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Translation and Linguistic Validation of the Korean Version of the Treatment Satisfaction Visual Analogue Scale and the Overactive Bladder Satisfaction With Treatment Questionnaire

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Purpose: This study reports the development of the Korean Version of the Treatment Satisfaction Visual Analogue Scale (TS-VAS) and the Overactive Bladder Satisfaction with Treatment Questionnaire (OAB-SAT-q) based on the original versions, with subsequent linguistic validation by Korean patients with overactive bladder receiving active treatment from a physician.
Methods: Translation and linguistic validation were performed in 2016. The validation process included permission for translation, forward translation, reconciliation, backward translation, cognitive debriefing, and proofreading. The original versions of the TS-VAS and OAB-SAT-q were independently translated into Korean by 2 bilingual translators and were then reconciled into a single version. The third bilingual translator performed a backward translation of the reconciled version into English. A trained interviewer and 5 Korean-speaking patients with OAB carried out the cognitive debriefing.
Results: During the forward translation process, the terms used in the 2 questionnaires were adjusted to use more appropriate expressions in the Korean language than were used in the original versions. During the backward translation process, no changes were made in terms of semantic equivalence. In the cognitive debriefing session, 5 patients were asked to fill in the answers within 8 minutes; most of them reported that the translated questions were clear and easy to understand.
Conclusions: The present study presents successful linguistic validation of the Korean version of the TS-VAS and OAB-SAT-q, which could be useful tools for evaluating treatment satisfaction in patients.

Keywords: Linguistics; Patient Satisfaction; Visual Analogue Scale; Overactive Bladder, Overactive

- **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).
- **Conflict of Interest:** MSC and SYC, members of the Editorial Board of INJ, are the fourth and corresponding authors of this article. However, they played no role whatsoever in the editorial evaluation of this article or the decision to publish it. No potential conflict of interest relevant to this article was reported.

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INTRODUCTION

Patient-reported outcomes (PROs) are important for assessing patients' satisfaction with the treatment they receive in clinics. PROs can help guide treatment with regard to the risks and benefits of an intervention in the course of treatment [1-3]. Therefore, it is important to develop a questionnaire that accurately represents PROs in order to facilitate decision-making about treatment. The Treatment Satisfaction Visual Analogue Scale (TS-VAS) and Overactive Bladder Satisfaction with Treatment Questionnaire (OAB-SAT-q) have been used for evaluating patients' satisfaction with their treatment. The visual analogue scale (VAS) is a widely accepted method for measuring the effects of disease and medical interventions with special reference to quality of life (QoL) [4-6]. The OAB-SAT-q was developed based on a review of existing instruments for measuring treatment satisfaction, input from physicians experienced in treating overactive bladder (OAB), and patient feedback.

To the best of our knowledge, no Korean versions of the TS-VAS and OAB-SAT-q were previously available. Therefore, we developed a Korean version based on the original versions, with subsequent linguistic validation in Korean patients with OAB who were receiving active treatment from a physician.

MATERIALS AND METHODS

Original TS-VAS and OAB-SAT-q

The VAS was described for the first time in 1921 by Hayes and Patterson [7]. The VAS is a simple and frequently used method to evaluate variations in pain intensity [8]. The VAS for satisfaction is a simple and valid instrument to quantify a patient's satisfaction after a treatment [9], and consists of a 100-mm-long horizontal line, with 2 descriptors representing extremes of satisfaction at the beginning and at the end of the line. Patients rate their satisfaction by making a vertical mark on the 100-mm line. The measurement in millimeters is converted to the same number of points, ranging from 0 to 100 points.

The OAB-SAT-q was developed as a way to evaluate the satisfaction of patients with OAB as part of the modular International Consultation on Incontinence Questionnaire [10]. The OAB-SAT-q is a disease-specific 11-item questionnaire designed to assess patients' satisfaction with their treatment in the clinical setting. The OAB-SAT-q items include effectiveness, convenience, side effects, preference for treatment, willingness to undergo the treatment again, and an assessment of global satisfaction. The response options vary depending on the content of the question and are presented on 4-, 5-, and 6-point Likert scales with anchors, such as "extremely dissatisfied" to "extremely satisfied" and "extremely bothersome" to "not at all bothersome" [10].

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). The process was designed to obtain a translated Korean version of the questionnaire that would be conceptually equivalent to the original. The translation was appropriate in terms of cultural adaptation and was supervised by the project leader of the panel. The panel consisted of 7 Korean experts who performed a typical linguistic validation process.

Permission

Before the study commenced, the panel contacted the copyright holder and acquired permission to translate and use the TS-VAS and OAB-SAT-q after conducting the linguistic validation process.

Forward Translation

The original versions of the TS-VAS and OAB-SAT-q were translated into the Korean language (versions 1.0a and 1.0b) by 2 bilingual translators who did not have medical licenses. The translations were performed independently, and the translators were not permitted to contact each other during the translation process.

Reconciliation by the Panel

The independently translated versions in the Korean language (versions 1.0a and 1.0b) were reconciled into a single version after several panel meetings (version 1.1). The panel discussed comprehension difficulties due to subtle differences in the nuances of the selected words and phrases.

Backward Translation

The reconciled version of the TS-VAS and OAB-SAT-q in the Korean language (version 1.1) was sent to a third bilingual translator. This translator translated it backward into English, and the results were compared to the original English versions of the TS-VAS and OAB-SAT-q. After the third translator completed the backward translation, the panel discussed the discrepancies be-

tween the original and the backward-translated versions of the TS-VAS and OAB-SAT-q. Some changes were made in the reconciled TS-VAS and OAB-SAT-q in the Korean language based on the outcomes of several discussions (version 1.2).

Cognitive Debriefing

Version 1.2 of the questionnaires was evaluated by 5 Korean-speaking patients with OAB, who were asked whether there were any clarity issues, culturally inappropriate expressions, or difficulties in understanding the questions. The panel chose a trained interviewer who conducted a standardized in-depth interview of a small number of patients. The debriefing interviews involved paraphrasing each question of the questionnaire and indicating whether the participants had any trouble understanding the question or felt that any terms were confusing. Subsequently, the panel discussed the feedback from the 5 patients with OAB and agreed upon a new version based on the issues raised (version 1.3).

Proofreading

Version 1.3 was proofread to check spelling, grammar, and formatting. This resulted in the final version of the TS-VAS and OAB-SAT-q in the Korean language (version 1.4).

RESULTS

Forward Translation and Reconciliation

As shown in Table 1, the word "satisfied" in the title of the original version of the TS-VAS was translated as "*manjok*" ('satisfaction') by the 2 translators. As shown in Table 2, the 11 questions of the OAB-SAT-q were translated into Korean. Question 1, "How satisfied or dissatisfied are you with the way the treatment relieves your symptoms?" in the original version was directly translated as "*jeungsangeul wanhwasikineundeisseoseo manjok hogeun bulmanjok hasimnikka*?" The phrase "How satisfied or dissatisfied are you with the treatment?" was repeated in questions 1-3. Question 2, "How satisfied or dissatisfied are you with the amount of time it takes the treatment to start working?" in the original version was translated as "*chiryohyogwaga natananeundekkaji geollineun sigane manjok hogeun bulmanjok hasimnikka*?" Question 3, "How satisfied or dissatisfied are you with the effectiveness of the treatment, compared to what you expected?" in the original version, was translated as "*gidaehaetdeon dae bihayeo chiryoui hyogwae eoneujeongdo manjok hogeun bulmanjok hasimnikka*?" The phrase "compared to what you expected" was translated as "*gidaehaetdeon geonmankeumebihae*" ('compared to your expectation') in translation 1, and as "*yesanghaetdeon geotboda*" ('than you expected') in translation 2. The panel reconciled it as "*gidaehaetdeon dae bihayeo*" ('expected compared to'). Question 4, "How convenient or inconvenient is it to take the treatment as instructed?" in the original version, was directly translated as "*eoneujeongdo pyeolli hogeun bulpyeonhasyeotseumnikka*?" The word "convenient" was translated as "*yongi*" ('easy') and "*pyeonhada*" ('comfortable') in translations 1 and 2, respectively. The panel reconciled it as "*pyeolli*" ('convenient'). The word "extremely" was finally translated as "*jigeuki*" rather than "*wanjeon*" ('complete') and "aju" ('very'). Question 5, "How often did you experience side effects from your treatment?" in the original version, was directly translated as "*eolmana jaju chiryo bujagyongeul gyeongheom hasyeotseumnikka*?" This question was translated in nearly the same way by both translators. Question 6, "How bother-

Table 1. Reconciliation after 2 forward translations of Treatment Satisfaction Visual Analogue Scale

US English item	First forward Korean translation	Second forward Korean translation	Reconciled forward Korean translation
EXAMPLE OF TREATMENT SATISFACTION VISUAL ANALOGUE SCALE	치료 만족 시각상사척도 예시	예) 치료 만족도 시각 상사 척도	
Please place a vertical mark on the line to indicate your answer to the question below	다음과 같은 질문을 답하기 위해 해당 선에 수직선을 표기하십시오.	선 위에 세로선을 표시하여 다음 질문에 답변하시기 바랍니다.	다음 질문을 답하기 위해 선 위에 세로선을 표기해주시기 바랍니다.
Are you satisfied with your treatment?	귀하의 치료에 만족하십니까?	귀하께서는 치료에 만족하십니까?	귀하는 치료에 만족하십니까?
No, not at all	전혀 그렇지 않음	아니요, 절대 만족하지 않습니다.	아니요, 전혀 그렇지 않음
Yes, completely	완전히 만족함	네, 전적으로 만족합니다.	네, 전적으로 만족함

Table 2. Reconciliation after 2 forward translations of Overactive Bladder Satisfaction with Treatment Questionnaire (OAB-SAT-q)

US English item	First forward Korean translation (Translation 1)	Second forward Korean translation (Translation 2)	Reconciled forward Korean translation
OAB-SAT-q	과민성방광 치료 만족도 설문조사 확인(인증)		과민성방광 치료만족도 설문지
Instructions	설명	설명서	지시사항
Please think about how satisfied you have been with the treatment you have received in the study.	귀하가 실험에 참여하며 받은 치료에 대해 얼마나 만족했는지를 생각해보십시오.	귀하께서는 이 연구에서 받으신 치료에 어느 정도 만족하시는지 생각해 보시기 바랍니다.	귀하는 이번 연구에서 받은 치료에 어느 정도 만족하는지 생각해 보시기 바랍니다.
The questions below will ask you to rate how satisfied or dissatisfied you are with your treatment for overactive bladder.	아래의 질문들은 귀하의 과민성방광 치료에 대한 만족(또는 불만족) 정도를 평가하기 위한 항목들입니다.	하기 질문들에 귀하의 과민성방광 치료 만족도를 평가하여 주시기 바랍니다.	아래의 질문들은 귀하가 과민성방광 치료에 어느 정도 만족 또는 불만족 하는지를 평가할 것입니다.
Thinking about the past four weeks, check one box for each item that best reflects your treatment experience.	지난 4주 동안 귀하의 치료 경험을 가장 정확하게 반영하는 칸을 항목별로 표시하여 주십시오.	귀하께서는 지난 4주를 생각하시어 귀하의 치료 경험을 가장 잘 묘사하는 항목을 선택하여 주시기 바랍니다.	지난 4주 동안, 귀하의 치료 경험을 가장 정확하게 반영하는 칸을 항목별로 표시하여 주십시오.
1. How satisfied or dissatisfied are you with the way the treatment relieves your symptoms?	1. 귀하가 받는 치료의 증상 완화 효과에 얼마나 만족 혹은 불만족하십니까?	1. 귀하께서는 치료가 증상 완화하는데 있어서 어느 정도 만족 혹은 불만족 하신가요?	1. 치료가 귀하의 증상을 완화시키는데 있어서 어느 정도 만족 혹은 불만족하십니까?
2. How satisfied or dissatisfied are you with the amount of time it takes the treatment to start working?	2. 치료가 작용하기까지 걸리는 시간에 얼마나 만족 혹은 불만족하십니까?	2. 귀하께서는 치료하시는데 기여되는 시간에 있어서 어느 정도 만족 혹은 불만족하신가요?	2. 치료 효과가 나타나는 데까지 걸리는 시간에 어느 정도 만족 혹은 불만족하십니까?
3. How satisfied or dissatisfied are you with the effectiveness of the treatment, compared to what you expected?	3. 귀하가 기대했던 것만큼에 비해 치료의 효과에 얼마나 만족 혹은 불만족하십니까?	3. 귀하께서는 치료 효과에 대해서 예상했던 것 보다 어느 정도 만족 혹은 불만족하신가요?	3. 귀하가 기대했던 바에 비하여 치료 효과에 어느 정도 만족 혹은 불만족하십니까?
Extremely dissatisfied	완전 불만족	아주 매우 불만족스럽다	지극히 불만족
Very dissatisfied	매우 만족	아주 불만족스럽다	매우 불만족
Dissatisfied	불만족	불만족스럽다	불만족
Satisfied	만족	만족스럽다	만족
Very satisfied	매우 만족	아주 만족스럽다	매우 만족
Extremely satisfied	완전 만족	아주 매우 만족스럽다	지극히 만족
4. How convenient or inconvenient is it to take the treatment as instructed?	4. 설명지에 명시된 대로 치료를 받는 것이 얼마나 용이 혹은 불편하십니까?	4. 설명서 대로 치료를 받으시는 것이 어느 정도 편하시거나 불편하신가요?	4. 귀하가 치료를 받는데 어느 정도 편리 혹은 불편하셨습니까?
Extremely inconvenient	완전 불편함	아주 매우 불편하다	지극히 불편함
Very inconvenient	매우 불편함	아주 불편하다	매우 불편함
Inconvenient	불편함	불편하다	불편함
Convenient	용이함	편하다	편리함
Very convenient	매우 용이함	아주 편하다	매우 편리함
Extremely convenient	완전 용이함	아주 매우 편하다	지극히 편리함
5. How often did you experience side effects from your treatment?	5. 귀하는 얼마나 자주 치료에 의한 부작용을 경험하셨습니까?	5. 귀하께서는 얼마나 자주 치료 부작용을 경험하시나요?	5. 귀하는 얼마나 자주 치료 부작용을 경험하셨습니까?
Never	부작용 경험 없음	한번도 없다	전혀 없음
A little of the time	매우 가끔	거의 없다	거의 없음

(Continued to the next page)

Table 2. Continued

US English item	First forward Korean translation (Translation 1)	Second forward Korean translation (Translation 2)	Reconciled forward Korean translation
Some of the time	가끔	가끔 있다	가끔 있음
A good bit of time	자주	그런 적이 여러 번 있다	상당히 있음
Most of time	매우 자주 경험함	거의 있다	매우 자주 있음
All of the time	항상	항상 있다	항상 있음
6. How bothersome are the side effects of the treatment you take to treat your overactive bladder?	6. 귀하의 과민성방광 치료에 의한 부작용이 얼마나 불편하십니까?	6. 과민성방광을 치료하는데 있어서 부작용이 귀하께 어느 정도의 불편함을 주나요?	6. 귀하는 과민성방광 치료를 받는데 있어서 (치료) 부작용이 얼마나 불편하십니까?
Extremely bothersome	완전히 불편함	아주 매우 불편하다	지극히 불편함
Very bothersome	매우 불편함	많이 불편하다	매우 불편함
Somewhat bothersome	적당히 불편함	어느 정도 불편하다	다소 불편함
A little bothersome	약간 불편함	조금 불편하다	약간 불편함
Not at all bothersome	전혀 불편하지 않음	전혀 불편하지 않다	전혀 불편하지 않음
7. To what degree have side effects affected your overall satisfaction with the treatment?	7. 부작용이 귀하의 전반적인 치료 만족도에 얼마나 영향을 미쳤습니까?	7. 부작용이 귀하의 전체적인 치료법 만족도에 어느 정도의 영향을 주었나요?	7. 귀하의 전반적인 치료 만족도에 부작용이 얼마나 영향을 미쳤습니까?
A great deal	매우 많이	상당히 많이 주었습니다	상당히 많이
Quite a bit	상당히/적당히	상당히 주었습니다	꽤 많이
Somewhat	약간 적게	어느 정도 주었습니다	다소
Minimally	매우 적게	최소 주었습니다	극히 일부분
Not at all	전혀 영향 없음	전혀 주지 않았습니다	전혀 영향 없음
8. Do you prefer the treatment that you received since entering this study to the treatment you received before the study?	8. 귀하가 실험 참가 후에 받으신 치료를 실험 참가 전에 받으신 치료보다 선호하십니까?	8. 귀하께서는 이번 연구에서 받으신 치료법을 이전에 받으셨던 치료법보다 더 선호하십니까?	8. 귀하는 이전에 받았던 치료방법보다 이번 연구에서 받은 치료방법을 더 선호 하십니까?
Never been treated before for overactive bladder	과민성방광 치료를 받아본 적이 없음	이번 연구 이전에 과민성방광 치료를 받은 이력이 전혀 없습니다	과민성방광 치료를 받아본 적이 없음
Definitely prefer my previous treatment	실험 참가 전에 받은 치료를 확실하게 선호함	분명히 이번 연구 이전에 받은 치료법을 선호합니다	이전에 받은 치료를 분명히 선호함
Slight preference for my previous treatment	실험 참가 전에 받은 치료를 약간 선호함	이번 연구 이전에 받은 치료법을 조금 더 선호합니다	이전에 받은 치료를 약간 선호함
Slight preference for the treatment I am receiving now	실험 참가 후에 받은 치료를 약간 선호함	이번 연구의 치료법을 조금 더 선호합니다	이번 연구의 치료방법을 약간 선호함
Definitely prefer the treatment I am receiving now	실험 참가 후에 받은 치료를 확실하게 선호함	분명히 이번 연구의 치료법을 선호합니다	이번 연구의 치료방법을 분명히 선호함
9. Would you be willing to use the same treatment for your bladder problem that you have received since entering this study?	9. 귀하의 방광 문제를 치료하기 위해 실험 참가 후에 받으신 거와 동일한 치료를 받기를 원하십니까?	9. 귀하께서는 방광 문제 치료 방법으로 이번 연구에서 받으신 치료법과 동일한 치료법을 사용하시겠습니까?	9. 귀하는 방광 문제를 치료하기 위해 이번 연구에서 받은 치료방법과 동일한 치료를 받을 의향이 있으십니까?
Definitely would not use the same treatment again	확실히 같은 치료를 받고 싶지 않음	절대로 동일한 치료법을 사용하지 않을 것이다	동일한 치료방법을 분명히 받지 않을 것임
Might not use the same treatment again	같은 치료를 다시 선택하지 않을 수도 있음	아마도 동일한 치료법을 사용하지 않을 것이다	동일한 치료방법을 아마도 받지 않을 것임

(Continued to the next page)

Table 2. Continued

US English item	First forward Korean translation (Translation 1)	Second forward Korean translation (Translation 2)	Reconciled forward Korean translation
Might use the same treatment again	같은 치료를 다시 선택할 수도 있음	아마도 동일한 치료법을 사용할 것이다	동일한 치료방법을 받을 수도 있음
Definitely would use the same treatment again	확실히 같은 치료를 다시 받고 싶음	분명히 동일한 치료법을 사용할 것이다	동일한 치료방법을 분명히 받을 것임
10. Would you recommend this treatment to others with overactive bladder?	10. 귀하가 받고 계신 치료를 다른 과민성방광 환자들에게 추천하시겠습니까?	10. 귀하께서는 다른 분에게 과민성방광 치료방법으로 이 치료법을 추천하시겠습니까?	10. 귀하는 다른 분에게 과민성방광 치료방법으로 이 치료방법을 추천하시겠습니까?
Definitely would not recommend	추천하지 않을 것이 확실함	절대로 추천하지 않을 것이다	절대로 추천하지 않을 것임
Might not recommend	추천하지 않을 수도 있음	아마도 추천하지 않을 것이다	아마도 추천하지 않을 것임
Might recommend	추천할 수도 있음	아마도 추천할 것이다	추천할 수도 있음
Definitely would recommend	추천할 것이 확실함	분명히 추천할 것이다	분명히 추천할 것임
11. Overall, how satisfied or dissatisfied are you with this treatment?	11. 전반적으로 귀하는 귀하의 치료에 얼마나 만족 혹은 불만족하십니까?	11. 전체적으로 이 치료법에 대해 어느 정도 만족 혹은 불만족하십니까?	11. 전반적으로 귀하의 치료에 얼마나 만족 혹은 불만족하십니까?
Extremely dissatisfied	완전 불만족	아주 매우 불만족스럽다	지극히 불만족
Very dissatisfied	매우 불만족	아주 불만족스럽다	매우 불만족
Dissatisfied	불만족	불만족스럽다	불만족
Satisfied	만족	만족스럽다	만족
Very satisfied	매우 만족	아주 만족스럽다	매우 만족
Extremely satisfied	완전 만족	아주 매우 만족스럽다	지극히 만족

some are the side effects of the treatment you take to treat your overactive bladder?" in the original version, was translated as "*gwihaneun gwaminseong banggwang chiryoreul banneundeiseoseo chiryobujagyongi eolmana bulpyeonhasimnikka*?" The responses included phrases such as "extremely bothersome," "very bothersome," "somewhat bothersome," "a little bothersome," and "not at all bothersome," which were translated as follows after the panel discussed the translation possibilities: "*jigeuki bulpyeonham*," "*maeu bulpyeonham*," "*daso bulpyeonham*," "*yakgan bulpyeonham*," and "*jeonhyeo bulpyeonhaji aneum*," respectively. Question 7, "To what degree have side effects affected your overall satisfaction with treatment?" in the original version, was directly translated as "*jeonbanjeogin chiryo manjokdoe bujagyongi eolmana yeonghyangeul michyeotseumnikka*?" The translation of this question did not meaningfully differ between the 2 translators. Question 8, "Do you prefer the treatment that you received since entering this study to the treatment you received before the study?" in the original version, was directly translated as "*ibeon yengueseobadeun chiryobangbeobeul deo seonhohasimnikka*?" Question 9, "Would you be willing to use the same treatment for your bladder problem that you have received since entering this study?" in the original version, was directly translated as "*dongilhan chiryoreul badeul uihyangi isseusimnikka*?" ('Would you be willing to use the same treatment?') The panel discussed and reconciled the 2 different translated sentences into the final question, and included "*uihyang*" ('willing'). Question 10, "Would you recommend this treatment to others with overactive bladder?" in the original version, was directly translated as "*ichiryobangbeobeul chucheon hasigetseumnikka*?" ('Would you recommend this treatment to others?'). Question 11, "Overall, how satisfied or dissatisfied are you with this treatment?" in the original version, was directly translated as "*jeonbanjeogeuro gwihaui chiryoeeol manamanjok hogeun bulmanjokasimnikka*?" The panel attempted to choose sentences that preserved the exact meaning of the English phrases, and reconciled the 2 translated versions to provide more natural expressions in the Korean language, within the framework of conceptual equivalence. The panel chose the final forward-translated versions on this basis.

Backward Translation

As shown in Table 3, the panel agreed that there were no signif-

Table 3. Backward translation

Original	Forward translation	Back translation
TS-VAS	치료 만족도 시각적 척도	
Please place a vertical mark on the line to indicate your answer to the question below	다음 질문을 답하기 위해 선 위에 세로선을 표기 해주시기 바랍니다.	In order to answer the following question, please indicate a vertical line on the line
Are you satisfied with your treatment?	귀하는 치료에 만족하십니까?	Are you satisfied with your treatment?
No, not at all	아니요, 전혀 그렇지 않음	No, I do not feel satisfied at all.
Yes, completely	네, 전적으로 만족함	Yes, I am fully satisfied.
OAB-SAT-q	과민성방광 치료 만족도 설문지	The satisfaction of overactive bladder treatment
Instructions:	지시사항:	Explanation/Description:
Please think about how satisfied you have been with the treatment you have received in the study.	귀하는 이번 연구에서 받은 치료에 어느 정도 만족하는지 생각해 보시기 바랍니다.	Please think how satisfied you are with treatment you have received during this investigation
The questions below will ask you to rate how satisfied or dissatisfied you are with your treatment for overactive bladder.	아래의 질문들은 귀하가 과민성방광 치료에 어느 정도 만족 또는 불만족 하는지를 평가할 것입니다.	The questions below will evaluate either how satisfied or dissatisfied you were with the overactive bladder treatment
Thinking about the past four weeks, check one box for each item that best reflects your treatment experience.	지난 4주 동안, 귀하의 치료 경험을 가장 정확하게 반영하는 칸을 항목별로 표시하여 주십시오.	Please indicate the box that best describes your treatment experience during the past 4 weeks in each category
1. How satisfied or dissatisfied are you with the way the treatment relieves your symptoms?	1. 치료가 귀하의 증상을 완화시키는데 있어서 어느 정도 만족 혹은 불만족하십니까?	1. How satisfied or dissatisfied are you with treatment relieving your symptoms?
2. How satisfied or dissatisfied are you with the amount of time it takes the treatment to start working?	2. 치료 효과가 나타나는 데까지 걸리는 시간에 어느 정도 만족 혹은 불만족하십니까?	2. How satisfied or dissatisfied are you with the time that it takes to show the effect of the treatment
3. How satisfied or dissatisfied are you with the effectiveness of the treatment, compared to what you expected?	3. 귀하가 기대했던 바에 비하여 치료 효과에 어느 정도 만족 혹은 불만족하십니까?	3. Compared to your expectations, how satisfied or dissatisfied are you with the effect of the treatment?
Extremely dissatisfied	지극히 불만족	Extremely dissatisfied
Very dissatisfied	매우 불만족	Very dissatisfied
Dissatisfied	불만족	Dissatisfied
Satisfied	만족	Satisfied
Very satisfied	매우 만족	Very satisfied
Extremely satisfied	지극히 만족	Fully Satisfied
4. How convenient or inconvenient is it to take the treatment as instructed?	4. 귀하가 치료를 받는데 어느 정도 편리 혹은 불편하셨습니까?	4. How comfortable or uncomfortable are you with receiving treatments the way you have been explained
Extremely inconvenient	지극히 불편함	Extremely uncomfortable
Very inconvenient	매우 불편함	Very uncomfortable
Inconvenient	불편함	Uncomfortable
Convenient	편리함	Convenient
Very convenient	매우 편리함	Very convenient
Extremely convenient	지극히 편리함	Exceptionally convenient
5. How often did you experience side effects from your treatment?	5. 귀하는 얼마나 자주 치료 부작용을 경험하셨습니까?	5. How often have you experienced the side effects (of the treatment)?
Never	전혀 없음	Never
A little of the time	거의 없음	Seldom/rarely

(Continued to the next page)

Table 3. Continued

Original	Forward translation	Back translation
Some of the time	가끔 있음	Occasionally
A good bit of time	상당히 있음	Quite often
Most of time	매우 자주 있음	Very often
All of the time	항상 있음	All of the time
6. How bothersome are the side effects of the treatment you take to treat your overactive bladder?	6. 귀하는 과민성방광 치료를 받는데 있어서 (치료) 부작용이 얼마나 불편하십니까?	6. How uncomfortable are you with the side effects from/when receiving the overactive bladder treatment
7. To what degree have side effects affected your overall satisfaction with treatment?	7. 귀하의 전반적인 치료 만족도에 부작용이 얼마나 영향을 미쳤습니까?	7. To what extent did the side effects influence the overall satisfaction of the treatment
A great deal	상당히 많이	To a very large extent
Quite a bit	꽤 많이	To a large extent
Somewhat	다소	To some extent
Minimally	극히 일부분	To a very small extent
Not at all	전혀 영향 없음	No influence at all
8. Do you prefer the treatment that you received since entering this study to the treatment you received before the study?	8. 귀하는 이전에 받았던 치료방법보다 이번 연구에서 받은 치료방법을 더 선호하십니까?	8. Do you prefer this treatment (method) rather than the previous treatment (method)?
9. Would you be willing to use the same treatment for your bladder problem that you have received since entering this study?	9. 귀하는 방광 문제를 치료하기 위해 이번 연구에서 받은 치료방법과 동일한 치료를 받을 의향이 있으십니까?	9. Do you have any intentions to receive the same type/method of treatment as the previous one to treat the bladder problems?
10. Would you recommend this treatment to others with overactive bladder?	10. 귀하는 다른 분에게 과민성방광 치료방법으로 이 치료방법을 추천하시겠습니까?	10. Would you recommend this overactive bladder treatment (method) to other people?
11. Overall, how satisfied or dissatisfied are you with this treatment?	11. 전반적으로 귀하의 치료에 얼마나 만족 혹은 불만족하십니까?	11. How satisfied or dissatisfied are you with your treatment overall?

TS-VAS, Treatment Satisfaction Visual Analogue Scale; OAB-SAT-q, Overactive Bladder Satisfaction with Treatment Questionnaire.

icant differences between the wording of the sentences in the original and the back-translated versions.

Cognitive Debriefing and Proofreading

The translation was tested by 5 patients with OAB (3 men and 2 women; age range, 30–70 years) who underwent medical therapy. Their levels of education varied from being a high school graduate to a university graduate. All patients completed the questionnaires within 8 minutes. One patient reported being unsure about the marking position on the line of TS-VAS. He suggested that vertical lines on the long horizontal line of TS-VAS could help patients understand the scale and mark their responses. The panel accepted his proposal and added 10 vertical lines indicating 0 to 10 points. Three patients reported that the translated questions were clear and easy to understand; however, 2 patients felt that the questions were a bit difficult to understand owing to the excessively long structure of the questions. The panel discussed these opinions that were articulated during the cognitive debriefing process, and the final versions of the questionnaires are shown in Figs. 1 and 2.

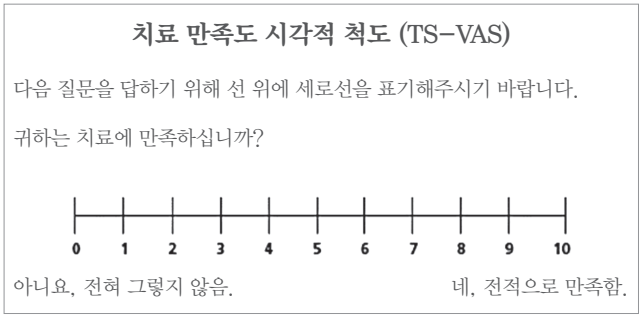

Fig. 1. Korean version of the Treatment Satisfaction Visual Analogue Scale (TS-VAS).

과민성방광 치료만족도 설문지

지시사항: 귀하는 이번 연구에서 받은 치료에 어느 정도 만족하는지 생각해 보시기 바랍니다. 아래의 질문들은 귀하가 과민성 방광 치료에 어느 정도 만족 또는 불만족 하는지를 평가할 것입니다. 지난 4주 동안, 귀하의 치료 경험을 가장 정확하게 반영하는 칸을 항목별로 표시하여 주십시오.

1. 치료가 귀하의 증상을 완화시키는데 있어서 어느 정도 만족 혹은 불만족하십니까?	지극히 불만족	매우 불만족	불만족	만족	매우 만족	지극히 만족
	□	□	□	□	□	□
	1	2	3	4	5	6
2. 치료 효과가 나타나는 데까지 걸리는 시간에 어느 정도 만족 혹은 불만족하십니까?	지극히 불만족	매우 불만족	불만족	만족	매우 만족	지극히 만족
	□	□	□	□	□	□
	1	2	3	4	5	6
3. 귀하가 기대했던 바에 비하여 치료 효과에 어느 정도 만족 혹은 불만족하십니까?	지극히 불만족	매우 불만족	불만족	만족	매우 만족	지극히 만족
	□	□	□	□	□	□
	1	2	3	4	5	6
4. 귀하가 치료를 받는데 어느 정도 편리 혹은 불편하셨습니까?	지극히 불편함	매우 불편함	불편함	편리함	매우 편리함	지극히 편리함
	□	□	□	□	□	□
	1	2	3	4	5	6
5. 귀하는 얼마나 자주 치료 부작용을 경험하셨습니까?	전혀 없음	거의 없음	가끔 있음	상당히 있음	매우 자주 있음	항상 있음
	□	□	□	□	□	□
	0	1	2	3	4	5
	'전혀없음' 이면 8번 문항으로 가세요					
6. 귀하는 과민성방광 치료를 받는데 있어서 (치료) 부작용이 얼마나 불편하십니까?		지극히 불편함	매우 불편함	다소 불편함	약간 불편함	전혀 불편하지 않음
		□	□	□	□	□
		1	2	3	4	5
7. 귀하의 전반적인 치료 만족도에 부작용이 얼마나 영향을 미쳤습니까?		상당히 많이	꽤 많이	다소	극히 일부분	전혀 영향 없음
		□	□	□	□	□
		1	2	3	4	5
8. 귀하는 이전에 받았던 치료방법보다 이번 연구에서 받은 치료방법을 더 선호하십니까?	과민성방광 치료를 받아본 적이 없음	이전에 받은 치료를 분명히 선호함	이전에 받은 치료를 약간 선호함	이번 연구의 치료방법을 약간 선호함	이번 연구의 치료방법을 분명히 선호함	
	□	□	□	□	□	
	0	1	2	3	4	
9. 귀하는 방광 문제를 치료하기 위해 이번 연구에서 받은 치료방법과 동일한 치료를 받을 의향이 있으십니까?		동일한 치료방법을 분명히 받지 않을 것임	동일한 치료방법을 아마도 받지 않을 것임	동일한 치료방법을 받을 수도 있음	동일한 치료방법을 분명히 받을 것임	
		□	□	□	□	
		1	2	3	4	
10. 귀하는 다른 분에게 과민성방광 치료방법으로 이 치료방법을 추천하시겠습니까?		절대로 추천하지 않을 것임	아마도 추천하지 않을 것임	추천할 수도 있음	분명히 추천할 것임	
		□	□	□	□	
		1	2	3	4	
11. 전반적으로 귀하의 치료에 얼마나 만족 혹은 불만족하십니까?	지극히 불만족	매우 불만족	불만족	만족	매우 만족	지극히 만족
	□	□	□	□	□	□
	1	2	3	4	5	6

Fig. 2. Korean Version of the Overactive Bladder Satisfaction with Treatment Questionnaire for patients with overactive bladder.

DISCUSSION

This study presented the first linguistic validation of the TS-VAS and OAB-SAT-q, which are used to evaluate patients' satisfaction with their treatment.

Linguistic validation is the process of investigating the reliability, conceptual equivalence, and content validity of translations of PRO measures. According to the universal translation methodology, the process of validation consists of permission for translation, forward translation, reconciliation, back-translation, cognitive debriefing, and proofreading [11]. Forward translations were performed simultaneously by 2 separate bilingual speakers. One was a 19-year-old Korean woman who had lived in Phuket, Thailand for 17 years. The other was a 24-year-old Korean man who had lived in the state of Maryland in the USA for 4.5 years, before becoming a university student majoring in Business Administration at Korea University. The forward translators in the present study were experienced bilingual speakers who were involved in the forward translation process for other questionnaires. Subsequently, reconciliation was performed to resolve discrepancies between the 2 forward translations. The reconciler altered the forward translations to make them suitable, or offered new forward translations, if necessary. The back-translation of the reconciled version involved another bilingual speaker who was fluent in the Korean and English languages, but was not involved in the previous steps of the forward translation process. Cognitive debriefing interviews were performed to gather data on the patients' interpretation of the translation. This process ensured that the meaning intended by the developer was retained in translation and was also understood by the patients in the same way [11]. The authors performed the validation process according to this universal process of translation validation.

The VAS is a valid and reliable measure for rating pain, and is widely accepted as a way to quantitatively evaluate QoL [12]. In adults, it has been observed to be a responsive and valid tool for measuring satisfaction, feelings, and emotional function [8,13-15]. VAS-based questionnaires could be a useful tool for assessing satisfaction specific to treatment with any medication [8]. The TS-VAS, which is widely used to evaluate patient satisfaction, reflects a patient's subjective perceptions or opinions regarding the treatment experience [8].

OAB is a condition that negatively effects patients' well-being, and is a chronic disease that requires long-term medical therapy. Patient satisfaction is an important issue when determining whether to continue a drug for the treatment of OAB. Therefore, it is important for physicians to evaluate patient satisfaction.

Previous investigators have used King's Health Questionnaire [16], the OAB questionnaire [17], the Overactive Bladder Symptoms Score [18] and Benefit, Satisfaction, and Willingness to Continue questionnaires to evaluate the severity of the symptoms of OAB, their effect on QoL, and patients' satisfaction with their treatment [19]. The OAB-SAT-q is a useful assessment tool for evaluating satisfaction among patients receiving treatment for OAB [10]. The OAB-SAT-q was developed by identifying concepts that are important for treatment satisfaction among patients with OAB. The questionnaire was developed and refined based on a review of existing instruments measuring treatment satisfaction, input from physicians experienced in treating OAB, and patient feedback [10]. Therefore, the findings of the current study will be helpful to domestic investigators, who will use the Korean version of the TS-VAS and OAB-SAT-q to assess treatment satisfaction and response among patients.

A limitation of this study is that it did not include a reliability analysis, which would enhance the strength of the association between the scores obtained from the English- and Korean-language versions. However, the content of the original questionnaires was not modified, and a reliability test can be considered for psychometric validation in the future.

In conclusion, the present study reports the successful linguistic validation of the TS-VAS and OAB-SAT-q. Our results can help provide reliable PROs to physicians in Korea.

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