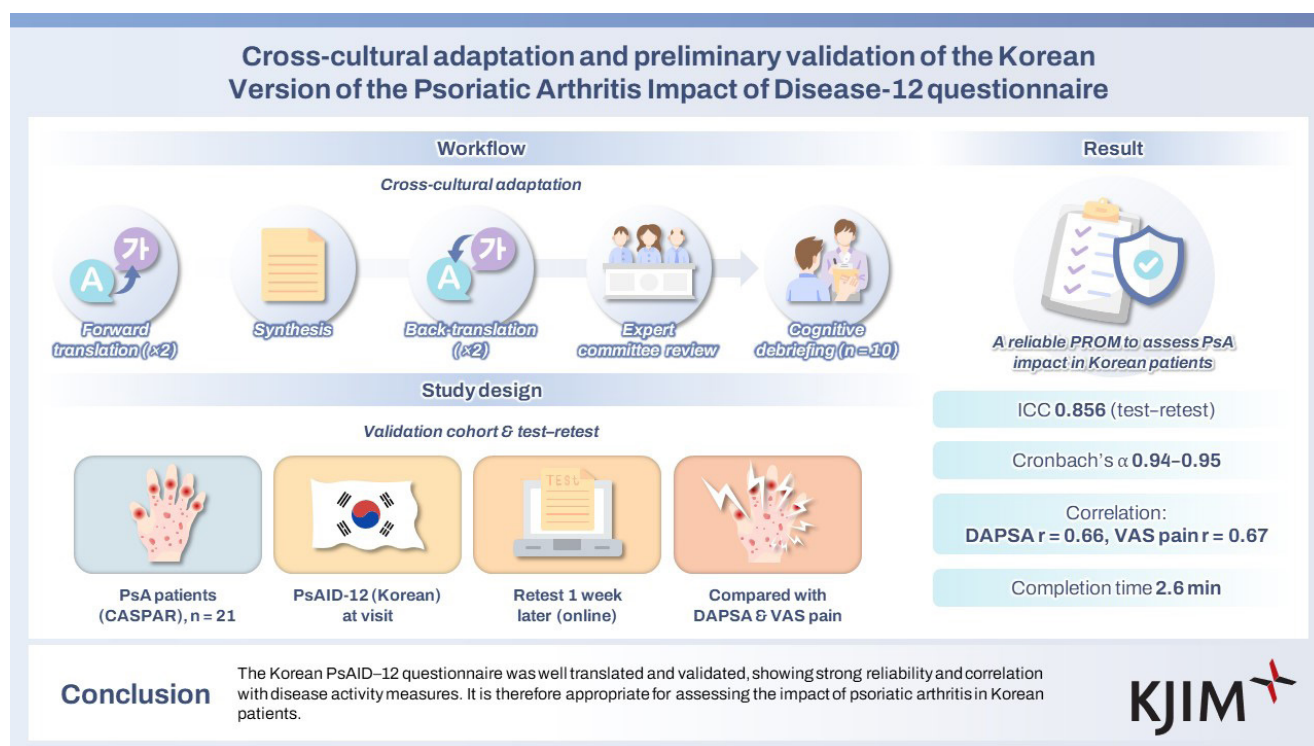




Cross-cultural adaptation and preliminary validation of the Korean version of the Psoriatic Arthritis Impact of Disease-12 questionnaire

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Background/Aims: The Psoriatic Arthritis Impact of Disease (PsAID-12) questionnaire was developed to measure quality of life and disease impact in patients with psoriatic arthritis (PsA). We aimed to translate the English PsAID-12 into Korean and to evaluate its reliability and validity.

Methods: The PsAID-12 questionnaire was translated into Korean following international cross-cultural adaptation guidelines. After expert review and cognitive debriefing with 10 patients, the final Korean version of the PsAID-12 was established. For validation, 21 patients with PsA completed the Korean PsAID-12 questionnaire, and a retest was conducted one week

later to assess reliability. Demographic data and disease activity indices, including the Disease Activity in Psoriatic Arthritis (DAPSA) and Visual Analog Scale (VAS) pain were collected. Correlations between PsAID-12 scores and disease activity indices were analyzed.

Results: Minor discrepancies in the translation process were resolved during the synthesis and review. The mean PsAID-12 scores were 3.9 ± 2.6 and 3.6 ± 2.3 for the first and second assessments, respectively. The mean response time was 2.6 ± 1.0 min. The intraclass correlation coefficient was 0.856 (95% CI 0.682–0.939, $p < 0.050$), indicating good reliability. The first PsAID-12 score was strongly correlated with the second PsAID-12 ($r = 0.79$), DAPSA ($r = 0.66$), and VAS pain ($r = 0.67$).

Conclusions: The Korean PsAID-12 questionnaire was well translated and validated, showing strong reliability and correlation with disease activity measures. It is therefore appropriate for assessing the impact of PsA in Korean patients.

Keywords: Korean Psoriatic Arthritis Impact of Disease; Psoriatic arthritis; Quality of life; Symptom burden

INTRODUCTION

Psoriatic arthritis (PsA) is a chronic inflammatory disease characterized by skin and nail psoriasis, enthesitis, and fingernail involvement [1,2]. The prevalence of PsA is reported to range from 0.05% to 0.25%, with 6–41% of patients with psoriasis developing PsA [3]. Although the prevalence of PsA in Korea is unknown, the overall prevalence of PsA among patients with psoriasis has been reported to be 11.2% [4].

The diverse symptoms of PsA affect both physical and mental health, impair daily activities, and limit social participation, ultimately reducing the quality of life. When evaluating PsA, it is essential to consider the psychological and social effects of the symptoms [5–7]. While physicians often focus on measures of pain and disease activity, incorporating tools that capture patient experience provides valuable insights into the everyday challenges faced by patients [5,8]. Patient-reported outcome measures (PROMs) enable patients to directly assess their feelings and functions in relation to their health [9,10]. This is particularly important for Korean patients with PsA, who may exhibit clinical manifestations and concerns that differ from those observed in other countries, highlighting the need for research that emphasizes PROMs.

The Psoriatic Arthritis Impact of Disease (PsAID-12) questionnaire was developed by the European League Against Rheumatism (EULAR) task force involving patients and clinicians from 13 countries, which aims to provide a tool to assess the impact of PsA from the patient's perspective [8]. The questionnaire was developed in two versions: clinical

practice (PsAID-12) and clinical trial (PsAID-9). The PsAID-12 questionnaire is grouped into three categories: physical impact, impact related to skin, and psychological and social impact, and is useful in clinical practice for the longitudinal monitoring of patients [11].

Information on PsA in Korean patients remains limited, and reliable data are scarce. Given that the PsAID-12 questionnaire has been validated in multiple countries, it may serve as a valuable tool for assessing the multidimensional impact of the disease on Korean patients. Therefore, we aimed to evaluate the reliability of the PsAID-12 questionnaire translated into Korean when applied to Korean patients with PsA.

METHODS

The study was conducted between September 2024 and January 2025. The English version of the PsAID-12 questionnaire was translated into Korean and then validated in 21 patients from a single center. All participants were patients with PsA who met the Classification Criteria for Psoriatic Arthritis (CASPAR) criteria [12]. Their baseline characteristics, medication status, and disease activity, including the Disease Activity in Psoriatic Arthritis (DAPSA), C-reactive protein (CRP), Visual Analog Scale (VAS) for pain were assessed.

Translation of the PsAID-12 questionnaire

The PsAID-12 questionnaire was translated into Korean according to international translation and cross-cultural adaptation guidelines [13]. The translation process was carried

out in five stages as follows: initial translation, synthesis, back-translation, review by an expert committee (comprising professionals involved in the translation and representatives from the Spondylitis Research Society of the Korean Rheumatology Association), and pretesting with patients (Fig. 1). Two native Koreans with different professional backgrounds independently forward translated the PsAID-12 questionnaire from English to Korean. The translations were then synthesized and back-translated. The back-translation from Korean to English was independently performed by two bilingual native English speakers who were not shown the original. An expert committee then reviewed the Korean translations. The Korean translation of the PsAID-12 questionnaire was completed after review by the Spondylitis Research Society of the Korean Rheumatology Association. For cognitive debriefing interviews, 10 patients were

interviewed regarding the validity and comprehensibility of the questionnaire items in the final Korean translation. The time to complete the items, comprehensibility, relevance, response option clarity, comprehensiveness, and additional feedback were evaluated (Supplementary Table 1).

Reliability of the PsAID-12 questionnaire

During a face to face consultation, the Korean PsAID-12 questionnaire was administered with the disease activity assessments. One week later, the PsAID-12 questionnaire was readministered online. The agreement in the PsAID-12 scores over a 1-week interval was evaluated.

Statistical analysis

All variables are expressed as mean $\pm$ standard deviation (SD) and percentage. The agreement between each item

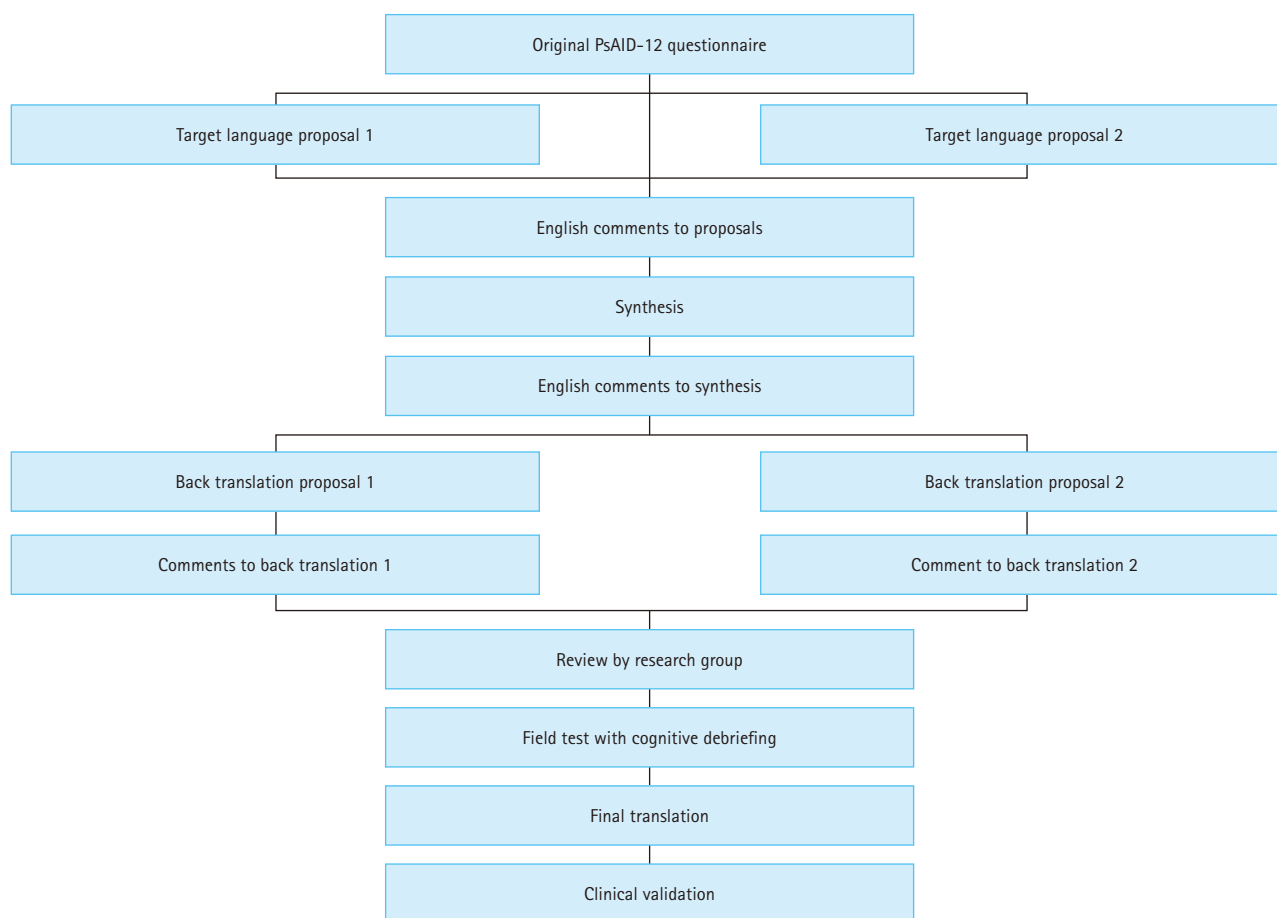


Figure 1. Flow diagram of the translation and cross-cultural adaptation process of the PsAID-12 questionnaire into Korean. The process followed established international guidelines and included five steps: forward translation, synthesis of the translations, backward translation, expert committee review, and field testing with 30 patients using cognitive debriefing interviews. PsAID-12, Psoriatic Arthritis Impact of Disease.

and the total PsAID-12 questionnaire over a 1-week interval was measured using the intraclass correlation coefficient (ICC). Internal consistency was assessed using Cronbach's alpha coefficient for the 12 items of the Korean PsAID-12 questionnaire. Spearman's correlation coefficient between each disease activity index and the total PsAID-12 score was analyzed. Statistical significance was set at $p < 0.05$. The analysis was conducted using R version 4.4.2 (The R Foundation for Statistical Computing).

Ethics statement

After obtaining informed consent from patients, the validation study was conducted. This study was approved by the Institutional Review Board of Inje University Ilsan Paik Hospital Institutional Review Board (IRB No. ISPAIK 2024-10-027-001) and was conducted in accordance with the Declaration of Helsinki and Ethical Guidelines for Medical Research Involving Human Subjects.

RESULTS

Baseline characteristics

A total of 21 patients with PsA completed the PsAID-12 questionnaire. The baseline characteristics are presented in Table 1. Of the participants, 14 (66.7%) used biological agents. The CRP level was mostly normal; however, the mean DAPSA was 15.0 ± 9.6 , showing moderate activity.

Cognitive debriefing results for the Korean PsAID-12 questionnaire

Cognitive debriefing interviews demonstrated that all participants found the instructions and items of the Korean PsAID-12 questionnaire to be clear, unambiguous, and culturally appropriate (Supplementary Table 1). The response options were considered suitable, and the time required to complete the questionnaire was appropriate, with a mean completion time of 2.6 ± 1.0 minutes (range, 1–4 min). Only one participant reported difficulty distinguishing whether fatigue was attributable to PsA or daily life, but no further substantial issues or additional suggestions were identified. Based on these results, the final Korean version of the PsAID-12 was established (Supplementary materials).

The results of the two surveys conducted 1 week apart, including the 12 PsAID-12 items, are shown in Table 2. In the first survey, the "fatigue" item had the highest score

Table 1. Baseline characteristics of patients with PsA

Variables	Value (n = 21)
Age (yr)	50.5 $\pm$ 9.3
Female	11 (52.4)
Disease duration (mo)	79.8 $\pm$ 68.6
BMI (kg/m ²)	24.7 $\pm$ 3.6
CASPAR criteria ^{a)}	
3	4 (19.0)
4	12 (57.1)
5	5 (23.8)
PsA subtype	
Axial PsA	2 (9.5)
Peripheral PsA	19 (90.5)
Skin biopsy	9 (42.9)
Medication	
Methotrexate	18 (85.7)
Tacrolimus	2 (9.5)
Leflunomide	2 (9.5)
Sulfasalazine	3 (14.3)
Hydroxychloroquine	1 (4.8)
Tumor necrosis factor inhibitor	7 (33.3)
Interleukin-17 inhibitor	7 (33.3)
Nonsteroidal anti-inflammatory drug	10 (47.6)
Glucocorticoid	6 (28.6)
C-reactive protein (mg/dL)	0.2 $\pm$ 0.3
Tender joint count	4.7 $\pm$ 4.7
Swollen joint count	0.6 $\pm$ 1.5
Disease activity indices	
VAS pain	5.5 $\pm$ 2.7
DAPSA	15.0 $\pm$ 9.6

Values are presented as mean $\pm$ standard deviation or number (%). PsA, psoriatic arthritis; BMI, body mass index; CASPAR, Classification Criteria for Psoriatic Arthritis; VAS, Visual Analog Scale; DAPSA, Disease Activity in Psoriatic Arthritis.

^{a)}Percentages may not total 100% due to rounding.

(5.5 $\pm$ 2.7), while "embarrassment and/or shame" had the lowest (2.6 $\pm$ 3.1). This same pattern was observed in the second survey. The total PsAID-12 scores were 3.9 ± 2.6 and 3.6 ± 2.3 , respectively, with no significant difference in their mean values based on a paired t-test. The ICC was 0.856 (95% confidence interval [CI] 0.682–0.939, $p < 0.050$), indicating good reliability. The Bland–Altman plot showed that the data were mainly distributed within the limit line, indicating that the reliability was acceptable and the bias was not large (Supplementary Fig. 1).

Table 2. Scores and agreements for each item in the Korean version of the PsAID-12 questionnaire

	PsAID-12 first			PsAID-12 second			Paired t-test		Intraclass correlation	
	mean $\pm$ SD (n = 21)	Range	Floor/ ceiling (%)	mean $\pm$ SD (n = 21)	Range	Floor/ ceiling (%)	Mean difference (95% CI)	p value	ICC (95% CI)	p value
1. Pain	4.1 $\pm$ 3.1	0–10	4.8/4.8	3.7 $\pm$ 2.7	0–9	9.5/9.5	0.429 (-0.454 to 1.311)	0.323	0.784 (0.546 to 0.906)	< 0.050
2. Fatigue	5.5 $\pm$ 2.7	1–10	4.8/4.8	4.6 $\pm$ 2.7	0–9	4.8/14.3	0.857 (-0.184 to 1.898)	0.101	0.624 (0.285 to 0.827)	< 0.050
3. Skin problems	3.8 $\pm$ 3.1	0–10	14.3/4.8	3.3 $\pm$ 2.6	0–8	14.3/4.8	0.476 (-0.407 to 1.359)	0.274	0.763 (0.508 to 0.896)	< 0.050
4. Work and/or leisure activities	3.7 $\pm$ 2.9	0–8	19.0/14.3	3.7 $\pm$ 2.8	0–9	9.5/4.8	-0.048 (-1.050 to 0.955)	0.922	0.710 (0.405 to 0.872)	< 0.050
5. Functional capacity	3.5 $\pm$ 2.8	0–8	19.0/14.3	3.8 $\pm$ 2.8	0–9	9.5/9.5	-0.238 (-1.305 to 0.829)	0.647	0.656 (0.319 to 0.845)	< 0.050
6. Discomfort	4.2 $\pm$ 2.9	0–10	9.5/4.8	4.0 $\pm$ 2.7	0–9	9.5/4.8	0.190 (-0.716 to 1.097)	0.666	0.754 (0.485 to 0.892)	< 0.050
7. Sleep disturbance	4.0 $\pm$ 3.1	0–9	19.0/9.5	4.3 $\pm$ 2.8	0–9	14.3/4.8	-0.286 (-1.274 to 0.703)	0.553	0.740 (0.462 to 0.886)	< 0.050
8. Dealing with the disease	3.3 $\pm$ 2.7	0–8	23.8/14.3	3.3 $\pm$ 2.5	0–8	9.5/9.5	-0.048 (-1.417 to 1.322)	0.943	0.348 (-0.105 to 0.676)	0.063
9. Anxiety, fear, uncertainty	4.2 $\pm$ 2.8	0–9	9.5/4.8	3.2 $\pm$ 2.4	0–7	19.0/14.3	1 (-0.271 to 2.271)	0.117	0.398 (0.000 to 0.697)	< 0.050
10. Embarrassment and/or shame	2.6 $\pm$ 3.1	0–9	33.3/4.8	2.4 $\pm$ 2.7	0–8	33.3/4.8	0.190 (-0.912 to 1.293)	0.722	0.661 (0.326 to 0.847)	< 0.050
11. Social participation	2.9 $\pm$ 2.6	0–8	23.8/9.5	2.8 $\pm$ 2.7	0–8	14.3/9.5	0.095 (-0.609 to 0.799)	0.7806	0.835 (0.635 to 0.929)	< 0.050
12. Depression	3.0 $\pm$ 3.2	0–9	42.9/9.5	2.5 $\pm$ 2.9	0–8	38.1/9.5	0.476 (-0.441 to 1.393)	0.2918	0.780 (0.540 to 0.904)	< 0.050
Total	3.9 $\pm$ 2.6			3.6 $\pm$ 2.3			0.236 (-0.357 to 0.828)	0.4162	0.856 (0.682 to 0.939)	< 0.050

PsAID-12, Psoriatic Arthritis Impact of Disease; SD, standard deviation; CI, confidence interval; ICC, intraclass correlation coefficient.

For individual items, no significant differences were found using the paired t-test; however, the ICC analysis showed that the coping “dealing with the disease” item had poor reliability, with an ICC of 0.348 (95% CI -0.105 to 0.676, $p = 0.063$). Similarly, the “anxiety, fear, and uncertainty” item demonstrated poor reliability, with an ICC of 0.398 (95% CI 0.000–0.697, $p < 0.050$). In contrast, the remaining items exhibited moderate-to-good reliability, with ICC values of 0.6 or higher. The Korean version of the PsAID-12 questionnaire demonstrated excellent internal consistency, with Cronbach’s alpha coefficients of 0.941 at the first and 0.951 at the second assessments (Supplementary Table 2).

Correlation between PsAID-12 questionnaire and disease activity indices

Table 3 shows the Spearman’s correlation coefficient between the PsAID-12 score and disease activity indices, and Figure 2 shows the correlation between the first PsAID-12 questionnaire and disease activity indices in a dot plot. The PsAID-12 questionnaire showed strong correlations with most of the other variables.

DISCUSSION

We translated the English PsAID-12 questionnaire into the Korean version following established translation guidelines.

Table 3. Spearman correlation coefficients and *p* values between PsAID-12 questionnaire and disease activity indices

	PsAID-12 first	PsAID-12 second	DAPSA	VAS pain
PsAID-12 first	1	0.79***	0.66**	0.67***
PsAID-12 second	0.79***	1	0.43	0.59**
DAPSA	0.66**	0.43	1	0.79***
VAS pain	0.67***	0.59**	0.79***	1

PsAID-12, Psoriatic Arthritis Impact of Disease; DAPSA, Disease Activity in Psoriatic Arthritis; VAS, Visual Analog Scale.

p* < 0.01; *p* < 0.001.

PsAID first vs. other variables

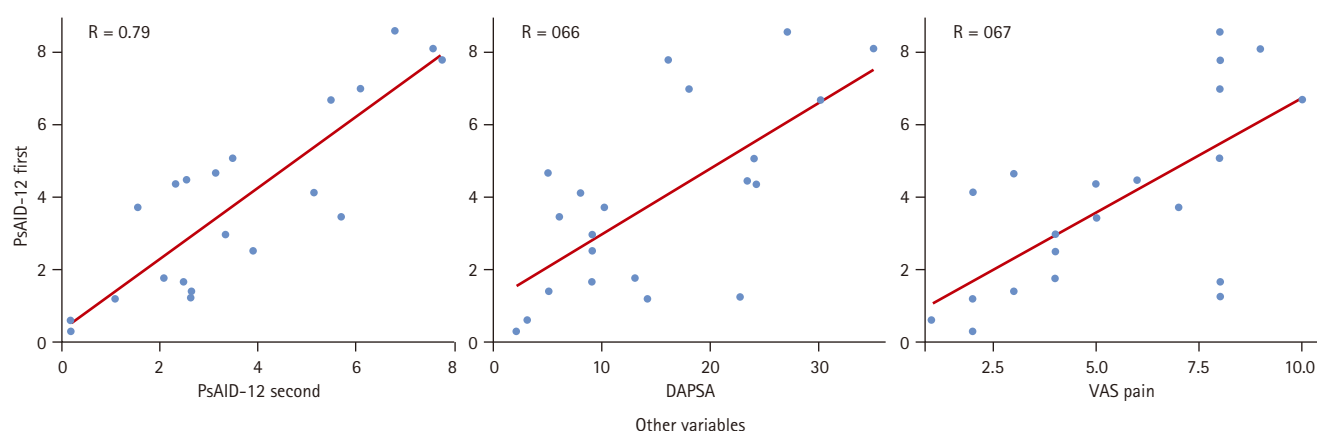


Figure 2. Correlations between the Korean PsAID-12 questionnaire and disease activity indices. Scatter plots demonstrate the relationship between PsAID-12 scores, DAPSA, pain VAS scores. Strong positive correlations were observed, supporting the construct validity of the Korean translation. PsAID-12, Psoriatic Arthritis Impact of Disease; DAPSA, Disease Activity in Psoriatic Arthritis; VAS, Visual Analog Scale.

The translation process was conducted by individuals with prior experience in translating English language questionnaires and was reviewed by both patients and experts [14]. The reliability of the translated Korean PsAID-12 questionnaire was assessed, and the agreement between the two surveys conducted 1 week apart was found to be good. Additionally, it demonstrated a strong correlation with disease activity, suggesting that the Korean version of the PsAID-12 questionnaire may be a valuable tool for evaluating patients with PsA.

Similar to other translation studies of the PsAID-12 questionnaire [15,16], the Korean version demonstrated high ICC values and strong correlations with disease activity indices, supporting its reliability and its ability to reflect the original questionnaire. Additionally, the total PsAID-12 score showed good reliability (ICC = 0.856). Items assessing physical domains, such as fatigue, discomfort, and pain, generally exhibited high ICC values, whereas items assessing coping and anxiety (items 8 and 9) showed lower values. This may

be due to their sensitivity to psychological and situational factors, which can fluctuate over short periods. Furthermore, some participants might have reported reduced anxiety and uncertainty simply through study participation and receiving medical attention, which may have lowered scores at follow-up. Finally, conducting the follow-up survey online may also have contributed to variability in responses [17].

The importance of PROMs in PsA is well recognized. In a multinational short-term study conducted in Europe and the United States, quality of life indicators decreased significantly in patients with PsA as the severity of skin disease and peripheral joint symptoms increased [18]. It showed that in the disease management of PsA, an integrated assessment of the overall symptoms from the patient's perspective and an accurate clinical assessment are necessary. In particular, they confirmed that the EuroQol-VAS and PsAID-12 questionnaire are sensitive tools for assessing the quality of life of patients with PsA. Therefore, the PsAID-12 questionnaire is a useful tool for easily identifying patients' needs that can-

not be identified through disease activity.

The effect of PsA on daily life was investigated in 1,286 patients from eight countries [5]. The study reported findings based on adjusted PsAID-12 question categories, revealing that many patients experienced the effects of PsA on physical function and activity as well as on social, emotional, and work life. Additionally, differences in specific items among countries were observed, indicating that the burden of disease perceived by patients varies owing to social and cultural factors in addition to disease activity [6,7]. This highlights the need for a scale that captures patients' experiences beyond disease activity when assessing patients with PsA. The translation of the PsAID-12 questionnaire into Korean was initiated with this objective, allowing us to better understand the characteristics and unmet needs of Korean patients with PsA and to compare them with those in other countries.

In our study, "fatigue" had the highest score, whereas "embarrassment and/or shame" and "social participation" had the lowest scores. Most patients had been receiving long-term treatment, with many taking biologics and experiencing physical discomfort; however, despite limitations in physical activity or skin discomfort, they may not perceive significant impairments in social activities. Interestingly, in a multinational survey, the percentage of Taiwanese patients who reported that PsA affected their psychological and social aspects was lower than that of patients in European and American countries [5].

Several noteworthy observations can be drawn from this study. The relatively moderate mean DAPSA score despite a low swollen joint count may be attributed to the predominance of pain and fatigue over objective joint swelling in our study population. This pattern may reflect the characteristics of the recruited patients rather than a unique feature of Korean PsA patients, and further studies with larger multicenter cohorts are warranted to clarify this observation. Approximately 30% of patients in our study were receiving glucocorticoids. While systemic glucocorticoids are generally not recommended as a standard treatment for PsA, they are frequently used in clinical settings as a temporary measure to manage symptoms until disease-modifying anti-rheumatic drugs or biologics take effect. This concomitant use of glucocorticoids may also have contributed to the relatively moderate DAPSA scores observed in our cohort.

This study has some limitations, primarily related to its sample size. Although only 21 participants were included,

which may have limited the statistical power for item-level psychometric analyses and contributed to relatively lower ICCs for some items, we emphasize that the sample size was not arbitrarily chosen. Specifically, a pilot cognitive debriefing with the first 10 patients yielded an ICC of 0.78 for the total PsAID-12 score. Using Bonett's formula for estimating sample size with a desired 95% CI half-width of ± 0.10 and 80% statistical power, the required minimum sample size was calculated as 19 participants. Taking into account a 10% anticipated dropout rate, the final target was set at 21, which was successfully achieved. Therefore, we believe that the sample size was not only statistically justified but also sufficient to meet the precision requirements of the study's psychometric objectives. Additionally, external factors such as the online administration of the second assessment and possible changes in treatment following outpatient visits may have influenced disease activity, thereby impacting test-retest reliability.

Despite these limitations, the Korean version of the PsAID-12 was carefully developed through a systematic process involving forward-backward translation, multidisciplinary expert review, and cognitive debriefing, ensuring both linguistic accuracy and cultural relevance. The translated questionnaire demonstrated good reliability and correlated well with established disease activity measures.

Therefore, the Korean PsAID-12 is a suitable tool for assessing the diverse impact of PsA in Korean patients. Its use in future clinical trials and longitudinal studies may provide deeper insights into the disease burden and treatment outcomes within this population.

KEY MESSAGE

1. The PsAID-12 questionnaire was successfully adapted into Korean through a rigorous translation process. The finalized Korean version demonstrated good reliability (ICC = 0.856) and strong correlations with disease activity indices, confirming its validity as a PROM for patients with PsA.
2. In Korea, where comprehensive data on PsA are limited, the PsAID-12 questionnaire is essential for capturing the multifaceted impact of the disease, including the physical, psychological, and social burdens, which may not be fully reflected in standard clinical assessments.

3. This study emphasizes that the PsAID-12 questionnaire can be useful for assessing the multidimensional impact of PsA in Korean patients, supporting its application in future clinical studies and cohort-based research.

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Credit authorship contributions

Bon San Koo: conceptualization, methodology, resources, investigation, data curation, formal analysis, validation, software, writing - original draft, writing - review & editing, visualization, project administration, funding acquisition; Jung Gon Kim: conceptualization, meth-

odology, resources, investigation, writing - review & editing; Bo Young Yoon: conceptualization, methodology, resources, investigation, data curation, writing - review & editing; Ji-Hyoun Kang: methodology, resources, investigation, data curation, validation, writing - review & editing; Sung-Eun Choi: methodology, resources, investigation, data curation, writing - review & editing; Sooin Jung: methodology, resources, investigation, data curation; Seyeong Kim: methodology, resources, investigation, data curation, writing - review & editing; Tae-Jong Kim: conceptualization, methodology, resources, investigation, data curation, validation, writing - original draft, writing - review & editing, supervision, project administration

Conflict of Interest

The authors disclose no conflicts.

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SUPPLEMENTARY MATERIALS

유럽류마티스학회 건선 관절염 질환의 영향 (PsAID12) 설문지: 임상진료용

건선 관절염이 귀하의 건강에 얼마나 영향을 미치는지 표시해 주시기 바랍니다.

지난 한 주 동안의 상태에 대해 알려 주세요.

1. 통증

지난 한 주 동안 건선 관절염으로 인하여 느낀 통증을 가장 잘 나타낸 숫자에 동그라미 치세요.

없음

0	2	3	4	5	6	7	8	9	10
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 매우 심함

설문 조사자
작성란

결과
×3
☐

2. 피로

지난 한 주 동안 건선 관절염으로 인해 경험한 피로의 전반적인 수준을 가장 잘 나타낸 숫자에 동그라미 치세요.

없음

0	2	3	4	5	6	7	8	9	10
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 매우 심함

결과
×2
☐

3. 피부 문제

지난 한 주 동안 건선 관절염으로 인해 느낀 가려움증을 포함한 피부 문제를 가장 잘 나타낸 숫자에 동그라미 치세요.

없음

0	2	3	4	5	6	7	8	9	10
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 매우 심함

결과
×2
☐

4. 일상 업무 및/또는 여가 활동

지난 한 주 동안 건선 관절염으로 인해 업무 및/또는 여가 활동을 수행하는데 겪은 어려움을 가장 잘 나타낸 숫자에 동그라미 치세요.

없음

0	2	3	4	5	6	7	8	9	10
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 매우 어려움

결과
×2
☐

5. 일상 기능

지난 한 주 동안 건선 관절염으로 인해 일상적인 신체 활동에서 겪은 어려움을 가장 잘 나타낸 숫자에 동그라미 치세요.

없음

0	2	3	4	5	6	7	8	9	10
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 매우 어려움

결과
×2
☐

6. 불편함

지난 한 주 동안 건선 관절염으로 인해 일상적인 활동에서 느낀 불편함과 짜증을 가장 잘 나타낸 숫자에 동그라미 치세요.

없음

0	2	3	4	5	6	7	8	9	10
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 매우 어려움

결과
×2
☐

7. 수면 장애

지난 한 주 동안 건선 관절염으로 인한 수면(혹은 저녁에 휴식 취할때) 문제를 가장 잘 나타낸 숫자에 동그라미 치세요.

없음

0	2	3	4	5	6	7	8	9	10
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 매우 어려움

결과
×2
☐

8. 대처 능력

건선 관절염의 전반적인 상태를 고려할 때, 지난 한 주 동안 건선 관절염에 얼마나 잘 대처(관리, 대응, 견디기) 하셨습니까?

매우 잘함

0	2	3	4	5	6	7	8	9	10
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 매우 부족함

설문 조사자
작성란

결과
× 1

9. 불안, 두려움과 미심쩍음

지난 한 주 동안 건선 관절염으로 인해 경험한 불안, 두려움, 미심쩍음 정도(예를 들어 미래 상황, 치료 방법, 외로움에 대한 두려움)를 가장 잘 나타낸 숫자에 동그라미 치세요.

없음

0	2	3	4	5	6	7	8	9	10
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 매우 심함

결과
× 1

10. 당혹감 및/또는 창피함

건선 관절염의 전반적인 상태를 고려할 때, 지난 한 주 동안 외모로 인해 경험한 당혹감 및/또는 창피함 정도를 가장 잘 나타낸 숫자에 동그라미 치세요.

없음

0	2	3	4	5	6	7	8	9	10
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 매우 심함

결과
× 1

11. 사회 활동

지난 한 주 동안 건선 관절염으로 인해 사회 활동(가족 및/또는 가까운 지인과의 관계 포함)에 참여하는 데 겪은 어려움을 가장 잘 나타낸 숫자에 동그라미 치세요.

없음

0	2	3	4	5	6	7	8	9	10
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 매우 어려움

결과
× 1

12. 우울감

지난 한 주 동안 건선 관절염으로 인한 우울감 정도를 가장 잘 나타낸 숫자에 동그라미 치세요.

없음

0	2	3	4	5	6	7	8	9	10
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 매우 심함

결과
× 1

설문에 답변해 주셔서 감사합니다

20점 기준
최종 PsAID 점수

를 합산 후,
20으로 나누세요:

PsAID 채점 및 계산 규칙

PsAID는 12개의 수치 평가 척도(NRS) 질문을 기반으로 계산됩니다.
각 NRS는 0에서 10 사이의 숫자로 평가 됩니다.

계산

PsAID 최종 값 =

- + (PsAID1 (통증) NRS 값 (범위 0-10) × 3)
- + (PsAID2 (피로) NRS 값 (범위 0-10) × 2)
- + (PsAID3 (피부) NRS 값 (범위 0-10) × 2)
- + (PsAID4 (업무 및/혹는 여가활동) NRS 값 (범위 0-10) × 2)
- + (PsAID5 (기능) NRS 값 (범위 0-10) × 2)
- + (PsAID6 (불편함) NRS 값 (범위 0-10) × 2)
- + (PsAID7 (수면) NRS 값 (범위 0-10) × 2)
- + (PsAID8 (대처) NRS 값 (범위 0-10) × 1)
- + (PsAID9 (불안) NRS 값 (범위 0-10) × 1)
- + (PsAID10 (당혹감) NRS 값 (범위 0-10) × 1)
- + (PsAID11 (사회 생활) NRS 값 (범위 0-10) × 1)
- + (PsAID12 (우울함) NRS 값 (범위 0-10) × 1)

총합을 20으로 나눕니다.

따라서 PsAID 최종 값 범위는 0-10이며, 수치가 높을수록 나쁜 상태임을 의미합니다.

결측 데이터 대체

PsAID를 구성하는 12개의 NRS 값 중 하나가 결측된 경우, 다음과 같은 방법으로 대체합니다:

나머지 11개의 (결측되지 않은) NRS 평균값을 계산하여(범위, 0-10) 이 값을 결측된 NRS 값으로 입력합니다.

그 후, 위에서 설명한 대로 PsAID를 계산합니다.

만약 2개 이상의 NRS 값이 결측된 경우, PsAID는 결측값으로 간주됩니다(대체하지 않음).

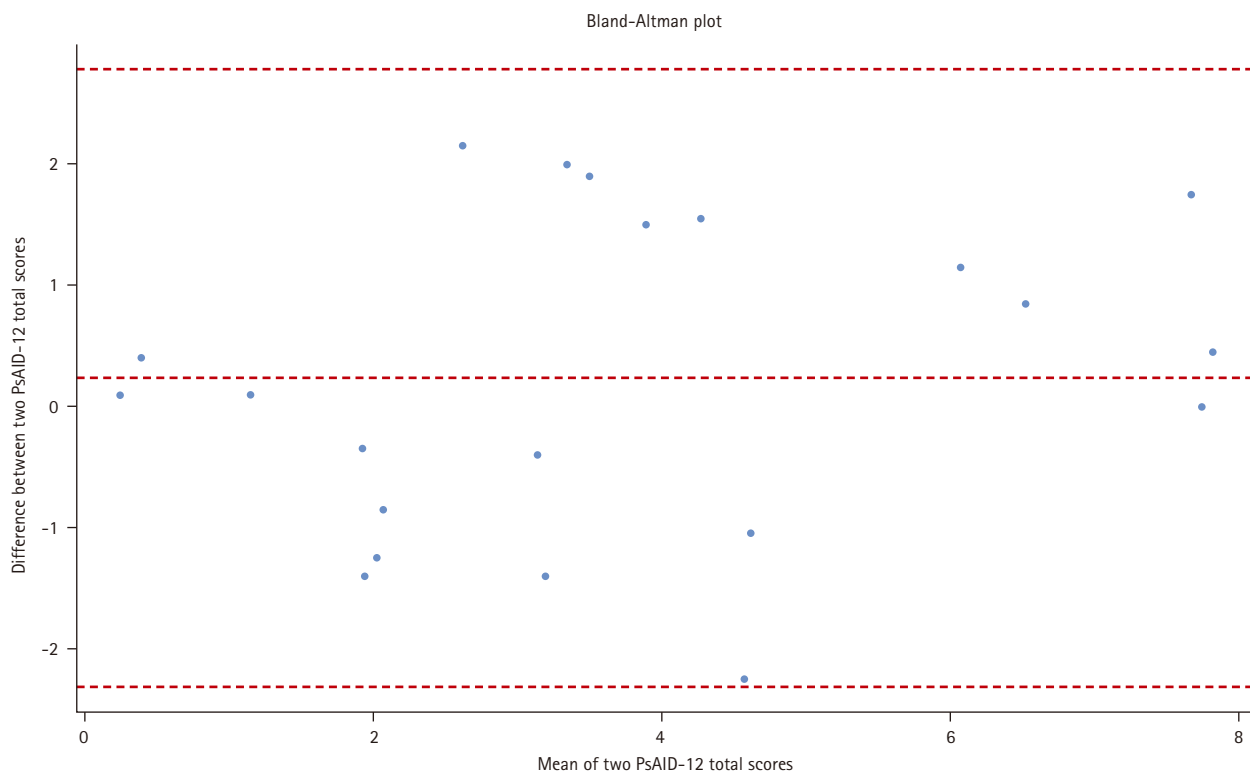
Supplementary Table 1. Cognitive debriefing interviews

Question	Yes	No	Answer to "No"
Were the instructions of this questionnaire easy to understand?	10	0	
Were the questions clear and unambiguous to you?	10	0	
Do you think the response options fit the questions well?	10	0	
Do you feel this questionnaire appropriately applies to your experience with psoriatic arthritis (PsA)	9	1	2. Fatigue - It was difficult to distinguish whether the fatigue was caused by psoriatic arthritis or experienced during daily life, leading to prolonged consideration before answering.
Did you find the time taken to complete the questionnaire appropriate?	10	0	
Did you experience any discomfort or difficulties while completing the questionnaire?	0	10	
Do you think this questionnaire adequately reflects your daily physical activities, emotions, or challenges due to the illness?	10	0	
Do you have any other comments or suggestions?	0	10	

Supplementary Table 2. Internal consistency (Cronbach's alpha) between two PsAID-12 assessments

	Cronbach's alpha	Std. alpha	Average	Alpha standard error	Mean	SD	Median
First survey	0.941	0.941	0.573	0.018	3.726	2.286	0.596
Second survey	0.951	0.951	0.620	0.015	3.468	2.167	0.590

PsAID-12, Psoriatic Arthritis Impact of Disease; SD, standard deviation.



Supplementary Figure 1. Bland–Altman plot for agreement between two PsAID-12 measurements. PsAID-12, Psoriatic Arthritis Impact of Disease.