	
None	14 (11.6)
Primary school	59 (48.8)
Secondary school	22 (18.2)
University	26 (21.5)
Postmenopausal Status	96 (79.3)
Hysterectomy	21 (17.4)
Duration of urinary incontinence symptoms	
≤1 year	29 (24.0)
2 to 5 years	28 (23.1)
>5 years	7 (5.8)
Pelvic organ prolapse (stage ≥3)	66 (54.5)
Pessary use	54 (44.6)
Previous anti-incontinence surgery	11 (0.09)

Table 3. The QUID-Thai version comparison with clinical diagnosis

	Stress urinary incontinence	Urge urinary incontinence
Sensitivity	0.73 (0.60 to 0.84)	0.69 (0.52 to 0.82)
Specificity	0.82 (0.71 to 0.91)	0.87 (0.77 to 0.93)
Positive predictive value	0.79 (0.68 to 0.86)	0.72 (0.59 to 0.83)
Negative predictive value	0.77 (0.69 to 0.84)	0.85 (0.78 to 0.90)
Accuracy	0.78 (0.70 to 0.84)	0.81 (0.73 to 0.87)
Area under the curve	0.86 (0.79 to 0.93)	0.86 (0.79 to 0.93)

QUID = Questionnaire for Urinary Incontinence Diagnosis

appropriate laboratory tests.

Conclusion

The QUID-Thai version has a good validity and reliability, similar to the original version. QUID is beneficial for the evaluation and diagnosis of female UI in urology/gynecology clinical practices, primary health care settings, and epidemiological trials in Thailand.

What is already known on this topic?

The QUID, a six-items questionnaire for female UI type diagnosis. It is reliable and able to help diagnose SUI and UUI in a referral urogynecology patient population with accuracy.

What this study adds?

This QUID-Thai version has a high sensitivity with acceptable specificity. It is useable for the Thai population.

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Potential conflicts of interest

The authors declare no conflict of interest.

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