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Original Article

Validation of the Turkish Chronic Pain Acceptance Questionnaire-8

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ABSTRACT

Objectives: The aim of this study was to test the validity of the Turkish version of the Chronic Pain Acceptance Questionnaire (CPAQ)-8.

Patients and methods: This methodological and cross-sectional study was conducted with 80 female patients (mean age: 49.5±10 years; range, 28 to 75 years) diagnosed with fibromyalgia syndrome between January 2020 and December 2021. Participants completed the Turkish version of the CPAQ-8, as well as the Fibromyalgia Impact Questionnaire, Brief Pain Inventory, Hospital Anxiety and Depression Scale, and Tampa Kinesiophobia Scale. Internal consistency, confirmatory factor analysis, and construct validity were examined in the statistical analysis of the data obtained.

Results: The two-factor model created by exploratory factor analysis provided a better fit than the global factor model. Cronbach's alphas of both subscales of the CPAQ-8 were found to be 0.76 and 0.80; therefore, they provided internal consistency. The CPAQ-8 was found to be significantly correlated with all other scales compared.

Conclusion: The Turkish version of the CPAQ-8 is an assessment tool with sufficient validity in assessing pain acceptance levels in fibromyalgia patients experiencing chronic pain. Future studies are needed to evaluate the validity and reliability of the questionnaire in different chronic pain models.

Keywords: Chronic pain, fibromyalgia syndrome, pain acceptance.

Chronic pain is a significant issue that causes heavy healthcare expenditure and workforce loss with its negative impact on individuals' psychosocial status, quality of life, and functional abilities.[1] Chronic pain is defined as pain that does not regress within the expected recovery period.[2] Depending on the underlying cause, this definition may be used for pain that persists for six weeks or six months in different cases.[1,2]

Fibromyalgia is a syndrome with chronic widespread body pain, fatigue, sleep disorder, autonomic dysfunction, and psychogenic pathologies, usually with unknown etiology. The prevalence of fibromyalgia syndrome (FMS) is reported between 2 and 9%, depending on the diagnostic criteria used.[3,4]

In recent years, studies have focused on behavioral pain models to better understand chronic pain conditions that do not respond to traditional treatment methods.[5,6] Cognitive behavioral therapy, which focuses on the "fear-avoidance model" in the management of chronic pain, is gaining importance as an effective treatment option to reduce pain and disability by providing the patient with psychological flexibility.[7,8] In this context, assessment tools are

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needed to determine the psychogenic elements of chronic pain, such as pain avoidance and acceptance of the situation.[6,9]

The Chronic Pain Acceptance Questionnaire (CPAQ) was first developed in 1992 and revised in 2004 to form a 20-question questionnaire collecting information about the level of pain acceptance and its psychometric properties.[10] The Turkish validity and reliability of this questionnaire were studied in 2018 by Akmaz et al.[11] The CPAQ-8, the short version, is a 7-point Likert scale consisting of eight items developed in 2010, and its validity and reliability were demonstrated.[12]

The CPAQ-8 has two subscales: the activity engagement (AE) subscale reflects the extent to which the individual's participation in daily activities in the presence of pain. The pain willingness (PW) subscale assesses the degree to which a person allows pain to exist without trying to control or prevent it. With these two subscales, the CPAQ-8 is an effective tool in evaluating pain acceptance, considering psychometric properties, such as content structure, criterion validity, consistency, coherence, and interpretability.[12] Due to these features, the questionnaire was translated into many languages, and its validity and reliability were studied by Eide et al.[13] in Norwegian, Sánchez-Rodríguez et al.[14] in Spanish, Rovner et al.[15] in Swedish, and Liu et al.[16] in Chinese. This study aimed to investigate the validity of the Turkish version of CPAQ-8 in the fibromyalgia population with chronic pain.

PATIENTS AND METHODS

The methodological and cross-sectional study was conducted with 80 female FMS patients (mean age: 49.5±10 years; range, 28 to 75 years) at the Istanbul University Istanbul Faculty of Medicine, Department of Physical Medicine and Rehabilitation between January 2020 and December 2021. Necessary permissions were obtained from the researchers who developed the scale to perform the Turkish translation and validation study. Afterward, the scale was translated from English to Turkish by three translators who are fluent in both languages. The researchers evaluated the Turkish translation, and the most appropriate expressions were selected, and this version was given to 10 bilingual health professionals (all medicine faculty members) for preliminary validation. The translation was revised based on these professionals' minor suggestions for a better understanding of the scale. The other three translators translated the scale back into English. The back-translation was compared with the original CPAQ-8, and for the items that did not match, a final discussion was made by the authors and translators until a final version was reconciled. This version was then piloted among 20 patients with chronic pain. Necessary changes were made in the wording according to these patients' feedback to form the Turkish version of CPAQ-8. After ensuring the construct validity of the translation at the preliminary level, further investigations on the psychometric properties of the tool were performed.

A patient identification form, the Turkish CPAQ-8, Tampa Scale of Kinesiophobia (TSK), Fibromyalgia Impact Questionnaire (FIQ), and Brief Pain Inventory were used to collect data. Information on age, sex, education level, occupation, location of pain, duration of pain, date of diagnosis, and treatment applied was collected using the patient identification form.

Patients were selected upon their application to our physical medicine and rehabilitation outpatient clinic. Patients diagnosed with FMS using the 2016 American College of Rheumatology (ACR) criteria and literate in Turkish were included in the study. The sample size for the study was calculated by considering the number of items (n=8) in the CPAQ-8. Statistically, it is recommended to have 7 to 10 individuals for each item to determine the sample sizep;[17] therefore, the study was completed with 80 patients.

Assessment tools

Fibromyalgia impact questionnaire

The FIQ was used to measure patients' symptom severity and functional status.[18] There are 10 items in the FIQ; each item gets a score between 0 and 10. The first item questions the ability to perform activities of daily living with 11 questions. Other items question general well-being, ability to work, and symptoms of pain, fatigue, stiffness, anxiety, and depression. The score range is 0 to 100; higher scores indicate severe disease. The Turkish version of FIQ was validated in 2000 by Sarmer et al.[19]

Brief pain inventory

The Brief Pain Inventory consists of four questions about the severity of pain and seven questions about its effect on daily functions. The inventory assesses an individual's walking, exercise, sleep, emotional state, general activity status, social

relations, and joy in the last 24 h. Each item gets scored between 0 and 10. The Brief Pain Inventory's Turkish validity and reliability study was conducted in 2009 by Dicle et al.[20]

Hospital Anxiety and Depression Scale

The Hospital Anxiety and Depression Scale (HADS) consists of 14 items and is designed to assess the severity of anxiety and depression in patients. Each item is scored between 0 and 3; higher scores indicate more anxiety or depression. The HADS has good psychometric properties and is frequently used in patients with musculoskeletal disorders.[21] The Turkish reliability of the HADS was studied in 2013 by Paker et al.[22]

Tampa Scale of Kinesiophobia

The TSK is a 17-item self-report questionnaire based on the evaluation of fear of movement, fear of physical activity, and fear avoidance. Scoring ranges from 1 to 4 points for each item, with higher scores indicating greater fear of injury. The reliability and validity of TSK were demonstrated in the patient population with chronic pain.[23] The TSK's Turkish validity and reliability study was conducted in 2011 by Tunca Yılmaz et al.[24]

Statistical analysis

The Cronbach's alpha method was used to evaluate the internal consistency of the PW and AE subscales of CPAQ-8. The Cronbach's alpha coefficient, which reflects the homogeneity of the same subgroup items, was separately calculated for each subscale. A Cronbach's alpha value of 0.7 is considered the minimum requirement for internal consistency.

Confirmatory factor analyses were performed within the scope of the validity test. Our strategy was to test and compare two different models: *(i)* a basic 8-item model (i.e., a single-factor structure) and *(ii)* a two-factor, eight-item model validated by Fish et al.[12] The study was planned according to this basis. Construct validity was determined by comparing the CPAQ-8 total and subscale scores with other specified scale scorings. Only correlations of $p<0.001$ were considered significant.

Data were analyzed with the IBM SPSS (version 21.0 software (IBM Corp., Armonk, NY, USA). The behavior of quantitative variables was indicated using centralization and measures of variance (mean ± standard deviation). Nonparametric Spearman's rank correlation test was used to calculate the correlation between any two numerical variables since the data did not have a normal distribution. The level of statistical significance was set at $p<0.05$.

RESULTS

The demographic and clinical parameters of the participants are given in Table 1. The internal consistency of the scale was measured with Cronbach's alpha. Cronbach's alpha values for AE and PW subscales were found to be 0.8 and 0.76, respectively (Table 2). Confirmatory factor analysis was used to test the adequacy of the previously supported two-factor CPAQ-8 model. For comparison, a one-factor model was also estimated in which all items were

TABLE 1
Demographic and clinical parameters of the participants

	n	%	Mean±SD	Median	Min-Max
Age (year)			49.5±10	49	28-75
Sex					
Female	80	100			
Visual Analog Scale-Pain			6.8±1.6	7	1-9
CPAQ-8-Pain Willingness			10.8±4.1	11	2-20
CPAQ-8-Activity Engagement			10.5±3.6	10.5	3-18
CPAQ-8 Total			21.4±7	22	6-37
Fibromyalgia Impact Questionnaire			57.4±13.9	59	23-90
Brief Pain Inventory Severity of Pain			6±1.7	6.13	1.5-9
Brief Pain Inventory Effect of Pain			6.1±1.9	6.29	0.71-9.86
Tampa Scale of Kinesiophobia			46±5.9	47	32-59

SD: Standard deviation; CPAQ-8: Chronic Pain Acceptance Questionnaire-8.

TABLE 2
Cronbach's alpha values of the CPAQ-8 subscales and questions

CPAQ-8 Activity Engagement					CPAQ-8 Pain Willingness				
	Cronbach's alpha	Mean±SD	Median	Min-Max		Cronbach's alpha	Mean±SD	Median	Min-Max
Total	0.8	10.5±3.6	10.5	3.0-18.0	Total	0.76	10.8±4.1	11.0	2.0-20.0
CPAQ-8 1	0.72	2.6±1.1	3.0	0.0-6.0	CPAQ-8 2	0.68	3.1±1.2	3.0	0.0-6.0
CPAQ-8 3	0.72	2.7±1.1	3.0	1.0-6.0	CPAQ-8 4	0.68	2.6±1.4	3.0	0.0-5.0
CPAQ-8 5	0.75	2.4±1.2	2.0	0.0-5.0	CPAQ-8 7	0.7	2.4±1.5	2.0	0.0-6.0
CPAQ-8 6	0.81	2.8±1.2	3.0	0.0-6.0	CPAQ-8 8	0.77	2.7±1.4	3.0	0.0-5.0

CPAQ-8: Chronic Pain Acceptance Questionnaire-8; SD: Standard deviation.

TABLE 3
Confirmatory factor analysis

Model	*p*	χ^2/df	RMSEA	SRMR	CFI	NFI
Global factor	0.001	2.52	0.14	0.08	0.87	0.8
Two factor model	0.192	1.28	0.06	0.06	0.98	0.91

RMSEA: Root-mean-square-error-of-approximation; SRMR: Standardized root mean square residual; CFI: Comparative fit index; NFI: Normed fit index; df: degrees of freedom.

TABLE 4
Correlation analysis

No	Parameter	1	2	3	4	5	6	7	8
1	Visual analog scale-pain	1							
2	CPAQ-8 total	-0.67**	1						
3	CPAQ-8-activity engagement	-0.66**	0.87**	1					
4	CPAQ-8-pain willingness	-0.56**	0.91**	0.61**	1				
5	Brief pain inventory severity of pain	0.74**	-0.73**	-0.67**	-0.66**	1			
6	Brief pain inventory effect of pain	0.78**	-0.76**	-0.66**	-0.71**	0.89**	1		
7	Fibromyalgia impact questionnaire	0.81**	-0.73**	-0.65**	-0.67**	0.75**	0.8**	1	
8	Tampa scale of kinesiophobia	0.46**	-0.61**	-0.6**	-0.54**	0.64**	0.58**	0.61**	1

CPAQ-8: Chronic Pain Acceptance Questionnaire-8; Spearman Correlation test * p<0.05; ** p<0.001.

determined according to a single factor. All factor loadings were positive and statistically significant. When we examined the two models separately, the global factor model did not have acceptable fit indices; however, the two-factor model's fit indices were at an acceptable level (Table 3).

While the correlation coefficients express the degree of magnitude of the effect, the *p* values test the existence of these observed effects. Negative correlation coefficients represent inversely proportional parameters, while positive correlation coefficients represent directly proportional changing parameters. Generally accepted interpretations for effect sizes are moderate between 0.4 and 0.499, strong between 0.5 and 0.799, and very strong between 0.8 and 1. A statistically significant correlation was observed in the comparisons between the data ($p<0.001$, Table 4).

DISCUSSION

Chronic pain is a common health problem, complex to manage, and associated with high costs. Behavioral treatment methods, particularly cognitive behavioral therapy, are increasingly being used to treat chronic

pain and acceptance of pain accordingly continues to be a focal point.[5,13] Acceptance of chronic pain has been shown to reduce pain intensity, pain-related anxiety, and depression and thus reduce pain-related physical and psychosocial disability. Reliable and valid tools are needed to further explore the acceptance in chronic pain.[6,25]

In this study, Cronbach's alpha coefficient was used to assess the internal consistency of the CPAQ-8, which is a Likert-type scale. The internal consistency reliability coefficient of the CPAQ-8 was 0.8 for the AE subscale and 0.76 for the PW subscale. These values were at an acceptable level, and the items in the scale were consistent with each other and consisted of items focusing on the same factor.[26]

Correlation analyses showed that both the CPAQ-8 total and subscale correlate with the other tools used. Moreover, acceptance of pain and participation in daily activities were associated with disease severity in our fibromyalgia sample. These findings are consistent with the results of Nicholas and Asghari[9]

Our findings support the validity of the Turkish version of the CPAQ-8, consistent with findings obtained in previous studies and other versions of the CPAQ-8.[13-16] The CPAQ-8 provides both the assessment of pain acceptance and the patient's perception of life changes due to chronic pain, enabling the clinicians to evaluate and manage pain in a multifaceted manner. In consequence, the CPAQ-8 can be a valuable clinical tool to reflect changes during pain management and can be used to evaluate treatment efficacy. Compared to the original 20-item CPAQ, CPAQ-8 is easier to comprehend for the patients and faster to evaluate for clinicians.

There are several limitations to this study. The variables evaluated in the study were collected via a questionnaire, which raised the possibility of common method variance. The construct validity of the CPAQ-8 can be made more comprehensively by examining the relationship between pain acceptance and other objective measures, such as physical performance measures or health care utilization. Future research may examine content validity to examine whether the CPAQ-8 achieves desired coverage on pain acceptance. Since it consists of fewer items, CPAQ-8 may be less sensitive to change than CPAQ. Future studies need to evaluate the validity and safety of the questionnaire in different chronic pain models.

In conclusion, the Turkish version of the CPAQ-8 was found to be an assessment tool with sufficient validity in assessing pain acceptance levels in patients with chronic pain due to FMS. This scale can be used to determine the effect of pain and the treatments applied.

Ethics Committee Approval: The study protocol was approved by the Istanbul University Istanbul Faculty of Medicine Ethics Committee (date/no: 16.01.2019/75). Clinical trial number: NCT04525742, August25, 2020. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Patient Consent for Publication: A written informed consent was obtained from each patient.

Data Sharing Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Author Contributions: Idea/concept, control/supervision, critical review: A.K.; Design, data collection-processing, literature review, references and fundings: M.Z.; Analysis-interpretation, writing the article, materials: A.K.M.

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REFERENCES

1. Hylands-White N, Duarte RV, Raphael JH. An overview of treatment approaches for chronic pain management. Rheumatol Int 2017;37:29-42.
2. McCracken LM, Marin FM. Current and future trends in psychology and chronic pain: Time for a change? Pain Manag 2014;4:113-21.
3. Evcik D, Ketenci A, Sindel D. The Turkish Society of Physical Medicine and Rehabilitation (TSPMR) guideline recommendations for the management of fibromyalgia syndrome. Turk J Phys Med Rehabil 2019;65:111-23.
4. Wolfe F, Clauw DJ, Fitzcharles MA, Goldenberg DL, Häuser W, Katz RL, et al. 2016 Revisions to the 2010/2011 fibromyalgia diagnostic criteria. Semin Arthritis Rheum 2016;46:319-29.
5. Feliu-Soler A, Montesinos F, Gutiérrez-Martínez O, Scott W, McCracken LM, Luciano JV. Current status of acceptance and commitment therapy for chronic pain: A narrative review. J Pain Res 2018;11:2145-59.
6. McCracken LM, Morley S. The psychological flexibility model: A basis for integration and progress in psychological approaches to chronic pain management. J Pain 2014;15:221-34.
7. Pei JH, Ma T, Nan RL, Chen HX, Zhang YB, Gou L, et al. Mindfulness-based cognitive therapy for treating chronic pain a systematic review and meta-analysis. Psychol Health Med 2021;26:333-46.
8. Hofmann SG, Asnaani A, Vonk IJ, Sawyer AT, Fang A. The efficacy of cognitive behavioral therapy: A review of meta-analyses. Cognit Ther Res 2012;36:427-40.

9. Nicholas MK, Asghari A. Investigating acceptance in adjustment to chronic pain: Is acceptance broader than we thought? Pain 2006;124:269-79.
10. Reneman MF, Dijkstra A, Geertzen JH, Dijkstra PU. Psychometric properties of Chronic Pain Acceptance Questionnaires: A systematic review. Eur J Pain 2010;14:457-65.
11. Akmaz HE, Uyar M, Kuzeyli Yıldırım Y, Akın Korhan E. Validity and reliability of the Turkish chronic pain acceptance questionnaire. Balkan Med J 2018;35:238-44.
12. Fish RA, McGuire B, Hogan M, Morrison TG, Stewart I. Validation of the chronic pain acceptance questionnaire (CPAQ) in an Internet sample and development and preliminary validation of the CPAQ-8. Pain 2010;149:435-43.
13. Eide H, Leren L, Sørebø Ø. The Norwegian versions of the Chronic Pain Acceptance Questionnaire CPAQ-20 and CPAQ-8 - validation and reliability studies. Disabil Rehabil 2017;39:1441-8.
14. Sánchez-Rodríguez E, de la Vega R, Racine M, Roy R, Jensen MP, Miró J. Support for the Spanish version of the CPAQ-8 as a measure of chronic pain acceptance. J Eval Clin Pract 2019;25:881-8.
15. Rovner GS, Arestedt K, Gerdle B, Börsbo B, McCracken LM. Psychometric properties of the 8-item Chronic Pain Acceptance Questionnaire (CPAQ-8) in a Swedish chronic pain cohort. J Rehabil Med 2014;46:73-80.
16. Liu Y, Wang L, Wei Y, Wang X, Xu T, Sun J. Validation of a Chinese version of the Chronic Pain Acceptance Questionnaire (CAPQ) and CPAQ-8 in chronic pain patients. Medicine (Baltimore) 2016;95:e4339.
17. MacCallum RC, Widaman KF, Preacher KJ, Hong S. Sample size in factor analysis: The role of model error. Multivariate Behav Res 2001;36:611-37.
18. Burckhardt CS, Clark SR, Bennett RM. The fibromyalgia impact questionnaire: Development and validation. J Rheumatol 1991;18:728-33.
19. Sarmer S, Ergin S, Yavuzer G. The validity and reliability of the Turkish version of the Fibromyalgia Impact Questionnaire. Rheumatol Int 2000;20:9-12.
20. Dicle A, Karayurt O, Dirimese E. Validation of the Turkish version of the Brief Pain Inventory in surgery patients. Pain Manag Nurs 2009;10:107-13.e2.
21. Pallant JF, Bailey CM. Assessment of the structure of the Hospital Anxiety and Depression Scale in musculoskeletal patients. Health Qual Life Outcomes 2005;3:82.
22. Paker N, Bugdayci D, Midik M, Celik B, Kesiktas N. Reliability of the Turkish version of the hospital anxiety and depression scale in the people with traumatic spinal cord injury. NeuroRehabilitation 2013;33:337-41.
23. Vlaeyen JWS, Kole-Snijders AMJ, Boeren RGB, van Eek H. Fear of movement/(re)injury in chronic low back pain and its relation to behavioral performance. Pain 1995;62:363-72.
24. Tunca Yilmaz Ö, Yakut Y, Uygur F, Ulug N. Tampa Kinezyofobi Ölçeği'nin Türkçe versiyonu ve test-tekrar test güvenirliği. Fizyoterapi Rehabilitasyon 2011;22:44-9.
25. Vowles KE, McCracken LM, Eccleston C. Processes of change in treatment for chronic pain: The contributions of pain, acceptance, and catastrophizing. Eur J Pain 2007;11:779-87.
26. Sullivan GM, Artino AR Jr. Analyzing and interpreting data from likert-type scales. J Grad Med Educ 2013;5:541-2.