



Korean Translation and Linguistic Validation of Urgency and Overactive Bladder Questionnaires

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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

- **Research Ethics:** 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).
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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, 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 questionnaires 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 yojeolbakseongui simgak jisū*. 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 maryeoumui jeolbakameul pyohyeonhamnida*. The phrase “urge to urinate” was translated as *sobyeon yokgu* by translator 1 and *sobyeon maryeoum* by translator 2, and the panel agreed on *sobyeon maryeoum* 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 *gwihauga sobyeoneul bogi jikjeone, ttaeroneun sobyeon maryeoumeul maeu ganghage neukkil ttaedo isseuna, geu oeeneun, sobyeon maryeoumi yakal ttaedo itseumnida*. 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 seolmyeonge ttara 0, 1, 2, 3 euro pyogihayeo neukkimeul pyeongghayeoye juseyo*. “0: NONE-no urgency” in the original text was translated as *0: eopseum- 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: yakam- jeolbakameul uisikal su isseuna, gwihaui hwaldonggwa eommureul jisokal su isseul jeongdoro swipge 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 eommue banghaega doel jeongdoui bulpyeonhameul neukkim*. “3: SEVERE: extreme urgency discomfort that abruptly stops all activity or tasks” in the original text was translated as *3: simgakam- jeolbakameuro inhae modeun hwaldonggwa eommuga gapjakseureopge 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 *yojeolbakseong inji jisū*. “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 *hwanjabunege sobyeon maryeoul ttae ilsangjeogeuro neukkineun gyeongheomeul seolmyeonghadorok hamnida*. The panel agreed to translate “typical” as *ilsangjeogeuro 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. naneun juro sobyeoneul chameul su eopda*. “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. naneun juro hwajangsireul jeuksi gandamyen sobyeoneul 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. naneun juro hwajangsil gagi jeone naega hadeon ireul kkeunnael su itda*.

Urgency Severity Scale

The name of the USS questionnaire was translated as *yojeolbakseong simgak jisū (hogeun jeongdo) seolmunji*. “How do you feel before each void?” in the original text was translated as *gwihaeneun maebeon sobyeoneul bogijeone eotteoke neukkisimnikka?* The word “void” was translated as *sobyeoneul bogi* (“relieve oneself”) by translator 1 and *sobyeoneul biul* (“empty”) by translator 2, and the panel agreed on *sobyeoneul bogi* as it is a more precise and familiar expression than *sobyeoneul biul*. “Please record the score that best describes how you feel before voiding” in the original text was translated as *sobyeoneul bogi jeon gwihaui sangtaereul gajang jal pyohyeonhaneun hangmoge (jeomsureul) pyogihaseyo*. The word “best describe” was translated as *gajang jal banyeonghaneun* (“best reflect”) by translator 1 and *gajang jal myosahan* (“best portray”) by translator 2, and the panel agreed on *gajang jal pyohyeonhaneun* (“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	
	인디버스(Indevus) 긴급 심각성 정도	긴급성 강도 치수	Indevus 요절박함의 심각성 정도	Indevus 요절박성의 심각 지수
Indevus Urgency Severity Scale				
Degree of urgency is meant to describe your urge to urinate.	긴급성의 수준은 귀하가 겪는 소변 욕구의 정도를 의미합니다.	긴급성의 정도는 소변 마려움의 긴급함을 뜻한다.		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.	변을 보기 전에 귀하가 때로는 매우 강한 소변 욕구를 느낄 때도 있으나, 때로는 소변 욕구가 더 약할 때도 있습니다.	때로는 소변 마려움의 긴급함을 심하게 느낄 때도 있지만, 또 다른 때는 덜 심하게 느낄 때도 있다.	여기서 toilet void 가 대변을 의미하는 것 같음. “귀하가 소변을 보기 직전에”	귀하가 소변을 보기 직전에, 때로는 소변 마려움을 매우 강하게 느낄 때도 있으나, 그 외에는, 소변 마려움이 약할 때도 있습니다.
Rate this feeling by circling 0, 1, 2, or 3, defined as:	0, 1, 2, 3의 설명에 따라 이와 같은 느낌(욕구)을 평가하십시오.	0, 1, 2, 3으로 느낌을 평가하여 주세요.		다음과 같은 설명에 따라 0, 1, 2, 3으로 표기하여 느낌을 평가하여 주세요.
0: NONE-no urgency.	0: 없음: 긴급하지 않음.	0: 긴급함 없음.		0: 없음- 절박하지 않음.
1: MILD-awareness of urgency, but is easily tolerated and you can continue with your usual activity or tasks.	1: 약함: 긴급성을 의식할 수 있으나, 귀하의 활동과 업무를 지속할 수 있을 정도로 쉽게 통제가 가능.	1: 가벼운- 긴급함 인지, 하지만 견딜 수 있으며 계속해서 하던 활동과 업무를 진행할 수 있다.		1: 약함- 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: 보통: 귀하의 활동과 업무를 잠시 방해하거나 활동의 시간을 단축시킬 정도의 충분한 긴급성을 느낌.	2: 중간- 긴급함으로 인해 계속해서 하던 활동과 업무에 방해가 될 정도의 불편함을 느낀다.	번역에 Discomfort 를 포함하면 ‘충분히 긴급한 불편함’으로 번역할 수 있으나, 명사구가 너무 길어서 헷갈릴 수 있을 거 같음(discomfort 생략).	2: 보통- 절박함으로 인해 일상적인 활동과 업무에 방해가 될 정도의 불편함을 느낌.
3: SEVERE: extreme urgency discomfort that abruptly stops all activity or tasks.	3: 심각함: 갑작스럽게 느껴지는 극한 긴급성 때문에 모든 활동과 업무를 지속할 수 없음.	3: 심각한- 심각하게 불편함으로 모든 활동과 업무를 다 중단한다.	번역에 Discomfort 를 포함하면 ‘충분히 긴급한 불편함’으로 번역할 수 있으나, 명사구가 너무 길어서 헷갈릴 수 있을 거 같음(discomfort 생략).	3: 심각함- 절박함으로 인해 모든 활동과 업무가 갑작스럽게 중단될 정도로 불편함을 느낌.
Urgency Perception Scale	긴급성 인지 정도	긴급성 인식 치수	요절박성 인지 지수 (혹은 정도)	
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.	환자분들의 소변 마려움 때의 대표적인 경험을 설명하기 바랍니다.	환자분에게 소변 마려움 때 일상적으로 느끼는 경험을 설명하도록 합니다.	
The response options are	환자의 반응은 다음과 같다.	답변 가능 항목:	선택항목은 다음과 같음.	
1. I am usually not able to hold urine.	1. 나는 주로 소변을 참지 못하는 편이다.	1. 나는 보통 소변을 못 참는다.	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 보통 화장실을 바로 간다는 전제하에 소변을 참을 수 있다.	2. 나는 주로 화장실을 즉시 간다면 소변을 참을 수 있다.	
3. I am usually able to finish what I am doing before going to the toilet.	3. 나는 주로 화장실을 가기 전에 내가 하고 있는 일을 마무리할 수 있는 편이다.	3. 나는 보통 화장실 가기 전에 내가 하던 것을 다 끝낸다.	3. 나는 주로 화장실 가기 전에 내가 하던 일을 끝낼 수 있다.	

(Continued to the next page)

Table 1. Continued

Urgency Severity Scale	긴급성 정도	긴급성 강도 치수 설문지	USS는 '긴급 심각성 정도'로 번역될 수 있으나, 자연스럽게 읽기 때문에 의역함	요절박성 심각 지수 (혹은 정도) 설문지
How do you feel before each void?	귀하는 변을 보기 전에 느낌이 어떻습니까?	매번 소변을 비울 때 마다 어떻습니까?		귀하는 매번 소변을 보기 전에 어떻게 느끼십니까?
Please record the score that best describes how you feel before voiding.	귀하가 변을 보기 전에 받는 느낌을 가장 잘 반영하는 점수를 선택하십시오.	소변 비우기 전 상태를 가장 잘 묘사한 항목을 선택하여 주시기 바랍니다.		소변을 보기 전 귀하의 상태를 가장 잘 표현하는 항목에 (점수를) 표기하십시오.
Record at each voiding in the diary according to the following descriptions.	귀하가 변을 볼 때마다 아래 설명에 맞게 기록해 주시기 바랍니다.	소변을 비우실 때 마다 하기 설명 항목 중에서 선택하시어 기록해 주시기 바랍니다.		아래에 설명에 따라 배뇨 일기에 소변을 비울 때마다 기록해주세요.
0. No feeling of urgency: I can continue activities until I choose to use the bathroom.	0. 긴급성 없음: 나는 화장실을 사용하는 것을 선택하기 전까지 내가 하고 있는 활동을 지속할 수 있다.	0. 긴급함 없음: 나는 화장실을 가려고 선택하기 전까지 하던 활동을 계속해서 할 수 있다.	'나는 화장실을 사용하는 것을 결정하기 전까지'가 정확한 표현이나 일상적인 표현으로 어색함.	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. 긴급성 낮음: 나는 소변 욕구를 의식할 수 있으나, 그것을 쉽게 통제할 수 있다. 나는 화장실을 사용하기 전까지 내가 하고 있는 활동이나 일을 끝낼 수 있다.	1. 가벼운: 소변 마려움을 인지하나 견딜 수 있다. 나는 화장실 가기 전에 하던 활동을 다 끝내고 갈 수 있다.		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. 긴급성 보통: 긴급성에 관한 느낌이 소변 욕구를 유발한다. 소변 욕구를 느낄 때 나는 내가 하고 있는 일을 멈추고 화장실로 가야한다.	2. 중간: 소변 마려움의 긴급함으로 인해 하던 활동이나 업무를 중단하고 화장실을 가야 한다.	Sensation of urgency의 의미가 명확하지 않음.	2. 중간 정도의 요절박성: 나는 요절박성으로 인해 소변을 보고자 하는 욕구를 강하게 느낌: 업무와 활동을 중단하고 화장실을 갈 필요가 있음.
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. 긴급성 높음: 긴급성에 관한 느낌이 소변 욕구를 유발한다. 나는 소변을 참는 데 어려움을 겪는다. 나는 소변 실수를 하기 전에 내가 하고 있는 일을 멈추고 화장실로 급하게 가야 한다.	3. 심각한: 소변 마려움의 긴급함으로 인해 하던 활동이나 업무를 중단하고 소변이 나오는 것을 방지하기 위해 신속하게 화장실로 가야 한다.		3. 심각한 정도의 요절박성: 나는 요절박성으로 인해 소변을 보고자 하는 욕구를 강하게 느낌. 소변을 참는 게 어려움. 소변을 지리지 않기 위해 업무와 활동을 중단하고 급하게 화장실을 갈 필요가 있음.
4. Unable to hold urine: The urine leaks from my bladder and I have a wetting accident before arriving at the bathroom.	4. 소변 통제 불가능: 나는 화장실에 도착하기 전에 방광에서 소변이 유출되고 소변 실수를 한다.	4. 더 이상 참을 수 없는: 화장실에 도착하기 전에 이미 방광에서 소변이 새어 나왔다.		4. 소변을 참을 수 없음: 나는 화장실에 도착하기 전에 (방광에서 소변이 유출되고) 소변을 지려 옷을 적신다.
Patient Perception of Intensity of Urgency Scale (PPIUS)	긴급 정도 강도의 환자 인지	긴급성 치수의 강도에 대한 환자 인식	Urgency scale의 intensity인지 Intensity of urgency의 scale인지 애매함	요절박성 지수의 강도에 대한 환자의 인지(PPIUS)
0. No urgency, I felt no need to empty my bladder, but did so for other reasons.	0. 긴급하지 않음, 나는 방광을 비우고 싶은 욕구를 느끼지 않지만, 다른 이유에서 소변을 본다.	0. 긴급성 없음, 방광을 비우고 싶음을 인지하지 않지만, 다른 이유로 소변을 비운다.		0. 절박하지 않음, 방광을 비워야 한다는 필요성을 느끼지 않지만 다른 이유로 그렇게 한다.

(Continued to the next page)

Table 1. Continued

1. Mild urgency, I could postpone voiding as long as necessary, without fear of wetting myself.	1. 약한 긴급, 나는 소변 실수를 두려워하지 않고 필요한 만큼 소변보는 것을 미룰 수 있다.	1. 가벼운 긴급성, 소변이 나오는 것을 걱정하지 않고도 필요한 만큼 소변보는 것을 참을 수 있다.	1. 약한 정도의 요절박성, 소변을 지르는 것에 대한 걱정 없이 필요한 만큼 오랫동안 소변을 참을 수 있다.
2. Moderate urgency, I could postpone voiding for a short while, without fear of wetting myself.	2. 보통 긴급, 나는 소변 실수를 두려워하지 않고 잠깐 소변보는 것을 미룰 수 있다.	2. 중간의 긴급성, 소변이 나오는 것을 걱정하지 않고도 잠깐은 소변보는 것을 참을 수 있다.	2. 중간 정도의 요절박성, 소변을 지르는 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.	3. 심각한 긴급, 나는 소변 보는 것을 미룰 수 없고, 소변 실수를 하지 않으려면 화장실로 급하게 가야 한다.	3. 심각한 긴급함, 소변보는 것을 참을 수 없고, 소변이 나오지 않으려면 화장실로 달려가야 한다.	3. 심각한 정도의 요절박성, 소변을 참을 수 없어 소변을 지리지 않기 위해 화장실로 달려가야 한다.
4. Urge incontinence, I leaked before arriving to the toilet.	4. 긴급한 소변 유출, 나는 화장실에 도착하기 전에 소변이 유출되고 실수를 한다.	4. 긴급 요실금, 화장실에 도착하기 전에 이미 소변이 새어 나왔다.	4. 절박성 요실금, 화장실에 도착하기 전에 소변을 지린다.

ing descriptions” in the original text was translated as *araae seolmyeonge ttara baenyoilgie sobyeoneul biul ttaemada girokaejuseyo*. The panel agreed on translating “the diary” as *baenyoilgie*, as it is a widely accepted translation of “voiding diary.” “0. No feeling of urgency: I can continue activities until I choose to use the bathroom” in the original text was translated as *0. yojeolbakseong eopseum: naneun hwajangsireul sayonghaneun geoseul gyeoljeonghagi jeonkkaji hadeon hwaldonggeul jisokal su isseum*. The panel determined that the translation of “choose to use the bathroom” as *hwajangsireul sayonghaneun geoseul gyeoljeonghagi* was appropriate, but was an awkward expression that required feedback. “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” in the original text was translated as *1. yakan jeongdoui yojeolbakseong: naneun sobyeon maryeoumeul neukkil su isseuna, swipge chameul su isseum. hwajangsil gagijone hwaldonggwa eommureul mamurihal su isseum*. The phrase “easily tolerated” was translated as *swipge tongjehal su itda* (“easily controlled”) by translator 1 and *gyeondil su itda* (“tolerated”) by translator 2, and the panel agreed on *swipge chameul su isseum* (“easily bearable”). “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” in the original text was translated as *2: junggan jeongdoui yojeolbakseong naneun yojeolbakseongeuro inhae sobyeoneul bogoja haneun yokgureul ganghage neukkim: eommuwa hwaldonggeul jungdanhago hwajangsireul gal piryoga isseum*. The panel determined that the

translation of “sensation of urgency” as *yojeolbakseong* (“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 activity or task to avoid a wetting accident and hurry to the bathroom” in the original text was translated as *3. simgakan jeongdoui yojeolbakseong: naneun yojeolbakseongeuro inhae sobyeoneul bogoja haneun yokgureul ganghage neukkim. sobyeoneul chamneunge eoryeoum. sobyeoneul jiriji anki wihae eommuwa hwaldonggeul jungdanhago geupage hwajangsireul gal piryoga isseum*. The phrase “a wetting accident” was translated as *sobyeon silsu* (“voiding accident”) by translator 1 and *sobyeoni naoneun geot* (“voiding”) by translator 2, and the panel agreed on *sobyeoneul 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. sobyeoneul chameul su eopseum: naneun hwajangsire dochakagi jeone (banggwangeseo sobyeoni yuchuldoego) sobyeoneul jiryeo oseul jeoksinda*. The panel agreed on the non-literal translation of “have a wetting accident” as *sobyeoneul jiryeo oseul jeoksinda* (“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 *yojeolbakseong jisuii gangdoe daehan hwanjauui inji*. “0. No urgency, I felt no need to empty my bladder, but did so for other reasons”

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 (IUSS)	The Indevus (Urinary) Urgency Severity Scale	Indevus 요절박성의 심각 지수	Indevus 요절박함의 심각성 지수
Degree of urgency is meant to describe your urge to urinate.	The (Urinary) Urgency Scale expresses/ shows your strong urge to urinate.	요절박성의 정도는 귀하의 소변 마려움의 절박함을 표현합니다.	요절박함의 정도는 귀하의 소변 마려움의 절박한 정도를 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.	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.	귀하가 소변을 보기 직전에, 때로는 소변 마려움을 매우 강하게 느낄 때도 있으나, 그 외에는, 소변 마려움이 약할 때도 있습니다.	귀하가 소변보기 직전에 소변 마려움을 때로는 매우 강하게 느낄 때도 있으나, (소변 마려움을) 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.	다음과 같은 설명에 따라 0, 1, 2, 3으로 표기하여 느낌을 평가하여 주세요.	
0: NONE-no urgency.	0: None – No urgency.	0: 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 – aware of urgency, but (can be) easily tolerated that your activity and tasks can be continued.	1: 약함- 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.	2: 보통 - 절박함으로 인해 일상적인 활동과 업무에 방해가 될 정도의 불편함을 느낌.	2: 중간 - 절박함으로 인해 일상적인 활동과 업무에 방해가 될 정도의 불편함을 느낌. 'shorten': add or not.
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.	3: 심각함- 절박함으로 인해 모든 활동과 업무가 갑작스럽게 중단될 정도로 불편함을 느낌.	
Urgency Perception Scale (UPS)	(Urinary) Urgency Awareness Scale	요절박성 인지 지수(혹은 정도)	요절박함 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.	환자분에게 소변 마려울 때 일상적으로 느끼는 경험을 설명하도록 합니다.	환자분에게 소변을 보고싶을 때 일상적으로 느끼는 경험을 설명하도록 합니다.
The response options are	The choices are as follows	선택항목은 다음과 같음.	
1. I am usually not able to hold urine.	1. I mostly cannot hold back urine.	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.	2. 나는 주로 화장실을 즉시 간다면 소변을 참을 수 있다.	2. (나는) 화장실을 즉시 간다면 도착할 때까지 주로 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.	3. (나는) 주로 화장실 가기 전에 내가 하던 일을 끝낼 수 있다.	
Urgency Severity Scale (USS)	(Urinary) Urgency Severity Scale Questionnaire	요절박성 심각 지수 (혹은 정도) 설문지	요절박함 심각성 지수 설문지
How do you feel before each void?	How do you feel before you urinate every time?	귀하는 매번 소변을 보기 전에 어떻게 느끼십니까?	
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.	소변을 보기 전 귀하의 상태를 가장 잘 표현하는 항목에 (점수를) 표기하세요.	소변을 보기 전 귀하의 상태를 가장 잘 표현하는 항목에 표기하세요.
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.	아래에 설명에 따라 배뇨일기에 소변을 비울 때마다 기록해주세요.	

(Continued to the next page)

Table 2. Continued

0. No feeling of urgency: I can continue activities until I choose to use the bathroom.	0. No urinary urgency: I can continue the activity I was doing before I decided to go to the toilet.	0. 요절박성 없음: 나는 화장실을 사용하는 것을 결정하기 전까지 하던 활동을 지속할 수 있음.	0. 요절박함 없음: 나는 화장실을 사용해야겠다고 마음먹기 전까지 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. Weak/ Mild level of urinary urgency: Although I can feel the urge to urinate, I can easily tolerate it. I can finish the activity and tasks I was doing, before I go to the toilet.	1. 약한 정도의 요절박성: 나는 소변 마려움을 느낄 수 있으나, 쉽게 참을 수 있음. 화장실 가기 전에 활동과 업무를 마무리할 수 있음.	1. 약한 정도의 요절박함: 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. Moderate level of urinary urgency: I strongly feel the desire to urinate due to urinary urgency. It is necessary to stop/ pause the task and activity I was doing and go to the toilet.	2. 중간 정도의 요절박성 - 나는 요절박성으로 인해 소변을 보고자 하는 욕구를 강하게 느낌: 업무와 활동을 중단하고 화장실을 갈 필요가 있음.	2. 중간 정도의 요절박함 - 나는 요절박함으로 인해 소변을 보고자 하는 욕구를 강하게 느낌: 업무와 활동을 중단하고 화장실을 갈 필요가 있음.
3. Severe feeling of urgency: The sensation of urgency causes a compelling desire to void. I have difficulty holding urine. I have to stop activity or task to avoid a wetting accident and hurry to the bathroom.	3. Severe level of urinary urgency: I strongly feel the desire to urinate due to urinary urgency. It is hard to hold urine. It is necessary to stop/ pause the task and activity I was doing and rush to the toilet in order to not leak urine.	3. 심각한 정도의 요절박성: 나는 요절박성으로 인해 소변을 보고자 하는 욕구를 강하게 느낌. 소변을 참는 게 어려움. 소변을 지리지 않기 위해 업무와 활동을 중단하고 급하게 화장실을 갈 필요가 있음.	3. 심각한 정도의 요절박함: 나는 요절박함으로 인해 소변을 보고자 하는 욕구를 강하게 느낌. 소변을 참는 게 어려움. 소변을 지리지 않기 위해 업무와 활동을 중단하고 급하게 화장실을 갈 필요가 있음.
4. Unable to hold urine: The urine leaks from my bladder and I have a wetting accident before arriving at the bathroom.	4. Can't hold urine: I leak urine on my clothes (even) before I reach the toilet.	4. 소변을 참을 수 없음: 나는 화장실에 도착하기 전에 (방광에서 소변이 유출되고) 소변을 지러 옷을 적신다.	4. 소변을 참을 수 없음: 나는 화장실에 도착하기 전에 소변을 지러 옷을 적신다.
Patient Perception of Intensity of Urgency Scale (PPIUS)	Patient's awareness of intensity of (Urinary) 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.	0. 요절박성 없음, 방광을 비워야 한다는 필요성을 느끼지 않지만 다른 이유로 그렇게 한다.	0. 요절박성 없음, 방광을 비워야 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.	1. 약한 정도의 요절박성, 소변을 지리는 것에 대한 걱정 없이 필요한 만큼 오랫동안 소변을 참을 수 있다.	1. 약한 정도의 요절박성, 소변을 지리는 것에 대한 걱정 없이 필요한 만큼 오랫동안 소변을 참을 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.	2. 중간 정도의 요절박성, 소변을 지리는 것에 대한 걱정 없이 잠깐 동안 소변을 참을 수 있다.	2. 중간 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.	3. Severe level of urinary urgency, I have to rush to the toilet in order to not leak urine because I can't hold back	3. 심각한 정도의 요절박성, 소변을 참을 수 없어 소변을 지리지 않기 위해 화장실로 달려가야 한다.	3. 심각한 정도의 요절박성, 소변을 참을 수 없어 소변을 지리지 않기 위해 화장실로 달려가야 한다.
4. Urge incontinence, I leaked before arriving to the toilet.	4. Urinary urgency incontinence, I leak urine (even) before I reach toilet.	4. 절박성 요실금, 화장실에 도착하기 전에 소변을 지린다.	4. 절박성 요실금, 화장실에 도착하기 전에 소변을 지린다.

in the original text was translated as 0. *jeolbakaji aneum, banggwangeul biwoya handaneun piryoseongeul neukkiji anchiman dareun iyuro geureoke 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, sobyeoneul jirineun geose daehan geokjeong eopsi piryohan mankeum oraetdongan sobyeoneul chameul 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 jirineun geose daehan geokjeong eopsi jamkkan dongan sobyeoneul 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 wihae hwajangsillo dallyeogaya handa. “4. Urge incontinence, I leaked before arriving to the toilet” in the original text was translated as *4. jeolbakseong yosilgeum, hwajangsire 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 sayonghaeyagetdago maemummeokgi 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 *gwiha* (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 *gingeup* and *gingeupseong* 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 보기 직전에 소변 마려움을 때로는 매우 강하게 느낄 때도 있으나 약하게 느낄 때도 있습니다. 다음과 같은 설명에 따라 0, 1, 2, 3 으로 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 느낌.
- 3: 심각함 - 절박함으로 인해 모든 활동과 업무가 갑작스럽게 중단될 정도로 불편함을 느낌.

요절박 심각성 지수 설문지 (USS)

귀하는 매번 소변을 보기전에 어떻게 느끼십니까? 소변을 보기 전 귀하의 상태를 가장 잘 표현하는 항목에 표기하세요. 아래에 설명에 따라 소변을 볼 때마다 배뇨일기에 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 느낌: 업무와 활동을 중단하고 화장실을 갈 필요가 있음.
- 3. 심각한 정도의 요절박: 요절박으로 인해 소변을 보고자 하는 욕구를 강하게 느낌. 소변을 참는게 어려움. 소변을 지리지 않기 위해 업무와 활동을 중단하고 급하게 화장실을 갈 필요가 있음.
- 4. 소변을 참을 수 없음: 화장실에 도착하기 전에 소변을 지려 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.

요절박 인지 지수 (UPS)

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

- 1. 주로 소변을 참을 수 없다.
- 2. 즉시 화장실에 간다면 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.

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AUTHOR CONTRIBUTION

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