



Original Article

The reliability and validity of the Korean version of the Japanese orthopaedic association back pain evaluation questionnaire

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Abstract. [Purpose] The purpose of this study was to establish the reliability and validity of the Japanese Orthopaedic Association Back Pain Evaluation Questionnaire (JOABPEQ) translated into Korean for use with patients' low back pain. [Subjects and Methods] Sixty-two subjects with low back pain, 28 men and 34 women, participated in the study. Reliability was determined by using the intra class correlation coefficient and Cronbach's alpha for internal consistency. Validity was examined by correlating the JOABPEQ scores with the 36 item short form health survey (SF 36). [Results] Test-retest reliability was 0.75–0.83. The criterion-related validity was established by comparison with the Korean version of the SF 36. [Conclusion] The Korean version of the JOABPEQ was shown to be a reliable and valid instrument for assessing low back pain.

Key words: Japanese Orthopaedic Association Back Pain Evaluation Questionnaire (JOABPEQ), Reliability, Validity

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INTRODUCTION

Low back pain is a common musculoskeletal disorder that more than 80% of the global population experiences at least once during their lifetime^{1, 2)}. In addition, low back pain is more frequently observed in the age group from the 40s to 80s, and especially in females³⁾.

To restore normal function, patients with low back pain receive physical therapy⁴⁾. Therefore, for effective treatment, a measurement tool to evaluate functions and monitor changes is needed^{5, 6)}.

Outcome measurement is important in decision making and evaluating the results, and is advantageous in continuous management of the patients⁷⁾. In order to accurately evaluate low back pain, outcome measurement should include topics regarding pain, low back function, general health condition, work disability, and patient satisfaction⁸⁾. While there are many scales that evaluate low back pain, there is no gold standard questionnaire on low back pain⁹⁾.

The Japanese Orthopaedic Association Back Pain Evaluation Questionnaire (JOABPEQ) was developed from the original Japanese Orthopaedic Association (JOA) score, and is a disease specific outcome measure that the patients with low back pain can self-report¹⁰⁾. Most components are related to the International Classification of Functioning Disability and Health (ICFDH)¹¹⁾.

The JOABPEQ has been translated into various languages, such as Iranian¹²⁾, Thai¹³⁾, and Turkish⁹⁾, and has been determined to be highly reliable and valid. However, the reliability and validity of the Korean translation of the JOABPEQ have

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not yet been confirmed. Thus, the purpose of this study is to determine the reliability and validity of the Korean version of the JOABPEQ.

SUBJECTS AND METHODS

Subjects were 62 outpatients with low back disorder receiving physical therapy at C Orthopedic Clinic in Gyeonggi-do. The inclusion criterion was that the patients be diagnosed with lumbar spine disease. The exclusion criteria were the inability to read Korean or respond to the questionnaire, infection at the lumbar spine, tumor at lumbar vertebra or intradural tumor, traumatic lumbar instability, rheumatoid arthritis, recent surgery lumbar spine, or congenital spinal disorder. After the subjects were informed about the study, they agreed to participate and signed consent forms. The study was approved by the Institutional Review Board of Gachon University.

The JOABPEQ is a self-report questionnaire designed to evaluate low back disorder, dysfunction, and disabilities resulting from low back complaints. The questionnaire consists of 25 items in 5 subscales: low back pain, lumbar function, walking ability, mental health, and social function. The scores range from 0 to 100 and a low score indicates worse health status¹⁰.

The forward- and back-translations of the JOABPEQ presented no major language problems for an expert committee including professors and language experts¹⁴.

To evaluate reliability, the test-retest method was used. The patients completed a Korean version of the JOABPEQ at first visit and again 2 weeks later. All tests were again collected by the same physiotherapist. The 14-day test-retest reliability was analyzed according to the intra class correlation coefficient (2,1) as well as internal consistency with Cronbach's α . Criterion-related validity was evaluated by correlating the 8 subscales of the Korean SF 36; General Health (GH), Physical Function (PF), Social Function (SF), Mental health (MH), Role Physical (RP), Role Emotional (RE), Bodily Pain (BP), and Vitality (VT).

RESULTS

The general characteristics of the subjects are shown in Table 1.

The ICC score was found to be 0.76, 0.83, 0.75, 0.80, and 0.79 for "low back pain," "lumbar function," "walking ability," "social life function," and "mental health" subscales respectively (Table 2).

The JOABPEQ parameter values showed significant correlations in all 8 subscales of the Korean version of the SF 36 (Table 3). Low back pain showed strong correlation with the RP, RE, and BP subscales. Lumbar function showed strong correlation with the PF subscale. Walking ability showed moderate correlation with the SF 36 subscales, except for VT. Social life function showed strong correlation with the PF subscale. Mental health showed strong correlation with the GH, MH, and RE subscales.

DISCUSSION

In this study, the test-retest reliability of the Korean version of the JOABPEQ was determined to be high. The reliability of the Thai version was tested with a two-week interval because the symptoms did not show dramatic changes and difficulty in remembering the contents of the questionnaire¹³. The subscales of low back pain, lumbar function, walking ability, social life function, and mental health all showed ICC >0.7, revealing high reliability. In this study, the reliability was also tested with a two-week interval, and all subscales showed high reliability with ICC >0.7.

In the Iranian version, internal consistency of the subscales was analyzed. Cronbach's α coefficient was acceptable, with the results ranging from 0.71–0.81¹². In the Thai version, internal consistency of the subscales, excluding lumbar function, revealed to be acceptable with the score greater than 0.7. For all the questions, internal consistency was very high, with a score of 0.866¹³. In this study, the result of the internal consistency of the subscales was also acceptable like the Iranian and Thai versions. Cronbach's α coefficient was lower than 0.95, confirming no item redundancy¹⁵.

In the Thai version, correlations in the 8 subscales of the SF 36 were analyzed to confirm the validity of the JOABPEQ. All subscales of the JOABPEQ showed significant positive correlation, which was explained as a result of the original JOABPEQ having been developed from the Rolland Morris Disability questionnaire and SF 36¹³. Further, in the Turkish version, correlations with social function, mental health, bodily pain, and physical function from the subscales of the SF 36 were measured, confirming good to very good correlation. Excellent correlation was identified with the Oswestry Disability Index⁹. In this study, similar to the Thai version, correlations in the 8 subscales of the SF 36 were analyzed to evaluate the validity of the JOABPEQ. The results were similar to the Thai version with $r=0.21-0.63$, showing significant positive correlation in all subscales.

In the Iranian version, responsiveness was analyzed to observe whether or not the JOABPEQ detects change before and after the intervention. In all the subscales, improvement was observed¹². The Thai version reported no floor and ceiling effect¹³. In this study, a similar result to the aforementioned study was observed regarding the floor and ceiling effect, signifying that it consists of appropriate ranges to detect change¹⁶.

Cross-cultural adaptations of existing language questionnaires, by translating them into specific languages for each coun-

Table 1. The demographic characteristics of study participants (n=62)

	Mean ± SD
Characteristic	
Gender, male/female	62 (28/34)
Age (years)	42.5 ± 16.6
Height (cm)	162.1 ± 15.4
Weight (kg)	63.6 ± 15.4
Pain duration (months)	20.1 ± 10.2
The type of low back pain	
Lumbar disc herniation	42
Lumbar canal stenosis	7
Spondylolisthesis	2
Scoliosis	3
Non-specific low back pain	8

Table 2. Test-retest reliability for JOABPEQ

	Internal consistency (α)	ICC (95% CI)
Low back pain	0.7	0.76 (0.65–0.89)
Lumbar function	0.68	0.83 (0.72–0.93)
Walking ability	0.74	0.75 (0.61–0.87)
Social life function	0.72	0.80 (0.73–0.92)
Mental health	0.78	0.79 (0.67–0.90)

JOABPEQ: Japanese Orthopaedic Association Back Pain Evaluation Questionnaire; ICC: intraclass correlation coefficient.

Table 3. Pearson's correlation coefficients of the JOABPEQ with the SF-36

JOABPEQ	GH	PF	SF	MH	RP	RE	BP	VT
Low back pain	0.42	0.40	0.47	0.27	0.54	0.63	0.62	0.48
Lumbar function	0.33	0.54	0.42	0.25	0.40	0.46	0.41	0.31
Walking ability	0.41	0.49	0.44	0.32	0.44	0.44	0.37	0.25
Social life function	0.30	0.51	0.37	0.21	0.47	0.43	0.40	0.40
Mental health	0.51	0.44	0.46	0.60	0.40	0.60	0.35	0.50

All correlations are significant at the 0.05 level.

JOABPEQ: Japanese Orthopaedic Association Back Pain Evaluation Questionnaire; SF-36: 36-item short form health survey; GH: general health; PF: physical function; SF: social function; MH: mental health; RP: role physical; RE: role emotional; BP: bodily pain; VT: vitality

try, would enable comparisons of different populations and permit the exchange of information between the countries¹⁷⁾. Therefore, it is important that translations of the questionnaires adapted for the specific culture in order to deliver the same meaning. The JOABPEQ was translated into Korean to verify the reliability and validity. However, due to the small sample size, it is difficult to generalize the results. Further, responsiveness that detects change over time was not evaluated. In the future, a broader spectrum of patients with lower back disorder should be included to determine reliability; furthermore, correlation analysis with functional disability measurement tool related to various low back disorders other than quality of life are needed.

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