Korean Translation and Linguistic Validation of Urgency and Overactive Bladder Questionnaires

Seung-Ee Kim, Hyo Serk Lee, Ha Na Lee, Seo Yeon Lee, Min Soo Choo, Min Gu Park, Ji Yun Chae, Seung-June Oh, Sung Yong Cho

1Department of Urology, Seoul National University Hospital, Seoul, Korea
2Department of Urology, Cheil General Hospital & Women’s Healthcare Center, Dankook University College of Medicine, Seoul, Korea
3Department of Urology, Samsung Medical Center, Seoul, Korea
4Department of Urology, Moryong Hospital, Hanyang University College of Medicine, Goyang, Korea
5Department of Urology, Hallym University Dongtan Sacred Heart Hospital, Hwaseong, Korea
6Department of Urology, Inje University Seoul Paik Hospital, Seoul, Korea
7Department of Urology, Mizlove Female Urology Clinic, Seoul, Korea
8Department of Urology, Seoul Metropolitan Government - Seoul National University Boramae Medical Center, Seoul, Korea

Purpose: Given the importance of evaluating the severity of overactive bladder (OAB) symptoms and outcomes after treatment, several questionnaires have been developed to evaluate OAB patients. However, only limited questionnaires are available in Korea for use with Korean patients. Therefore, this study aimed to develop Korean versions of OAB questionnaires through a rigorous linguistic validation process.

Methods: The Indevus Urgency Severity Scale, Urgency Perception Scale, Urgency Severity Scale, and Patient Perception of Intensity of Urgency Scale underwent translation and linguistic validation. The linguistic validation procedure consisted of permission for translation, forward translations, reconciliation, back-translation, cognitive debriefing, and proofreading. Two independent bilingual translators translated the original version of each questionnaire, and a panel then discussed and reconciled the 2 initial translations. Next, a third independent bilingual translator performed a backward translation of the reconciled version into English. Five Korean patients diagnosed with OAB were interviewed for cognitive debriefing.

Results: Each item of the questionnaires was translated into 2 Korean versions in the forward translation process. Terms such as ‘urgency’ and ‘wetting’ were translated into ordinary language by the translators and adjusted by the panel members to more conceptually equivalent terms in a medical context. In the back-translation process, the panel made a few changes regarding details based on a comparison of the back-translated and original versions. During the cognitive debriefing process, 5 patients provided a few pieces of feedback on the naturalness of the wording of the questionnaires, but generally agreed on the translated terms.

Conclusions: In this study, the panel produced a successful linguistic validation of Korean versions of multiple OAB questionnaires, which can be utilized to evaluate the severity and treatment outcomes of OAB.

Keywords: Urgency; Overactive bladder; Patient-reported outcome; Questionnaires; Linguistic validation

Corresponding author: Sung Yong Cho
Department of Urology, Seoul National University Hospital, 101 Daehak-ro, Jongno-gu, Seoul 03080, Korea
E-mail: moretry@yahoo.com
Submitted: September 3, 2019 / Accepted after revision: October 22, 2019
INTRODUCTION

Overactive bladder (OAB) is a component of lower urinary tract symptoms, which were defined as “urgency, with or without urge incontinence, usually with frequency and nocturia, in the absence of infection or other proven etiology” in 2003 by the International Continence Society (ICS) [1]. It is well known that OAB and urinary incontinence (UI) have a negative impact on health-related quality of life (HRQoL) in aspects of physical, social, psychological, and ecological well-being [2,3].

In 2006, the Korean EPIC (European Prospective Investigation into Cancer and Nutrition) study demonstrated that the overall prevalence of OAB in the Korean population was 12.2% and the prevalence of OAB with UI was 5.1% [4]. Furthermore, the Korean Burden of Incontinence Study, which was conducted in 2013, showed a substantial economic impact of OAB in the Korean population due to the costs of diagnosis, medications, and incontinence pads, especially in patients with severe UI [5].

Given the prevalence of OAB and its economic and social impact on the Korean population, it is necessary to evaluate HRQoL and patient-reported outcomes (PRO) after OAB treatment [6]. However, insufficient questionnaires are available as tools to evaluate the severity of urgency and UI in the Korean population.

Therefore, the authors of this study investigated validated questionnaires available for evaluating the severity of OAB and UI, and selected the Indevus Urgency Severity Scale (IUSS), Urgency Perception Scale (UPS), Urgency Severity Scale (USS), and Patient Perception of Intensity of Urgency Scale (PPIUS) based on the PRO assessment review in the Fifth International Consultation on Incontinence, published in 2013 [7].

MATERIALS AND METHODS

Original Questionnaires

The IUSS questionnaire was developed by Nixon et al. [8]. The UPS questionnaire was developed by Cardozo et al. [9]. The USS was developed by Chung et al. [10] by modifying the IUSS. The PPIUS was developed by Cartwright et al. [11].

Translation and Linguistic Validation

This study was approved by the Institutional Review Board of the Seoul Metropolitan Government - Seoul National University Boramae Medical Center (approval number: 26-2016-60). A linguistic validation procedure was implemented to obtain translated Korean versions of the IUSS, UPS, USS, and PPIUS questionnaires that should be conceptually equivalent to the original questionnaires. The procedure of translation and linguistic validation was performed following a well-established process that consisted of forward translation, reconciliation, back-translation, cognitive debriefing, and proofreading, as described in previous investigations [12-14].

In each step of the process, all translators and a panel consisting of 2 Korean experts (SJO and SYC) commented on the difficulty and naturalness of the translations and alternative translation options.

Permission

The panel contacted all copyright holders of each questionnaire, and requested and acquired permission to translate and utilize a Korean version of each questionnaire.

Forward Translation

Two trained bilingual translators independently translated the original version of each questionnaire into conceptually equivalent Korean phrasing (version 1.0a and 1.0b). The translators did not have a medical license, and they were forbidden to contact each other.

Reconciliation by the Panel

The 2 independently translated versions were compared by the panel, including both independent translators, and were reconciled considering delicate cultural differences and linguistic nuances into a single new version (version 1.1).

Back-Translation

A third bilingual translator received the reconciled Korean version of each questionnaire (version 1.1), and back-translated it into English. The back-translated English version of each questionnaire was compared with the original English version. The panel, including all translators, discussed the translations and made changes (version 1.2).

Cognitive Debriefing

The questionnaires (version 1.2) were given to 5 Korean-speaking patients with OAB with different educational backgrounds. They were asked whether the questionnaires were understandable, clear, and intuitive. After the interview, the panel discussed the patients’ responses, and agreed on a new version (version 1.3).
**Proofreading**

Version 1.3 was proofread by the panel to check for grammatical problems and availability for evaluating OAB (version 1.4).

**RESULTS**

**Forward Translation and Reconciliation**

As shown in Table 1, all items of the IUSS, USS, PPIUS, and UPS questionnaires were translated into Korean by 2 independent translators. The transcriptions given below of the Korean text of the translated questionnaires follow the official Revised Romanization of Korean system developed by the National Academy of the Korean Language.

**Indevus Urgency Severity Scale**

The name of the IUSS questionnaire was translated as *Indevus yojeolbakeseongui singak jisu*. The word “urgency” was translated as *gingeup* and *gingeupseong* (“emergent”) by translators 1 and 2, respectively, but the panel agreed on *yojeolbakseong* as alternative option that appropriately conveyed the medical nuance of this term. “Degree of urgency is meant to describe your urge to urinate” in the original text was translated as *yojeolbakseongui jeongdoneun gwihaui sobyeon maryeousumui jeolbakeseongui pyohyeonhamnida*. The phrase “urge to urinate” was translated as *sobyeon yokgyu* by translator 1 and *sobyeon maryeousum* by translator 2, and the panel agreed on *sobyeon maryeousum* as a more familiar expression. “Sometimes you may feel a very strong urge to urinate, and at other times, you may feel a milder urge prior to the onset of a toilet void” in the original text was translated as *gwihaui sobyeon bogyi jikjeone, ttaerouneun sobyeon maryeousumae maeganghe neukkiri ttaedo isseuna, geu oeeneun, sobyeon maryeousum yakal ttaedo itsuemnida*. The panel agreed on the general tone of the sentence as rendered by translator 1, as it was a more honorific form.

“Rate this feeling by circling 0, 1, 2, or 3, defined as” in the original text was translated as *daeumgwa gateun seomnyeongtara 0, 1, 2, 3 euro pyohihaye neukkimeul pyeonggahaye juseyo*, “0: NONE—no urgency” in the original text was translated as *0: copeum—jeolbakaji aneum*, “1: MILD—awareness of urgency, but is easily tolerated and you can continue with your usual activity or tasks” in the original text was translated as *1: yakan—jeolbakameul uisikal su isseuna, gwihaui hwaldonggwa eommureul jisokal su isseul jeongdoro swipe chameul su isseum*. “2: MODERATE—enough urgency discomfort that interferes with or shortens your usual activity or tasks” in the original text was translated as *2: botong—jeolbakameuro inhae ilsangjeogin hwaldonggwa commue banghaega doel jeongdoui bulpyeonhameul neukkim*. “3: SEVERE: extreme urgency discomfort that abruptly stops all activity or tasks” in the original text was translated as *singakam—jeolbakameuro inhae modeun hwaldonggwa eommu gapjaksseureogpe jungdandoel jeongdoro bulpyeonhameul neukkim*. The panel agreed on an alternative option for the proper translation of “abruptly.”

**Urgency Perception Scale**

The name of the UPS questionnaire was translated as *yojeolbakeseong inji jisu*. “The patient is asked to describe his/her typical experience when he/she feels the desire to urinate” in the original text was translated as *hwanjabunuge sobyeon maryeousum tae ilsangjeogujeuro neukkineun gyongheonjeuro seomnyeonghadorok hamnida*. The panel agreed to translate “typical” as *ilsangjeogujeuro neukkineun* (“routinely felt”), as it is a familiar expression. “The response options are” in the original text was translated as *seontaekangmogeun daeumgwa gateum*. “1. I am usually not able to hold urine” in the original text was translated as *1. naeun juro sobyeonchameul chameul su copda*. “2. I am usually able to hold urine until I reach the toilet if I go immediately” in the original text was translated as *2. naeun juro hwajangsireul jeuki gandumyobesyeneon chameul su itda*. “3. I am usually able to finish what I am doing before going to the toilet” in the original text was translated as *3. naeun juro hwajangsil gogi jeone naeag hadeon ireul kkeumnal su itda.*

**Urgency Severity Scale**

The name of the USS questionnaire was translated as *yojeolbakseong inji jisu* (hogeun jeongdo) seomnunji. “How do you feel before each void?” in the original text was translated as *gwihaun maebon sobyeonbogyi jotteoke neukkisinnikka*. The word “void” was translated as *sobyeneon bogyi* (“relieve oneself”) by translator 1 and *sobyeneon biul* (“empty”) by translator 2, and the panel agreed on *sobyeneon biul* as it is a more precise and familiar expression than *sobyeneon bogyi*. “Please record the score that best describes how you feel before voiding” in the original text was translated as *sobyeneoniogi jeon gwihaun sangtareul gjajang jal pyohyeonhamnau hangmoge (jeomsureul) pyoighaseyo*. The word “best describe” was translated as *gajang jal banyeonghamnau* (“best reflect”) by translator 1 and *gajang jal myosahan* (“best portray”) by translator 2, and the panel agreed on *gajang jal pyohyeonhamnau* (“best express”). “Record at each voiding in the diary according to the follow-
Table 1. Grid for the first forward translation of questionnaires into Korean

| US English term | First forward Korean translations | Comments on difficulty, meaning, or alternative options for translation |
|-----------------|-----------------------------------|---------------------------------------------------------------|
| **Indevus Urgency Severity Scale** | | |
| Degree of urgency is meant to describe your urge to urinate. | 긴급성의 수준은 귀하의 소변 욕구의 정도를 의미합니다. | 요절박성의 정도는 귀하의 소변 마려움의 절박함을 표현합니다. |
| Sometimes you may feel a very strong urge to urinate, and at other times, you may feel a milder urge prior to the onset of a toilet void. | 때로는 매우 강한 소변 마려움을 느낄 때도 있고, 때로는 소변 마려움이 뚜렷하지 않을 때도 있습니다. | |
| Rate this feeling by circling 0, 1, 2, or 3, defined as: | 0, 1, 2, 3의 설명에 따라 이와 같은 느낌을 평가하여 주세요. | |
| 0: NONE—no urgency. | 없음: 긴급하지 않음. | |
| 1: MILD—awareness of urgency, but is easily tolerated and you can continue with your usual activity or tasks. | 약함: 긴급성을 의식할 수 있으나, 귀하의 활동과 업무를 지속할 수 있으며 계속해서 하던 활동과 업무를 진행할 수 있다. | |
| 2: MODERATE—enough urgency discomfort that is interferes with or shortens your usual activity or tasks. | 보통: 귀하의 활동과 업무를 짐작하나, 귀하의 활동과 업무를 지속할 수 있을 정도로 쉽게 통제가 가능한다. | |
| 3: SEVERE—extreme urgency discomfort that abruptly stops all activity or tasks. | 심각함: 귀하의 활동과 업무를 방해하여 귀하의 활동과 업무를 완전히 중단한다. | |
| **Urgency Perception Scale** | | |
| The patient is asked to describe his/her typical experience when he/she feels the desire to urinate. | 환자에게 평소 소변 욕구를 느낄 때 겪는 경험을 설명하도록 요구한다. | |
| The response options are | 답변 가능 항목: | 선택항목은 다음과 같음. |
| 1. I am usually not able to hold urine. | 1. 나는 주로 소변을 참지 못하는 편이다. | 1. 나는 주로 소변을 참을 수 없다. |
| 2. I am usually able to hold urine until I reach the toilet if I go immediately. | 2. 나는 주로 화장실을 즉시 갈 수 있다면 소변을 참을 수 있는 편이다. | 2. 나는 주로 화장실을 즉시 갈 수 있다면 소변을 참을 수 있다. |
| 3. I am usually able to finish what I am doing before going to the toilet. | 3. 나는 주로 화장실에서 가기 전에 내가 하고 있는 일을 마무리할 수 있는 편이다. | 3. 나는 주로 화장실 가기 전에 내가 하고 있는 일을 마무리할 수 있다. |

(Continued to the next page)
Table 1. Continued

| Urgency Severity Scale | 긴급성 정도 | 긴급성 잡도 차수 설문지 | USS(‘긴급 심각성 점수’로 번역될 수 있음, 자연스럽지 않기 때문에 의역함) | 요절박성 심각 지수 (혹은 정도) 설문지 |
|------------------------|-------------|----------------------|------------------------------------------------|----------------------------------|
| How do you feel before each void? | | | | |
| namely변을 보기 전에 느 | | | | |
| 점이 어Mappings이씨아? | | | | |
| Record at each voiding in the diary | | | | |
| 귀하가 변을 볼 때마다 아 | | | | |
| 래 설명에 맞게 기록해 주 | | | | |
| 시기 바랍니다 | | | | |
| Please record the score that best describes how you feel before voiding. | | | | |
| 소변을 이에 하기 전의 상태를 기록하 | | | | |
| 심각도를 가장 잘 표현한 항목을 선택 | | | | |
| 하여 주시기 바랍니다. | | | | |
| 0. No feeling of urgency: 나는 화장실을 사용하는 것을 선택하기 전까지 내가 하고 있는 활동을 지속할 수 있다. | 0. 요절박성 없음: 나는 화장실을 사용하는 것을 결정하기 전까지 하던 활동을 지속할 수 있음. | | | |
| 1. Mild feeling of urgency: I can feel the need to urinate, but it is easily tolerated. I can finish my activity or task before going to the bathroom. | 1. 약한 정도의 요절박성: 나는 소변 마려움을 느낄 수 있으나, 쉽게 참을 수 있음. 화장실 가기 전에 활동과 업무를 마무리할 수 있음. | | | |
| 2. Moderate feeling of urgency: The sensation of urgency causes a compelling desire to void. I need to stop my activity or task and go to the bathroom. | 2. 중간 정도의 요절박성: 나는 요절박성으로 인해 소변을 참을 수 없어 화장실 가기 전에 활동과 업무를 중단하고 화장실을 가야함. | | | |
| 3. Severe feeling of urgency: The sensation of urgency causes a compelling desire to void. I have difficulty holding urine. I have to stop my activity or task to avoid a wetting accident and hurry to the bathroom. | 3. 심각한 정도의 요절박성: 나는 요절박성으로 인해 소변을 참을 수 없어 화장실 가기 전에 활동과 업무를 중단하고 화장실을 가야함. | | | |
| 4. Unable to hold urine: The urine leaks from my bladder and I have a wetting accident before arriving at the bathroom. | 4. 소변을 참을 수 없음: 나는 화장실에 도착하기 전에 방광에서 소변이 유출되고 소변을 참을 수 없다. | | | |
| Patient Perception of Intensity of Urgency Scale (PPIUS) | | | | |
| 0. No urgency, I felt no need to empty my bladder, but did so for other reasons. | 0. 요절박성 없음: 나는 변을 보지 않고도 소변을 보지 않기 위해서만 소변을 냈다. | | | |
| 0. 요절박성 없음, 방광을 비우지 않고도 소변을 들어보지 않기 위해서만 소변을 냈다. | 0. 요절박성 없음, 방광을 비우지 않고도 소변을 들어보지 않기 위해서만 소변을 냈다. | | | |
| (Continued to the next page)
### Table 1. Continued

| Category | Description | Translation |
|----------|-------------|-------------|
| 1. Mild urgency, I could postpone voiding as long as necessary, without fear of wetting myself. | 약한 긴급, 나는 소변을 두려워하지 않고 필요한 만큼 소변을 둔화할 수 있다. | The panel agreed on translating “the diary” as “baenyoilgie”, as it is a widely accepted translation of “voiding diary.” “0. No urgency, I felt no need to empty my bladder, but did so for other reasons” was translated as “나는 소변이 새어 나왔다” as it is a widely used idiom. |
| 2. Moderate urgency, I could postpone voiding for a short while, without fear of wetting myself. | 보통 긴급, 나는 소변을 두려워하지 않고 잠깐 소변을 둔화할 수 있다. | 2. “Mild feeling of urgency: I can continue activities until I choose to use the bathroom” in the original text was translated as 1. 약한 정도의 요절박성, 소변을 지리는 것에 대한 걱정 없이 잠깐 동안 소변을 참을 수 있다. |
| 3. Severe urgency, I could not postpone voiding, but had to rush to the toilet in order not to wet myself. | 심각한 긴급, 나는 소변을 지리지 않기 위해 화장실로 빠져야 한다. | 3. “Moderate feeling of urgency: The sensation of urgency causes a compelling desire to void. I have difficulty holding urine. I have to stop my activity or task to avoid a wetting accident and hurry to the bathroom” in the original text was translated as 2. 중간 정도의 요절박성, 소변을 지리는 것에 대한 걱정 없이 잠깐 동안 소변을 참을 수 있다. |
| 4. Urge incontinence, I leaked before arriving to the toilet. | 급한 소변 유출, 나는 화장실에 도착하기 전에 이미 소변이 유출되고 실수를 한다. | “1. Mild feeling of urgency: I can postpone voiding, but had to rush to the toilet in order not to wet myself.” was translated as “1. 약한 정도의 요절박성, 소변을 지리는 것에 대한 걱정 없이 잠깐 동안 소변을 참을 수 있다.” |

The name of the PPIUS questionnaire was translated as “voiding” or “wetting” as it is common translation of “wetting” or “incontinence.” The phrase “wetting accident” was translated as “sobyeon silsu” (“voiding accident”) by translator 1 and sobyeoni naoneum geot (“voiding”) by translator 2, and the panel agreed on sobyeonul jiriji (“wetting”) as it is common translation of “wetting” or “incontinence.” The panel agreed on the non-literal translation of “have a wetting accident” as sobyeonul jiriyoe osuel jeoksinanda (“get one’s clothes wet”), as it is a widely used idiom.

**Patient Perception of Intensity of Urgency Scale**

The name of the PPIUS questionnaire was translated as “voidelbakseong” (“urgency”) did not reflect the meaning of “sensation.” “3. Severe feeling of urgency: The sensation of urgency causes a compelling desire to void. I have difficulty holding urine. I have to stop my activity or task to avoid a wetting accident and hurry to the bathroom” in the original text was translated as 3. singakkan jeongdoui yoeoelbakseong: naneun yoeoelbakseongeuro inhae sobyeoneul bogoja haneun yokgureul ganghage neukkim. sobyeoneul channeunge eoryeoum. sobyeoneul jiriji anki wihae commuwa hwaldongeul jungdanhago geupage hwajangsi reul gal piriya ge isseum. The phrase “a wetting accident” was translated as sobyeonul jiriji (“wetting”) as it is common translation of “wetting” or “incontinence.” “4. Unable to hold urine: The urine leaks from my bladder and I have a wetting accident before arriving at the bathroom” in the original text was translated as 4. sobyeonul chameul su eopseum: naneun hwajangsi reul gal piriya ge isseum. The panel agreed on the non-literal translation of “have a wetting accident” as sobyeonul jiriyoe osuel jeoksinanda (“get one’s clothes wet”), as it is a widely used idiom.
Table 2. Grid for the backward translation of questionnaire

| US English term | US English Backward translation | Korean translation | Comments on difficulty, meaning, or alternative options for translation |
|-----------------|---------------------------------|--------------------|--------------------------------------------------------------------------|
| Indevus Urgency Severity Scale (IUS) | The Indevus (Urinary) Urgency Severity Scale | Indevus 요절박성이 심각성 지수 | 요절박성의 정도는 귀하의 소변 마리움의 절박함을 나타냅니다. |
| Degree of urgency is meant to describe your urge to urinate. | The (Urinary) Urgency Scale expresses/ shows your strong urge to urinate. | Indevus 요절박성의 심각성 지수 | 귀하가 소변을 보러 갈 때로는 사람들은 마리움의 절박한 정도를 나타냅니다. |
| Sometimes you may feel a very strong urge to urinate, and at other times, you may feel a milder urge prior to the onset of a toilet void. | Just before you urinate, although sometimes you feel the (extremely) strong urge to urinate, apart from those times, I also feel the urge to urinate at a weak level. | Indevus 요절박성의 심각성 지수 | 귀하가 소변보기 직전에 소변 마리움을 매우 강하게 느낄 때도 있으나, 그 외에는 소변을 보기 전에, 소변 마리움을 약하게 느낄 때도 있습니다. |
| Rate this feeling by circling 0, 1, 2, or 3, defined as: | Please rate/evaluate (your feeling/ how you feel) by using the scale of 0 to 3 for the following statements. | Indevus 요절박성의 심각성 지수 | 다음과 같은 설명에 따라 0, 1, 2, 3으로 표기하여 느낄 정도를 정하여 주세요. |
| 0: NONE-no urgency. | 0: None – No urgency. | Indevus 요절박성의 심각성 지수 | 없음- 절박하지 않음. |
| 1: MILD-awareness of urgency, but is easily tolerated and you can continue with your usual activity or tasks. | 1: Weak/ Mild – awareness of urgency, but (can be) easily tolerated that your activity and tasks can be continued. | Indevus 요절박성의 심각성 지수 | 약- 절박함을 의식할 수 있으나, 귀하의 활동과 업무를 지속할 수 있을 정도로 쉽게 참을 수 있음. |
| 2: MODERATE-enough urgency discomfort that is interferes with or shortens your usual activity or tasks. | 2: Normal/ Moderate- Due to urgency, You feel enough discomfort that it interferes with usual activity and tasks. | Indevus 요절박성의 심각성 지수 | 보통- 절박함으로 인해 일상적인 활동과 업무에 방해가 될 정도로 불편함을 느낄. |
| 3: SEVERE: extreme urgency discomfort that abruptly stops all activity or tasks. | 3: Severe – Due to urgency, You Feel enough discomfort that it abruptly stops all activities and tasks. | Indevus 요절박성의 심각성 지수 | 심각- 절박함으로 인해 모든 활동과 업무가 갑작스럽게 중단될 정도로 불편함을 느낄. |
| Urgency Perception Scale (UPS) | (Urinary) Urgency Awareness Scale | 요절박성 인지 지수( 혹은 정도) | 요절박성 인지 지수 |
| The patient is asked to describe his/her typical experience when he/she feels the desire to urinate. | The feeling patient usually experiences when the patient feels the urge to urinate will be explained/ described. | 요절박성 인지 지수( 혹은 정도) | 화장실하게 소변 마리움을 보러 갈 때, 화장실하게 소변을 보고싶을 때를 느낄 정도로 느낄 정도로 느끼는 경험을 설명하도록 합니다. |
| The response options are | The choices are as follows | 요절박성 인지 지수( 혹은 정도) | 선택항목은 다음과 같은. |
| 1. I am usually not able to hold urine. | 1. I mostly cannot hold back urine. | 요절박성 인지 지수( 혹은 정도) | 1. 나는 주로 소변을 참을 수 없다. |
| 2. I am usually able to hold urine until I reach the toilet if I go immediately. | 2. I mostly can hold urine if I go to the toilet instantly. | 요절박성 인지 지수( 혹은 정도) | 2. 나는 주로 화장실에 갈 때 간다면 소변을 참을 수 있다. |
| 3. I am usually able to finish what I am doing before going to the toilet. | 3. I mostly can finish the work that I was doing before I go to the toilet. | 요절박성 인지 지수( 혹은 정도) | 3. 나는 주로 화장실 가기 전에 내가 하고 있던 일을 끝낼 수 있다. |
| Urgency Severity Scale (USS) | (Urinary) Urgency Severity Scale Questionnaire | 요절박성 심각성 지수 | 요절박성 심각성 지수 설문지 |
| How do you feel before each void? | How do you feel before you urinate every time? | 요절박성 심각성 지수 | 귀하는 매번 소변을 보러 갈 때 어떻게 느낄까요? |
| Please record the score that best describes how you feel before voiding. | Please indicate (the point/ the number to) the category that best describes your state/ condition before you urinate. | 요절박성 심각성 지수 | 소변을 보러 귀하의 상태를 가장 잘 표현하는 항목에 (점수로) 표 시할 것으로 표현이 낫습니다. |
| Record at each voiding in the diary according to the following descriptions. | Following the descriptions below, please record every time you empty urine on urination diary. | 요절박성 심각성 지수 설문지 | 아래에 설명에 따라 배뇨일기에 소변을 비울 때마다 기록해주세요. |

(Continued to the next page)
### Table 2. Continued

| Patient Perception of Intensity of Urgency Scale (PPIUS) | Patient’s awareness of intensity of (Urginary) Urgency Scale | 요절박성 지수의 강도에 대한 환자의 인지 | 요절박성 지수의 강도에 대한 환자의 인지 |
|----------------------------------------------------------|--------------------------------------------------------------|--------------------------------------|--------------------------------------|
| 0. No urgency, I felt no need to empty my bladder, but did so for other reasons. | 0. No urinary urgency, I don’t feel the need to empty the bladder, but I do for another reason. | 요절박성 없음, 화장실을 비워야 하는 필요성 느끼지 않지만 다른 이유로 그렇게 한다. | 요절박성 없음, 방광을 비우려 한다는 필요성을 느끼지 않지만 다른 이유로 그렇게 한다. |
| 1. Mild urgency, I could postpone voiding as long as necessary, without fear of wetting myself. | 1. Weak/Mild level of urinary urgency, can hold back urine for as long as necessary without worrying about leak. | 약한 정도의 요절박성, 소변을 지리지 않는 경우에 대한 걱정 없이 짧은 동안 소변을 채울 수 있다. | 약한 정도의 요절박성, 소변을 지리지 않는 경우에 대한 걱정 없이 짧은 동안 소변을 채울 수 있다. |
| 2. Moderate urgency, I could postpone voiding for a short while, without fear of wetting myself. | 2. Moderate level of urinary urgency, I can hold back urine for a while without worrying about leak. | 중간 정도의 요절박성, 소변을 지리지 않는 경우에 대한 걱정 없이 짧은 동안 소변을 채울 수 있다. | 중간 정도의 요절박성, 소변을 지리지 않는 경우에 대한 걱정 없이 짧은 동안 소변을 채울 수 있다. |
| 3. Severe urgency, I could not postpone voiding, but had to rush to the toilet in order not to wet myself. | 3. Severe level of urinary urgency, I have to rush to the toilet in order not to leak urine because I can’t hold back. | 심각한 정도의 요절박성, 소변을 지리지 않는 경우에 대한 걱정 없이 짧은 동안 소변을 채울 수 없다. | 심각한 정도의 요절박성, 소변을 지리지 않는 경우에 대한 걱정 없이 짧은 동안 소변을 채울 수 없다. |
| 4. Urge incontinence, I leaked before arriving at the bathroom. | 4. Urinary urgency incontinence, I leak urine (even) before I reach toilet. | 요절박성 요실금, 환장실에 도착하기 전에 소변을 지리지 않는다. | 요절박성 요실금, 환장실에 도착하기 전에 소변을 지리지 않는다. |

In the original text was translated as 0. jeolbakaji aneum, bang-gwangeul biwoya handaneum piryoseongeul neukkiji anchimnan dareun iyuro gareasu handa. “1. Mild urgency, I could postpone voiding as long as necessary, without fear of wetting myself” in the original text was translated as 1. yakan jeongdoui yojeolbakseong, sobyeonul jirinjeun geose daehan geokjeong eopsi jamkkkan dongoon sobyeonul cha-meul su itda. “2. Moderate urgency, I could postpone voiding for a short while, without fear of wetting myself” in the original text was translated as 2. junggan jeongdoui yojeolbakseong, sobyeoneul jirinjeun geose daehan geokjeong eopsi piryohan mankeum oaraedongan sobyeonul chameul su itda. “3. Severe urgency, I could not postpone voiding, but had to rush to the toilet in order not to wet myself” in the original text was translated as 3. simgakan jeongdoui yojeolbak-
seong, sobyeoneul chameul su eopseo sobyeoneul jiriji anki whiae hwajangsillo dallyeogaya handa. “4. Urge incontinence, I leaked before arriving to the toilet” in the original text was translated as 4. jeolbakseong yosilgeum, hwajangsiro dochakagi jeone sobyeoneul jirinda. The word “incontinence” was translated as sobyeon yuchul (“urine leak”) by translator 1 and yosilgeum (“incontinence”) by translator 2, and the panel agreed on yosilgeum as it is a medical term that is widely understood.

Back-Translation and Retranslation
As shown in Table 2, all items of the OAB questionnaires that were reconciled by the panel were reverse-translated, and the panel then discussed the differences between the back-translated versions and original versions, as described below.

Indevus Urgency Severity Scale
The panel discussed the differences between the translations of “enough urgency discomfort that interferes with or shortens” in the original version and “You feel enough discomfort that it interferes with” in the reconciled version. The panel ultimately agreed to omit “shortens” because the translation could fully convey the message through only “interferes with.”

Urgency Perception Scale
The panel discussed the differences between translations of “the desire to urinate” in the original version and “urge to urinate” in the reconciled version. The panel finally agreed on the translation sobyeoneul bogosipeul ttae as the best expression of the phrase “the desire.”

Urgency Severity Scale
The panel discussed the differences between translations of “until I choose to use the bathroom” in the original version and “before I decided to go to the toilet” in the reconciled version in terms of the nuances of the translation. The panel finally agreed on the translation hwajangsireul sayonghaeyagedago maemmneokgi jeonkkaji, as it is a more familiar and communicative expression.

Patient Perception of Intensity of Urgency Scale
The panel had no disagreements with the back-translation of the PPIUS, given the translation process of the above questionnaires.

Cognitive Debriefing and Proofreading
The revised version of the translations after forward and reverse translation were tested by 5 patients with OAB (3 men and 2 women; age range, 30–70 years) who had received medical therapy, including anticholinergics. Their levels of education ranged from high school to university. All patients completed the translated questionnaires within 8 minutes. The patients stated that the items of questionnaires were generally easy to understand.

One patient reported that there was a discrepancy among the questionnaires in terms of whether they phrased the items as referring to “patient” or “you,” and stated that this difference was not harmonious. In the IUSS and USS questionnaires, “you” was translated as gwihya (a polite expression for “you”), while in the USS, “patient” was translated as hwanjabun (a polite expression for “patient”). The panel discussed this difference, but decided to keep those terms in consideration of the original text. Another patient reported that in the USS questionnaire, the description of an item was so long that the meaning of the sentence was lost in the middle. The panel discussed the patient’s feedback and agreed that the sentence was long and distracting. Therefore, the panel decided to emphasize the main words by underlining them. Furthermore, the panel proofread the all four questionnaires and agreed to unify the translation of “urgency” as yojeolbak rather than yojeolbakseong, as yojeolbak is a briefer and clearer expression.

Finally, the panel revised the translations by consistently organizing the expressions, especially honorific forms, in the questionnaires. The final versions are shown in Fig. 1.

DISCUSSION
During the translation process of multiple OAB questionnaires, a few words showed persistent differences between the translators and the panel. The word “urgency” was translated as ginge-up and gingeupsong by the translators, both meaning “emergency.” Yojeolbak is a popular translation used in urological publications, and the panel therefore agreed to use yojeolbak. In the same context, it was observed that symptom-related adjectives such as “urgent” were challenging words to translate; therefore, they were not translated literally, and were replaced by colloquial expressions [15].

The word “moderate” was translated as botong and junggan by the translators, and the word “usually” was translated juro and botong. The translated term botong, which generally means “normal” or “normally,” was used differently by the translators. In the forward translation, the panel agreed to translate “usually” as juro, but the translation of “moderate” was inconsistent (botong in the IUSS and junggan in the UPS). The panel dis-
Indevus 요절박의 심각성 지수 (IUSS)

요절박의 정도는 귀하의 소변 마려움의 절박한 정도를 표현합니다. 귀하가 소변 보기가 적절한 소변 마려움을 때로는 매우 강하게 느낄 때도 있으나 약하게 느낄 때도 있습니다. 다음과 같은 설명에 따라 0, 1, 2, 3으로 표기하여 느낌을 평가하여 주십시오.

0: 없음 - 절박하지 않음
1: 약함 - 절박함을 의식할 수 있으나, 귀하의 활동과 업무를 지속할 수 있을 정도로 쉽게 참을 수 있음.
2: 중간 - 절박함으로 인해 일상적인 활동과 업무에 방해가 될 정도의 불편함을 느낄.
3: 심각함 - 절박함으로 인해 모든 활동과 업무가 감작스럽게 중단될 정도로 불편함을 느낄.

요절박 심각성 지수 설문지 (USS)

귀하는 매번 소변을 보기전에 어떻게 느끼시나요? 소변을 보기 전 귀하의 상태를 가장 잘 표현하는 항목에 표기하십시오. 아래에 설명에 따라 소변을 볼 때마다 베뇨일기에 기록해주세요.

0. 요절박 없음: 화장실을 사용해야겠다고 마음먹기 전까지 활동을 지속할 수 있음.
1. 약한 정도의 요절박: 소변 마려움을 느낄 수 있으나, 쉽게 참을 수 있음. 화장실 가기전에 활동과 업무를 마무리할 수 있음.
2. 중간 정도의 요절박 - 요절박으로 인해 소변을 보고자 하는 욕구를 강하게 느낄: 업무와 활동을 중단하고 화장실을 갈 필요가 있음.
3. 심각한 정도의 요절박: 요절박으로 인해 소변을 보고자 하는 욕구를 강하게 느낄. 소변을 참는게 어려움. 소변을 지리지 않기 위해 업무와 활동을 중단하고 급하게 화장실을 갈 필요가 있음.
4. 소변을 참을 수 없음: 화장실에 도착하기 전에 소변을 지리 옷을 적신다.

요절박 지수의 강도에 대한 환자의 인지 (PPIUS)

0. 요절박 없음, 방광을 비워야 한다는 필요성을 느끼지 않지만 다른 이유로 그렇게 한다.
1. 약한 정도의 요절박, 소변을 지리는 것에 대한 걱정 없이 필요한 만큼 오랫동안 소변을 참을 수 있다.
2. 중간 정도의 요절박, 소변을 지리는 것에 대한 걱정 없이 잠깐 동안 소변을 참을 수 있다.
3. 심각한 정도의 요절박, 소변을 참을 수 없어 소변을 지리지 않기 위해 화장실로 달려가야 한다.
4. 절박성 요실금, 화장실에 도착하기 전에 소변을 지린다.

요 절박 인지 지수 (UPS)

환자분에게 소변을 보고 싶을 때 일상적으로 느끼는 경험이 설명해 주십시오. 선택항목은 다음과 같습니다.

1. 주로 소변을 참을 수 없다.
2. 즉시 화장실에 갈수록 도착할 때까지 주로 소변을 참을 수 있다.
3. 주로 화장실 가기 전에 내가 하던 일을 끝낼 수 있다.

Fig. 1. Korean version of Indevus Urgency Severity Scale (IUSS), Urgency Severity Scale (USS), Patient Perception of Intensity of Urgency Scale (PPIUS), and Urgency Perception Scale (UPS) questionnaires.
cussed this inconsistency, and given the tendency of lists to proceed in the order of “mild,” “moderate,” and “severe,” they decided that it was natural to unify this expression as junggan.

A limitation of this study is that the authors did not conduct a reliability analysis; thus, a further evaluation of the correlation and agreement between scores on the original English versions and the translated Korean versions of the questionnaires is required. Therefore, further psychometric validation of the translated Korean versions of these questionnaires should be conducted in the future.

In conclusion, this study provides a successful and appropriate linguistic validation of Korean versions of the IUSS, UPS, USS, and PPIUS questionnaires. These Korean versions of the questionnaires could contribute to evaluating the severity of symptoms and PROs of Korean patients who suffer from OAB.

ACKNOWLEDGMENTS

This article was supported by the members of the Questionnaire Investigation Committee of the Korean Continence Society. Soon Ho Kang performed a previous linguistic validation study and provided support for this article.

AUTHOR CONTRIBUTION

- Conceptualization: SEK, SJ/O, SYC
- Data curation: HSL, HNL, SYL, MSC, MGP, JYC, SEK, SYC
- Formal Analysis: HSL, HNL, SYL, MSC, MGP, JYC, SEK, SYC
- Investigation: HSL, HNL, SYL, MSC, MGP, JYC, SEK, SYC
- Methodology: SEK, SYC
- Validation: SEK, SYC
- Project Administration: SEK, SYC
- Writing – Original Draft: SEK, SYC
- Writing – Review & Editing: SEK, HSL, HNL, SYL, MSC, MGP, JYC, SYC

REFERENCES

1. Chuang FC, Hsiao SM, Kuo HC. The Overactive Bladder Symptom Score, International Prostate Symptom Score-Storage Subscore, and Urgency Severity Score in patients with overactive bladder and hypersensitive bladder: which scoring system is best? Int Neurourol J 2018;22:299-106.

2. Möller LA, Lose G, Jørgensen T. The prevalence and bothersomeness of lower urinary tract symptoms in women 40-60 years of age. Acta Obstet Gynecol Scand 2000;79:298-305.

3. Stewart WF, Van Rooyen JB, Candiff GW, Abrams P, Herzog AR, Corey R, et al. Prevalence and burden of overactive bladder in the United States. World J Urol 2003;20:327-36.

4. Lee YS, Lee KS, Jung JH, Han DH, Oh SJ, Seo JT, et al. Prevalence of overactive bladder, urinary incontinence, and lower urinary tract symptoms: results of Korean EPIC study. World J Urol 2011;29:185-90.

5. Lee KS, Choo MS, Seo JT, Oh SJ, Kim HG, Ng K, et al. Impact of overactive bladder on quality of life and resource use: results from Korean Burden of Incontinence Study (KOBIS). Health Qual Life Outcomes 2015;13:89.

6. Kim TH, Choo MS, Kim YJ, Koh H, Lee KS. Drug persistence and compliance affect patient-reported outcomes in overactive bladder syndrome. Qual Life Res 2016;25:2011-9.

7. Abrams P, Cardozo L, Khoury S, Wein AJ, editors. Incontinence: proceedings of the 5th International Consultation on Incontinence. Paris: International Consultation on Incontinence; 2013.

8. Nixon A, Colman S, Sabounjian L, Sandage B, Schwiderski UE, Staskin DR, et al. A validated patient reported measure of urinary urgency severity in overactive bladder for use in clinical trials. J Urol 2005;174:604-7.

9. Cardozo L, Coyne KS, Versi E. Validation of the urgency perception scale. BJU Int 2005;95:591-6.

10. Chung SD, Liao CH, Chen YC, Kuo HC. Urgency severity scale could predict urodynamic detrusor overactivity in patients with overactive bladder syndrome. Neurourol Urodyn 2011;30:1300-4.

11. Cartwright R, Srikrishna S, Cardozo L, Robinson D. Validity and reliability of the patient’s perception of intensity of urgency scale in overactive bladder. BJU Int 2011;107:1612-7.

12. Cho SY, Lee HE, Jeong SJ, Oh SJ. Translation and linguistic validation of the Korean version of the “benefit, satisfaction, and willingness to continue” questionnaire for patients with overactive bladder. Int Neurourol J 2016;20:255-9.

13. Kang SH, Oh SJ, Jeong SJ, Cho SY. Linguistic Validation of the intermittent self-catheterization questionnaire for patients with neurogenic bladder who perform intermittent catheterization for voiding dysfunction. Int Neurourol J 2019;23:75-85.

14. Lee HN, Chae JY, Lee HS, Choo MS, Park MG, Lee SY, et al. Translation and linguistic validation of the Korean version of the treatment satisfaction visual analogue scale and the overactive bladder satisfaction with treatment questionnaire. Int Neurourol J 2017;21:309-19.

15. Acquadro C, Kopp Z, Coyne KS, Corcos J, Tubaro A, Choo MS, et al. Translating overactive bladder questionnaires in 14 languages. Urology 2006;67:536-40.