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Original Article

Psychometric Properties of the Turkish Version of Spondyloarthritis Knowledge Questionnaire: A Methodological Study

Öznur Erbay Dallı[1], Seda Pehlivan[1], Tuğba Ocak[2], Arzu Ceyhan[3], Yavuz Pehlivan[2]

Abstract

Background: Information and education are recommended for patients with inflammatory arthritis including spondyloarthritis (SpA). However, there is no Turkish instrument available to measure the knowledge level of patients with SpA. The study aimed to translate the Spondyloarthritis Knowledge Questionnaire (SPAKE) into Turkish and investigate its validity and reliability.

Methods: This methodological study was conducted between February 2023 and August 2023 in patients with SpA. Data were collected using the "Patient Characteristics Form" and the "Turkish version of SPAKE (SPAKE-T)." Language, content, item analysis, known-group technique, test–retest, and internal consistency were used to evaluate validity and reliability.

Results: A total of 226 SpA patients participated in the study. The validity and reliability analysis of SPAKE-T showed the following results: (a) content validity index at item level between 0.86 and 1.00, (b) significant correlation between the total score of the questionnaire and its sub domains between 0.18 and 0.81 ($P < .05$), (c) item difficulty between 0.11 and 0.91, (d) item discrimination index between 0.26 and 0.81, (e) within the known group validity, significantly lower knowledge scores in patient groups with low education level, disease duration less than 10 years, and patients who did not receive education about their disease ($P < .05$), (f) Cronbach alpha value was 0.80, and (g) test–retest reliability was 0.81.

Conclusion: This study indicates that the SPAKE-T, which has satisfactory psychometric properties, can be easily used to assess the overall knowledge level of patients with SpA about disease self-management.

Keywords: Spondyloarthritis, validity, reliability, psychometric, knowledge

ORCID iDs of the authors:
Ö.E.D. 0000-0003-2282-0846;
S.P. 0000-0002-1670-0672;
T.O. 0000-0002-4560-1569;
A.C. 0009-0009-9762-2503;
Y.P. 0000-0002-1201-8836.

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[1] Department of Internal Medicine Nursing, Bursa Uludağ University Faculty of Health Sciences, Bursa, Türkiye
[2] Department of Rheumatology, Bursa Uludağ University Faculty of Medicine, Bursa, Türkiye
[3] Department of Nursing, Bursa Uludağ University Institute of Health Sciences, Bursa, Türkiye

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Corresponding author:
Öznur Erbay Dallı
E-mail: oznurerbay@uludag.edu.tr

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Introduction

Spondyloarthritis (SpA) is a term for a group of chronic systemic inflammatory diseases that include common genetic (HLA-B27 gene) and clinical features (asymmetric oligoarthritis, enthesitis, dactylitis, etc.) as well as non-musculoskeletal manifestations such as acute anterior uveitis, psoriasis, and inflammatory bowel disease.[1] Based on the predominant clinical involvement of the disease, SpA is classified as peripheral (arthritis, dactylitis, or enthesitis) and axial (involvement of the sacroiliac joint and/or spine).[2] The prevalence of the disease varies between 0.1% and 1.4% worldwide and between 0.3% and 1.3% in Europe, whereas it is 2-3 times more common in men than in women.[3,4] Spondyloarthritis, one of the most common chronic inflammatory rheumatic diseases, has an unpredictable and fluctuating course throughout a patient's life, and physical symptoms due to its effects on the skeletal system typically interfere with the most productive phases of life.[5,6] In addition to the physical effects, such as pain, morning stiffness, and functional impairment, the disease has a lifelong burden that affects various aspects of life, including mental and occupational.[7,8]

The disease management of SpA should involve regular exercise and patient education, including non-pharmacologic therapies as an integral part of treatment, in addition to pharmacologic treatment.[8] The European Alliance of Associations for Rheumatology (EULAR) guidelines for patients with inflammatory arthritis emphasize that patient education is an integral part of standard care.[9] Patient education is an important intervention to better manage disease and optimize health in patients with chronic diseases.[10] Patient education is defined as an interactive process between patients and healthcare providers through different learning activities to support and strengthen patient self-efficacy as well as adherence to both pharmacological and non-pharmacological treatment.[8-10] Patient education enables patients to improve

their quality of life, participate in their own care, and manage their diseases.[9] Therefore, assessing patients' level of knowledge is an important step in evaluating the content and effectiveness of both the educational process and the educational interventions.

It is important to determine the level of knowledge of patients with SpA to meet their educational needs on these specific issues. Beauvais et al[11] developed and validated the Spondyloarthritis Knowledge Questionnaire (SPAKE), which includes both current treatments for SpA and general knowledge about disease management.[11] There is currently no instrument available to objectively measure the knowledge level of patients with SpA in Türkiye. Furthermore, the Turkish version of the SPAKE has not been tested for validity and reliability. Therefore, the aim of this study was to evaluate the psychometric properties of the Turkish version of the SPAKE to determine the level of disease knowledge in patients with SpA.

Material and Methods

Study Design

This is a methodological study involving the translation and cross-cultural adaptation of the SPAKE to examine its validity and reliability for use in Turkish SpA patients.

Setting and Sample

The study was conducted between February 2023 and August 2023 in patients with SpA admitted to the Rheumatology Outpatient Clinic of a university hospital. The inclusion criteria were (a) being 18 years of age or older, (b) volunteering to participate in the study, (c) being diagnosed with SpA for at least 6 months according to Assessment of SpondyloArthritis International Society (ASAS) axial and peripheral SpA classification, (4) being on biologic therapy (as the questionnaire included questions about biologic therapies). Patients with Turkish reading and comprehension problems, visual or hearing problems, and diagnosed psychiatric diseases were excluded from the sample.

The sample size of the study was determined according to the criteria established for adaptation studies.[12] Accordingly, it was planned to reach at least 5 times the number of items in the measurement tool (42 × 5 = 210).

Data Collection Procedures and Instruments

The data collection for the study was conducted by 2 research physicians. During the research process, potential SpA patients who met the inclusion criteria were identified. These patients were informed in detail about the study and invited to participate. The Patient Characteristics Form and the SPAKE Turkish version (SPAKE-T) were used to collect data.

Patient Characteristics Form

This form included questions about patients' sociodemographic (age, sex, education level, marital status, etc.) and health/disease status characteristics (comorbidities, duration of diagnosis, type of SpA, etc.).

Spondyloarthritis Knowledge Questionnaire

This test was developed by Beauvais et al[11] to assess the knowledge level of patients with SpA. The test includes a total of 42 items covering 6 domains related to SpA: knowledge about the disease (12 items), pharmacological treatment (11 items), non-pharmacological treatment (8 items), comorbidity (1 item), self-management of pain and fatigue (4 items), and adaptability to psychosocial and occupational problems and the health care system (6 items). The correct statements are scored as "True (1 point)," "False (0 points)," and "I Don't Know (0 points)," while the incorrect statements are scored in reverse. The test score is determined by the formula: (total score × 100)/42, resulting in a score range of 0-100. A higher score indicates a higher degree of knowledge level.[11]

Validity and Reliability Stages of the Turkish Version of the Spondyloarthritis Knowledge Questionnaire

The validity of the questionnaire was assessed by language, content, item analysis (item difficulty and discrimination index), and known group validity; reliability was assessed by test–retest and internal consistency (Figure 1).

When adapting the questionnaire into Turkish, the forward and backward translation method was used to ensure linguistic equivalence.[12] An expert panel was formed to translate the questionnaire from English to Turkish. The experts were required to have a good command of both languages, clinical experience in the field of rheumatology, and familiarity with scale adaptation/development stages. Three rheumatologists and 2 nursing faculty members (PhD) who met the specified criteria translated the questionnaire into Turkish. The researchers analyzed the expert panel translations and selected the sentences that most accurately conveyed the meaning of the original scale items. They then created a single Turkish form based on these selections. The Turkish form was back-translated from Turkish to English by 2 linguists unfamiliar with the scale. The questionnaire's translated version was found to be compatible with the original and achieved semantic equivalence.

In order to assess the content validity of the SPAKE-T, another panel was formed with the specified expert criteria (3 nursing faculty

Main Points

- Assessing a patient's knowledge is important for nurses and physicians to plan educational and self-management interventions.
- There is no Turkish instrument available to assessment the knowledge level of patients with spondyloarthritis (SpA).
- The present study show that Turkish Version of the Spondyloarthritis Knowledge Questionnaire (SPAKE-T) is a valid and reliable assessment tool to evaluate knowledge level of SpA patients.

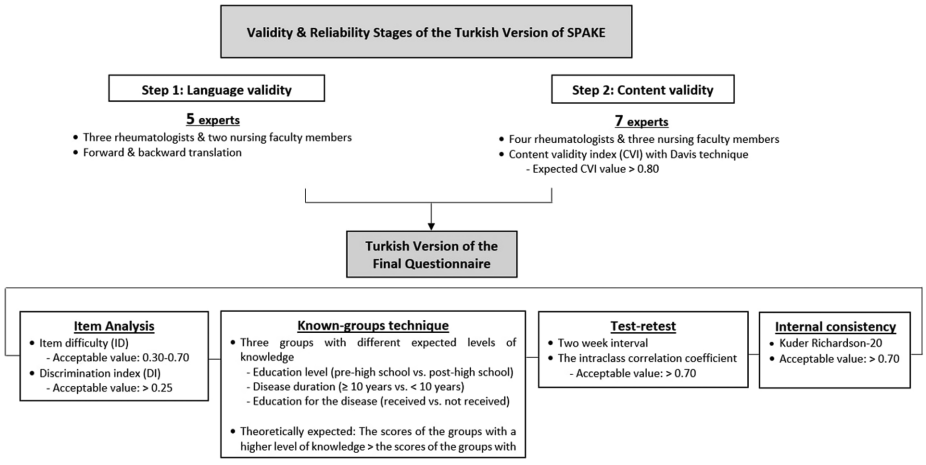

Figure 1. Validity and reliability stages of the Spondyloarthritis Knowledge Questionnaire Turkish Version.

members, 4 rheumatologists). An expert opinion form was prepared and sent to the experts' email addresses based on the Davis technique evaluation criteria, which evaluated the items as "1-Appropriate," "2-Item should be slightly revised," "3-Item should be seriously revised," and "4-Item is not appropriate."[13] The experts were requested to assess the level of concurrence between the original form and the Turkish version as well as the comprehensibility of the items according to the given criteria within 2 weeks. The experts who rated an item as "(1) and (2)" were divided by the total number of experts to calculate the content validity index (CVI) for that item. The CVI criterion was set at 0.80.[13]

Since the items of the questionnaire were scored dichotomously (1,0), item difficulties and discrimination indices were analyzed in the validity phase. **The item difficulty index** is referred to as the *P*-value and is calculated as the proportion of respondents who answered the question correctly.[14] The possible range for this ratio is between 0.00 and 1.00 (the closer to 1.00, the easier the item). Items are classified as very easy if they range from 0.90-1.00, easy if they range from 0.71-0.89, moderate if they range from 0.31-0.70 (ideal), difficult if they range from 0.21-0.30, and very difficult if they range from 0.20-0.00.[15,16] **The discrimination index** is a basic measure for determining the validity of an item and indicates the ability of an item to discriminate between those who score high and those who score low on the overall test.[16] The discrimination index, expressed as a D-value, is calculated by subtracting the percentage of correct responses in the 27% group with the highest scores from the percentage of correct responses in the 27% group with the lowest scores and dividing by the number of individuals in the higher group. The resulting value varies between −1 and 1.[16] The closer the score is to 1, the better the item is able to distinguish between the 2 groups. Ideally, the items should have a value of 0.25 or more to enable good differentiation.[16] **Known group validity** is another method of construct validity that assesses the ability of an instrument to discriminate between different groups.[17] If an instrument can effectively discriminate between independent groups, it should reveal significant differences in survey results between groups. To execute this method, researchers must first identify groups expected to have varying responses to the instrument, and then compare the groups' results.[17] Considering that the instrument in this study measures the general level of knowledge related to SpA, the groups for known group validity were determined for 50 patients randomly selected from the sample as follows: educational level (before high school vs. high school and above), disease duration (≥10 years vs. <10 years), and educational status related to the disease (education received vs. no education received).

The stability of the questionnaire was assessed using the test–retest method. Stability refers to the extent to which results are comparable when measured at different times, providing an estimate of the consistency of repetitive measurements.[17] Eight participants were included in the test–retest phase of SPAKE-T, and the questionnaire was administered to them again after 2 weeks. These participants were excluded from the overall sample. Finally, we assessed the internal consistency of the questionnaire. Since the questionnaire consisted of binary data, the Kuder–Richardson 20 (KR-20) test, which is equivalent to Cronbach's alpha, was used.[18] The acceptable values for reliability analyses are described in the section on data analysis.

Data Analysis

The data of the study was analyzed using SPSS for Windows 28.0. Results of questionnaire items were coded as binary variables (1: true, 0: false). If the questionnaire items contained "I don't know," multiple answers, or no answers selected, the result was marked as false. The total score for each participant was determined by the number of correct answers.

The normal distribution conformity of the data was tested for using both the Shapiro–Wilk test and the skewness/curve values. To summarize participant characteristics and outcome variables, appropriate descriptive statistics were employed, with continuous data expressed as mean and standard deviation, and categorical variables as frequency and percentage. The correlation between the overall questionnaire and its subdomains was examined using Pearson's correlation coefficient. Correlation coefficients were categorized as either very low (<0.20), low (0.20-0.40), medium (0.40-0.70), high (0.70-0.90), or very strong (0.90-1.00).[19] The independent samples *t*-test was used to compare knowledge scores between groups, which were determined for known group validity. The KR-20 analysis was used for internal consistency, and the minimum acceptable reliability coefficient was determined to be 0.70.[20] To evaluate test–retest reliability, the intraclass correlation coefficient (ICC) analysis was utilized, with a required ICC value of ≥ 0.70 for adequate reliability.[21] The statistical significance was accepted as $P < .05$.

Ethical Considerations

The study was conducted according to the Declaration of Helsinki. The study was approved by the Clinical Research Ethics Committee of Bursa Uludağ University (decision number: 2023-3/28). Before the data collection, each participant was informed about the study and his/her written or verbal consent to participate was obtained. Participants were also informed of their right to withdraw from the study at any time without affecting the treatment or services they received. The permission to adapt the questionnaire was obtained from Dr. Catherine Beauvais via e-mail.

Results

Characteristics of Patients

A total of 226 patients with SpA were reached, most of whom (81.4%) had axial SpA (Table 1). The mean age of the patients was 43.97 ± 10.11 years, more than half of them were male (58.8%), most of them had a higher education (61.9%), and were married (77.4%). In addition, 33.6% of patients had comorbidities, and the mean disease duration was 12.77 ± 7.85 years. Patients reported using nonsteroidal anti-inflammatory drugs (77.0%) and conventional DMARDs (47.3%) in addition to biologic DMARD therapy. The mean Bath Ankylosing Spondylitis Disease Activity Index and Bath Ankylosing Spondylitis Functional Index scores were 1.75 ± 1.39 and 1.87 ± 1.64, respectively, and 88.1% of the patients reported having received education about their disease.

Psychometric Properties of the Questionnaire

Validity

Based on expert opinions regarding the content validity of the questionnaire, the CVI results of the questionnaire items ranged from 0.86 to 1.00, and the SPAKE-T version was developed without any item revisions. Additionally, Table 2 shows a statistically significant correlation between the SPAKE-T domains and the total score. The disease knowledge domain demonstrated the strongest correlation (0.816), while the comorbidity domain had the lowest correlation (0.185).

The questionnaire's item analyses revealed that the 42 items in SPAKE-T had item difficulty scores ranging from 0.11 to 0.91. The discrimination index, which assessed the difference

Table 1. Characteristics of Patients (n = 226)

Characteristics	n (%) or Mean ± SD
Age (years)	43.97 ± 10.11
Gender, male	133 (58.8)
Education level, high school, and more	140 (61.9)
Marital status, married	175 (77.4)
Comorbidities, yes	76 (33.6)
Type of SpA	
AxSpA	184 (81.4)
pSpA	42 (18.6)
Disease duration (years)	12.77 ± 7.84
Current treatment in combination with bDMARDs*	
NSAIDs	174 (77.0)
cDMARDs	107 (47.3)
BASDAI (0-10)	1.75 ± 1.39
BASFI (0-10)	1.87 ± 1.64
Receiving education for the disease	199 (88.1)

axSpA, axial spondyloarthritis; BASFI, Bath Ankylosing Spondylitis Functional Index (higher score indicates a higher degree of functional limitations); BASDAI, Bath Ankylosing Spondylitis Disease Activity Index (higher score indicates a higher disease activity); cDMARD, conventional disease-modifying anti-rheumatic drugs; NSAID, non-steroidal anti-inflammatory drugs; pSpA, peripheral spondyloarthritis.

between item scores of the group with the highest (n = 61) and lowest (n = 61) scores, had a range of 0.26 to 0.81 (see Table 3).

In terms of known group validity, patients with the expected high level of knowledge had significantly higher group scores than participants with expected lower knowledge levels ($P < .05$ for all) (Table 4).

Reliability

Table 5 shows the reliability results for the SPAKE-T. The reliability coefficient for the overall questionnaire was found to be 0.89 in the ICC analysis using the test–retest method. The subdomains' reliability coefficients ranged from 0.76 to 0.96. According to the KR-20 analysis, the internal consistency of the SPAKE-T was found to be 0.80.

Discussion

The management of chronic diseases is multifaceted, necessitating diverse strategies.[22] Over the past years, many changes in health care, such as increased access to care and treatment options, evidence-based practices, consideration of patient preferences, and the expectation of patient autonomy in care decisions, have led to an increase in patient responsibility for their health. Today, patients are expected to take the lead in their own healthcare and adhere to treatment regimens to maintain health and reduce complications.[23-25] To properly manage their health processes and make improvements, patients must have adequate self-efficacy. It is crucial to believe in the patient's ability to manage their diseases and provide support in this process.[22,25,26] Self-efficacy acts as a bridge between an individual's knowledge and self-care, and one of the most important strategies to increase self-efficacy is to ensure that the patient has sufficient knowledge about their disease.[27] Studies indicate that enhancing health knowledge among high-risk and chronic illness groups is a successful strategy for mitigating and postponing disease severity.[28,29] Notably, improving health knowledge not only helps patients to have more information about their disease status and increase their self-care skills but also contributes to increased awareness of healthcare by helping them to stop unhealthy behaviors and maintain healthy lifestyles.[30]

Patient education is crucial for managing SpA, a chronic, inflammatory disease that results in functional limitations and severe pain. It is also essential in achieving treatment objectives.[9] Therefore, it is necessary to have dependable and valid tools to assess the level of knowledge and the impact of patient education on SpA patients. In this study, we aimed to validate "SPAKE," the only knowledge questionnaire developed with the contributions of healthcare professionals and patients to determine the level of knowledge needed by SpA patients to manage their health and compatible with current recommendations for SpA management, in the Turkish population. The Turkish version of the questionnaire showed good internal and external consistency and reproducibility. To our knowledge, this is the first study to test the acceptability and psychometric properties of the SPAKE in another culture.

In the context of the linguistic and content validity of the scale, translation, back-translation, and cultural adaptation procedures were carefully performed. To ensure the most appropriate expressions for patient understanding, expert panels consisting of physicians and nurses experienced in rheumatology were formed. The questionnaire was discussed extensively to create the Turkish version. The experts' findings indicated that the questionnaire items had an acceptable CVI value (≥0.80). Therefore, no significant revisions or eliminations were necessary at this stage, and the final SPAKE-T was created.

There was a low correlation between the "comorbidity" sub-domain and the total SPAKE-T score, and a moderate-to-high correlation between all other sub-domains (Table 2).

Table 2. Correlations Coefficient Between Domains and the Spondyloarthritis Knowledge Questionnaire Turkish Version. Total Score

SPAKE Domains	DK	PT	NPT	CO	SC	AS	Total Score
DK		0.448*	0.497*	0.016	0.276*	0.512*	0.816*
PT	0.448*		0.321*	0.238*	0.218*	0.378*	0.746*
NPT	0.497*	0.321*		0.038	0.245*	0.462*	0.669*
CO	0.016	0.238*	0.038		0.047	0.059	0.185**
SC	0.276*	0.218*	0.245*	0.047		0.317*	0.451*
AS	0.512*	0.378*	0.462*	0.059	0.317*		0.716*

AS, adaptive skills to psychosocial and professional issues and the healthcare system; CO, comorbidity; DK, disease knowledge; NPT, non-pharmacological treatments; PT, pharmacological treatments; SC, self-care for pain and fatigue.
*$P < .001$.
**$P < .05$.

Table 3. Validity Analysis (Item Difficulty and Discrimination Index) of the Spondyloarthritis Knowledge Questionnaire Turkish Version

Domains	Number of Items	Item Difficulty (*P*)[a] (n = 226)	D-value (n = 122)
DK	1	.32	0.74
	2	.74	0.52
	3	.57	0.67
	4	.73	0.43
	5	.85	0.33
	6	.73	0.74
	7	.47	0.64
	8	.32	0.60
	9	.67	0.76
	10	.35	0.33
	11	.30	0.67
	12	.11	0.26
PT	13	.50	0.71
	14	.75	0.50
	15	.65	0.55
	16	.51	0.71
	17	.18	0.38
	18	.32	0.71
	19	.34	0.52
	20	.35	0.81
	21	.70	0.55
	22	.20	0.36
	23	.56	0.57
NPT	24	.76	0.57
	25	.86	0.38
	26	.91	0.31
	27	.90	0.38
	28	.63	0.52
	29	.76	0.57
	30	.86	0.36
	31	.42	0.57
CO	32	.30	0.40
SC	33	.46	0.33
	34	.60	0.55
	35	.80	0.48
	36	.78	0.31
AS	37	.72	0.32
	38	.67	0.76
	39	.64	0.69
	40	.43	0.29
	41	.78	0.40
	42	.73	0.43

a, this *P*-value expresses the proportion of participants who answered the item correctly; AS, adaptive skills to psychosocial and professional issues and the healthcare system; CO, comorbidity; D-value, discrimination index; DK, disease knowledge; NPT, non-pharmacological treatments; PT, pharmacological treatments; SC, self-care for pain and fatigue.

The correlation coefficients between the 5 sub-domains with moderate and high correlations and the total questionnaire were higher than the correlation coefficient between each domain. This indicates that these 5 sub-domains are consistent with the overall concept and show relative independence. The low correlation of the "comorbidity" sub-domain could be attributed to the fact that this domain is only represented by 1 item (item 17: there is a higher risk of heart disease [e.g., heart attack] in SpA). Furthermore, there were either very low or non-significant correlations between this domain and the other 5 domains. This finding is one of the limitations of the questionnaire that should be considered in future studies. The "comorbidity" domain in the questionnaire is addressed in the context of a single disease (heart disease). Most patients diagnosed with SpA have at least 1 comorbid condition in addition to extra-articular symptoms, and hyperlipidemia, obesity, and osteoporosis are among the most commonly reported comorbidities other than heart disease.[31,32] These comorbid conditions increase the burden of disease by contributing to disease activity, functional and work disability, and mortality.[33] Therefore, it is important to investigate the level of knowledge of patients regarding the awareness of comorbidities in SpA and to provide the necessary training to control comorbidities in the early period and ultimately improve patient outcomes. The analysis of patients' responses to the questionnaire indicates the lowest percentage of correct answers for the "Comorbidity" domain (31.0%) (Table 5). This may indicate that the need to provide education to SpA patients regarding comorbidities should be considered.

As the SPAKE-T is a dichotomous true/false questionnaire, item analysis validity was used. Based on the item difficulty analysis of the questionnaire, the 3 items that were determined to be "difficult or very difficult" by scoring below 0.30 were as follows: item 14—taking 2 nonsteroidal anti-inflammatory drugs at the same time (including self-medication) increases the risk of an ulcer and digestive tract bleeding, item 36—SpA will develop sooner or later if you have the HLA-B27 gene, and item 38—if disease-modifying drugs or biologics are not effective after 2 to 4 weeks, they should be stopped (Table 3). This indicates that patients need more education on disease knowledge and pharmacological treatments. As a matter of fact, the lowest percentages of correct responses were found in the "Pharmacological Treatments" and "Disease Knowledge" domains after the "Comorbitide"

Table 4. Known-Groups Validity for Spondyloarthritis Knowledge Questionnaire Turkish Version

Groups		n = 50	Mean ± SD (Max = 42)	*P*
Education level	High school and more (H)	29	25.41 ± 6.39	.032
	Less than high school (L)	21	21.57 ± 5.56	
Disease duration	≥10 years (H)	33	25.74 ± 5.64	.041
	<10 years (L)	17	22.03 ± 6.11	
Status of receiving education for the disease	Yes (H)	36	26.54 ± 5.86	.027
	No (L)	14	20.88 ± 5.74	

(H), group with theoretically expected higher level of knowledge; (L), group with theoretically expected lower level of knowledge.

Table 5. Test–Retest Reliability (2-Week Interval, n = 8), Percentage of Correct Answers (n = 226), and Internal Consistency Reliability for the Spondyloarthritis Knowledge Questionnaire Turkish Version

Domains	Number of Items	Percentage of Correct Answer (%)	ICC	95% CI
1: Disease knowledge	12	51.6	0.76*	0.47-0.95
2: Pharmacological treatments	11	46.3	0.78*	0.38-0.95
3: Non-pharmacological treatments	8	76.8	0.95*	0.78-0.99
4: Comorbidity	1	31.0	0.87*	0.36-0.97
5: Self-care for pain and fatigue	4	66.1	0.76*	0.36-0.95
6: Adaptive skills	6	66.7	0.96*	0.79-0.99
Overall questionnaire	42	58.0	0.89*	0.48-0.97
Mean for questionnaire's score, *mean ± SD*		25.23 ± 5.90		
Internal consistency reliability (overall)		KR-20: 0.80		

CI, confidence interval; ICC, intraclass correlation coefficient; KR-20, Kuder–Richardson; SD, standard deviation.
*$P < .05$.

domain (46.3% and 51.6%, respectively) (Table 5). The questionnaire items classified as "very easy" with a score of 0.90 and above belong to the "Non-pharmacological treatments" domain and are as follows: item 20—exercise intensity should be tailored to your condition and item 21—physical activity is beneficial in SpA (Table 3). The "non-pharmacological treatments" domain, which included 8 items, had the highest level of knowledge among SpA patients with a correct percentage of 76.8% (Table 5). The ASAS/EULAR panel recommends a multidisciplinary and patient-centered treatment approach that includes a combination of pharmacologic and non-pharmacologic treatments for patients with SpA.[34] Non-pharmacological interventions, such as exercise, education, and physical therapy, have been shown to improve disease activity, function, spinal mobility, and pain in patients with SpA.[34] Therefore, it is critical for patients with SpA to adopt non-pharmacologic interventions to manage their adverse symptoms associated with their disease. In future studies, the items identified as very easy or very difficult in the SPAKE-T in this study should be considered. However, since all questionnaire items had discrimination indices above 0.25 (Table 3), none were removed in our study.

Another method used to test the construct validity of the SPAKE-T was the known groups technique. The present study evaluated questionnaire performances across 3 groups with varying levels of knowledge that were theoretically expected. The results revealed that groups with lower education levels, disease durations of less than 10 years, and no education on the disease had lower knowledge scores (Table 4). These findings suggest that the questionnaire has a high ability to distinguish between groups.

Regarding the questionnaire's reliability, both internal consistency and test–retest analyses showed satisfactory results. The overall questionnaire had an acceptable internal consistency of 0.80. The assessment tool was administered twice with a 2-week interval, and the test–retest phase assessed by ICC revealed significant time stability (0.89 for the overall questionnaire, 95% CI: 0.48-0.97; across domains > 0.70). This indicates that the final scores of the2 assessments were very similar (see Table 5). Similar to our study, internal consistency was reported as 0.85 and reproducibility as 0.81 (95% CI: 0.72-0.89) in the original study.[11]

Limitations

This study has some limitations. To the best of our knowledge, there is no adaptation study of SPAKE in different languages and cultures, so the discussion of our results is limited to the results of the original questionnaire. As the study was conducted in a single center, the results cannot be generalized. Although tobacco consumption is a predictor for the onset of SpA, impacts disease activity, and reduces response to bDMARDs, the questionnaire does not include a specific item on tobacco use. Therefore, it is important for rheumatology nurses and physicians to be cognizant of this issue and address tobacco cessation in their patients.

Our findings suggest that the SPAKE-T, which has acceptable psychometric properties, can be easily used to determine the general knowledge level of SpA patients on disease self-management. Rheumatology nurses and physicians can plan educational interventions by determining the knowledge level of SpA patients using the SPAKE-T, prepare educational content according to areas of high knowledge deficiency, and reuse the questionnaire as an outcome measure after completion of the training. We believe that future studies can use this questionnaire for many purposes in education, research, and practice related to disease management of SpA patients.

Ethics Committee Approval: This study was approved by the Ethics Committee of Bursa Uludağ University (approval number: 2023-3/28; date: 14/02/2023).

Informed Consent: written informed consent was obtained from the patients who agreed to take part in the study.

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