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Cross-Cultural Translation, Validity and Reliability of the Turkish Version of the Waddell Disability Index

Waddell Engellilik İndeksinin Türkçe Versiyonunun Kültürler Arası Çevirisi, Geçerliliği ve Güvenilirliği

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ABSTRACT Objective: The most important aspect of evaluating the functional abilities of the patient and deciding on a successful treatment procedure is the correct management of the evaluation questionnaires. The aim of this study was to translate the Waddell Disability Index (WDI) into the Turkish language and assess its reliability and validity among patients with low back pain (LBP) in the Turkish population. **Material and Methods:** >One hundred subjects (63 female, 37 male) who had LBP for at least 3 months were included in this study. All participants were asked to complete the WDI, the Roland-Morris Disability Questionnaire (RMDQ), and the Bournemouth Questionnaire (BQ) on the day of admission, and 1 week later. The test-retest reliability and internal consistency analyses were applied for the assessment of reliability. The test-retest analysis was assessed by using the intraclass correlation coefficient (ICC) method (95% confidence interval). The value of Cronbach's alpha coefficient was calculated for internal consistency. Spearman's correlation coefficient analysis was used for convergent validity. **Results:** The mean age was 50.14±12.61 years in the study. The WDI had a good internal consistency (Cronbach's alpha coefficient=0.816) and excellent test-retest reliability (ICC=0.957). Spearman's correlation coefficient of the WDI with the RMDQ was calculated at 0.641 and Spearman's correlation coefficient of the WDI with the BQ was calculated at 0.729. These results showed that the WDI is very well correlated with the RMDQ and the BQ (p<0.001). **Conclusion:** Our results suggest that the Turkish version of the WDI is a reliable and valid instrument for Turkish people.

Keywords: Low back pain; Waddell Disability Index; Turkish version; validity; reliability

ÖZET Amaç: Hastanın fonksiyonel yeteneklerini değerlendirmenin ve başarılı bir tedavi prosedürüne karar vermenin en önemli yönü, değerlendirme anketlerinin doğru yönetimidir. Bu çalışmanın amacı, Waddell Engellilik İndeksi'ni [Waddell Disability Index (WDI)] Türkçeye çevirmek ve Türk popülasyonunda bel ağrılı [low back pain (LBP)] hastalar arasında güvenilirliğini ve geçerliliğini değerlendirmektir. **Gereç ve Yöntemler:** Bu çalışmaya, en az 3 aydır bel ağrısı olan 100 (63 kadın, 37 erkek) kişi dâhil edildi. Tüm katılımcılardan WDI, Roland-Morris Engellilik Anketi [Roland-Morris Disability Questionnaire (RMDQ)] ve Bournemouth Anketi'ni [Bournemouth Questionnaire (BQ)] kabul gününde ve 1 hafta sonra doldurmaları istendi. Güvenirliğin değerlendirilmesi için test-tekrar test güvenirliği ve iç tutarlılık analizleri uygulanmıştır. Test-tekrar test analizi, sınıf içi korelasyon katsayısı [intraclass correlation coefficient (ICC)] yöntemi (%95 güven aralığı) kullanılarak değerlendirildi. İç tutarlılık için Cronbach alfa katsayısı değeri hesaplanmıştır. Yakınsak geçerlilik için Spearman korelasyon katsayısı analizi kullanıldı. **Bulgular:** Çalışmada ortalama yaş 50,14±12,61 yıl idi. WDI, iyi bir iç tutarlılığa (Cronbach alfa katsayısı=0,816) ve mükemmel test-tekrar test güvenilirliğine (ICC=0,957) sahipti. WDI ile RMDQ arasındaki Spearman korelasyon katsayısı 0,641 ve WDI ile BQ arasındaki Spearman korelasyon katsayısı 0,729 olarak hesaplandı. Bu sonuçlar, WDI'nın RMDQ ve BQ ile çok iyi korele olduğunu gösterdi (p<0,001). **Sonuç:** Sonuçlarımız, WDI'nın Türkçe versiyonunun Türk halkı için güvenilir ve geçerli bir araç olduğunu göstermektedir.

Anahtar Kelimeler: Bel ağrısı; Waddell Engellilik İndeksi; Türkçe versiyon; geçerlilik; güvenilirlik

Low back pain (LBP) is a very common musculoskeletal problem that negatively affects physical, mental, and social well-being, causes limitation of activity, impairs general health, can be seen in all societies, and affects people of all ages. Heavy physical strain, repetitive lifting, sociodemographic charac-

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teristics, habits, and psychosocial factors have been shown as risk factors for LBP.[1] The reasons such as the high prevalence of LBP in society, its persistence for a long time, causing functional losses and adversely affect the quality of life have led to an increase in the importance of specific evaluation and treatment methods used in LBP. One of the most important aspect of evaluating the functional abilities of the patient and deciding on a successful treatment protocol is the correct use of measurement questionnaires. In general, spinal mobility and muscle strength are the most commonly used physiological measurements in patients with LBP. However, these measurements are weakly correlated with parameters such as symptom reduction, daily functional abilities, and working life. This proposed that objective evaluation of the spine and subjective measurement of function in patients with LBP should be performed with validated questionnaires. Also, apart from their role in functional status assessment, the scales can also be used to monitor patients with LBP. As a result, accurate assessment of functional disability with functional status questionnaires plays an important role in evaluating treatment and disease progression.[2,3]

The assessment of the effects of LBP-related disability on activities of daily living is necessary for the evaluation and effective treatment of LBP. Therefore, there is a need for scales and questionnaires evaluating disability as it leads to loss of function. As a result, internationally accepted tools for functional assessment have been adapted and used, especially in clinical trials. Among the features of the standard functional scale, it should be reproducible, reliable, valid, and sensitive to small but significant clinical changes.[4]

There are currently several relevant questionnaires developed and published in English. The most widely used scales for assessing LBP and disability are the Roland-Morris Disability Questionnaire (RMDQ), the Oswestry Disability Index (ODI), the Bournemouth Questionnaire (BQ), the Quebec Back Pain Disability Scale (QPDS), and the Waddell Disability Index (WDI).[4] All questionnaires have been shown to be similar in terms of high standards of validity, reliability, and sensitivity to change. Although some of these scales have been reported as having the best psychometric properties so far, this situation may differ between societies with different socio-cultural statuses. It is also important to choose the scale that best fits the needs of the population.[4,5] Most of these standardized questionnaires were developed to study English-speaking patients. However, there is a need for measures specifically designed for use in non-English speaking countries, as cultural groups differ in their expressions of illness and use of various health systems. Translating a questionnaire is important in terms of allowing the comparison of different populations and the exchange of information between cross-cultural and linguistic barriers. A simple direct translation of a questionnaire from one language to another would not allow its use in clinical research. The translation should be verified to obtain an equivalent questionnaire and to ensure comparability of the data.[2,6] It is now widely accepted that questionnaires for cross-cultural use must not only be well translated linguistically but must also be culturally adapted to maintain the content validity of the tool.[7]

WDI assesses the loss of function based on nine basic physical activities (lifting, sitting, standing, travelling, walking, sleeping, social life, sex life, and putting on footwear) of daily living commonly restricted by LBP. Patients answer the questions as positive or negative (yes/no). It has been suggested that simple yes/no questions are quick and reliable, appropriate for clinical consideration, and easily incorporated into routine assessment. The advantage of the WDI is that it is a detailed, short, and easy to answer outcome measurement. The questionnaire can be completed in about 5 minutes and scored in less than 1 minute.[5] It is validated in English, Spanish and is also available in an unvalidated French version.[5] The Turkish version study of this questionnaire has not been conducted yet. The increase in Turkish versions of questionnaires questioning LBP will increase the variety of evaluation methods of low back disorders and will help to better examine the discomfort. Therefore, the aim of the study was to translate the WDI into the Turkish language and assess its reliability and validity among patients with LBP in the Turkish population.

MATERIAL AND METHODS

STUDY DESIGN

This study was directed at the Department of Physical Medicine and Rehabilitation in Bezmiâlem Vakıf University. The trial protocol was confirmed by the Ethical Committee of Bezmiâlem Vakif University (date: April 29, 2022, no: 2022/134). Written consent was acquired by each patient enrolled. The study was conducted in accordance with the principles of the Declaration of Helsinki.

PARTICIPITANTS AND DATA EXTRACTION

We received permission to translate and make a cross-cultural adaptation of the scale into the Turkish language. Contact was established via mail and allowed to determine whether there were any attempts in progress to develop a Turkish version of their questionnaire and then translation and cultural adaptation were carried out according to the procedure established by Beaton et al.[7]

There are no general criteria for calculating sample size when assessing internal consistency and factor analysis. The Cosmin guideline, however, contains standards for evaluating the methodological quality of studies on measurement properties. According to the Cosmin checklist, a sample size of minimum 100 respondents or seven respondents times the number of items is recommended.[8] Moreover, Tabachnick and Fidell reported that, for factor analysis, a ratio of 10 participants per item was sufficient for the sample size.[9] Therefore, the present study included 100 patients with LBP. Thus, the required sample size was sufficient for the 9 items.

One hundred subjects (63 female, 37 male) aged 18-65 years who had LBP for at least 3 months were included in this study. All patients had been previously investigated by physical and neurological examination, spine radiographs, and laboratory tests (complete blood count, erythrocyte sedimentation rate, C-reactive protein, blood biochemistry, urinary analysis) to identify causes of LBP. Exclusion criteria are the patients with malignancy, a history of lumbar spine injury or surgery, vertebral fractures, an infection in the lumbar spine, radiculopathy with neurological deficit, lumbar myelopathy, neurological or vascular diseases, rheumatic disease, and psychiatric disorders.

The translation and cross-cultural adaptation process used the guidelines proposed by Beaton et al.[7] Two bilingual translators whose mother language was Turkish translated the scale in English into Turkish, independent of each other (forward translation). These translations were compared by 2 bilingual translators and combined into a single translation. Two native English translators, who did not know the purpose of the study and were completely blind to the original version of the scale, translated the Turkish translation back into English (backward translation). The 2 new English versions of the WDI were presented to a committee of 4 translators and 2 doctors. The committee reviewed all the translation and adaptation processes and compared the Turkish version of the scale with the original version of the scale. The Turkish version of WDI was found compatible with the original English version in semantic and holistic terms. The Turkish version of WDI was tested with 30 patients suffering from LBP during a pilot study. The patients were questioned in terms of the comprehensibility of the questionnaire and its suitability for their own situation. All the questions were well accepted by patients. After the pilot study, the final version of the scale was obtained.

RMDQ

The Turkish version of the RMDQ was conducted by Küçükdeveci et al. in 2001.[10] The RMDQ is a multidimensional questionnaire consisting of 24 items about the individual's perceptions of LBP and related disability, designed to assess the degree of functional limitation in patients with LBP: walking, bending, sitting, lying, dressing, sleeping/resting, eating, pain frequency, self-care, and activities of daily living. In the questionnaire, the answers vary from yes-no (yes: 1 point, no: 0 points) and high scores indicate a severe disability.

BQ

The Turkish version of the BQ was conducted by Gunaydin et al. in 2016.[11] The BQ is a multidimensional questionnaire consisting of 7 items for the evaluation

of the functional abilities of the patient and deciding on a successful treatment protocol in patients with LBP: pain, daily-social life, depression-anxiety, pain control, and fear-avoidance behaviors. In the questionnaire, the answers are scored on values ranging from 0 to 10. The total score is 70, and a high score indicates a high disability.

WDI

The WDI is a questionnaire consisting of 9 items that evaluate activities of daily living restricted due to LBP. It includes heavy lifting, sitting, standing, traveling, walking, sleeping, social activity, sex life, and wearing footwear. In the questionnaire, the answers range from yes to no (yes: 1 point, no: 0 points), and the total score ranges from 0 to 9.[12]

Participants had to answer the newly-developed Turkish version of the WDI along with the previously translated Turkish version of the RMDQ and BQ. The scales were completed by all the patients. Written consent was obtained from each patient enrolled.

STATISTICAL ANALYSIS

All statistical analyses were performed using IBM SPSS Statistics for Windows, Version 28.0 (Armonk, NY: IBM Corp). The Shapiro-Wilk test was used to assess the assumption of normality. Continuous variables (age, duration of symptoms, the value of the WDI, the RMDQ, and the BQ) were presented with mean±standard deviation (SD) and median (minimum-maximum). Categorical data (sex and occupation) were expressed as frequencies with percentages. The test-retest value was measured with the intraclass correlation coefficient (ICC) and the internal consistency analysis was measured with Cronbach's alpha value. ICC and Cronbach's alpha values can vary from 0 to 1. ICC values of 0.80 and above were accepted as a high level of correlation. Cronbach's alpha coefficient value was considered as an acceptable internal consistency for greater than 0.7.[13,14] Internal construct validity of the WDI was analyzed with confirmatory factor analysis. The structural validity of LBOS was examined through factor analysis by using Bartlett's test (BT), and the combined validity was assessed using the Kaiser-Meyer-Olkin (KMO) test. The convergent validity of the WDI was determined using Spearman's correlation analysis after the total scores obtained from all questionnaires (WDI, RMDQ, and BQ). Spearman's correlation coefficient for the construct validity was accepted as follows: $r_S \geq 0.81$-1.0 as excellent, 0.61-0.80 very good, 0.41-0.60 good, 0.21-0.40 fair, and 0-0.20 poor.[15] The statistical significance value was accepted as $p<0.05$.

RESULTS

The mean age was 50.14±12.61 years in the study. Of all patients, 63% (n=63) were female and 37% (n=37) were male. The mean duration of LBP was 14.49±10.45 years. The demographic characteristics of patients including age, gender, duration of symptoms, occupation, and the total scores of all questionnaires (WDI, RMDQ, and BQ) obtained 1 week apart were presented in Table 1. The ICC value for test-retest of the total score was 0.957 for the WDI, 0.983 for the RMDQ, and 0.997 for the BQ. According to convergent validity results, the correlation of the WDI was found very high with the BQ (r_S=0.729) and the RMDQ (r_S=0.641) (Table 2). These results showed that the WDI is very well correlated with the RMDQ and the BQ ($p<0.001$) and the reliability of

TABLE 1: The demographic and clinical characteristics of patients and the mean patient total scores for each questionnaires.

Variables	n=100	
Age	50.14±12.61	
Gender		
Female	63% (63)	
Male	37% (37)	
Duration of low back pain (years)	14.49±10.45	
Occupation		
Working	44% (44)	
Unemployed	41% (41)	
Retired	15% (15)	
The mean total score of WDI (initial)	6.23±1.33	*6.00 (4.00-9.00)
The mean total score of RMDQ (initial)	16.12±3.49	*17.00 (8.00-21.00)
The mean total score of BQ (initial)	37.74±8.75	*38.00 (23.00-55.00)
The mean total score of WDI (after one week)	6.05±1.32	*6.00 (4.00-9.00)
The mean total score of RMDQ (after one week)	15.78±3.55	*16.00 (8.00-21.00)
The mean total score of BQ (after one week)	37.20±8.77	*37.00 (22.00-55.00)

All values are expressed as mean±standard deviation; *median (minimum-maximum); number and percentage; WDI: Waddell Disability Index; RMDQ: Roland-Morris Disability Questionnaire; BQ: Bournemouth Questionnaire.

TABLE 2: The correlation values of the Waddell Disability Index.

Questionnaires (n=100)	WDI Spearman's correlation (initial and after one week) r_s	p value*
RMDQ (initial)	0.641	<0.001
BQ (initial)	0.729	<0.001
RMDQ (after one week)	0.632	<0.001
BQ (after one week)	0.705	<0.001

*p<0.05; significant difference; WDI: Waddell Disability Index;
RMDQ: Roland-Morris Disability Questionnaire; BQ: Bournemouth Questionnaire.

the WDI was considerably high. ICC correlation for the retest reliability of the WDI is presented in Table 3. The Cronbach's alpha score for the entire questionnaire was recorded as 0.816, thereby indicating that the WDI had a good internal consistency (Table 4). The KMO test value was calculated as 0.50, expressing that the sample used in the study was appropriate. The BT value is 155.683, indicating that the sample data are homogeneous and sufficient (Table 5). These findings suggest that the WDI is both appropriate and sufficient.

DISCUSSION

LBP is an important factor that causes disability by affecting the daily, social, and work life of the person. The restriction of activities of daily living caused by LBP has an important place in the planning of treatment. Whatever the source of the pain, the objective assessment is difficult and the evaluation should be based primarily on the patient's subjective experience of pain and disability. Instead of focusing on the examination findings for diagnostic purposes, it is more accurate for a multidisciplinary approach to evaluate the performance of the patient in his daily life. For this purpose, there are specific questionnaires developed for the evaluation of patients and the quantitative determination of treatment results. Although the direct observation of activity limitations is impractical, the standardized self-report questionnaires provide an opportunity to gather a large amount of information about activity limitations. Various features of the scale such as acceptability, ease of use, high reliability, validity, and responsiveness to clinical changes can guide the evaluation and selection of an appropriate scale. On the other hand, questionnaires are more consistent and reliable than interviews because of presenting the questions to each patient in exactly the same way every time. Although there are many types of questionnaires, previous studies show that simple scales are better than complex ones.[3,6,7] Therefore, we attempted to adapt the WDI to Turkish. The full-adapted version is published in the Appendix. ICC values above 0.80 were accepted as excellent reliability. For the test-retest reliability, the ICC value was 0.957 at a 1-week interval in our study. This study showed that the WDI is a valid and reliable method of measuring disability in Turkish patients with LBP.

Küçüdeveci et al. conducted a study concerning the validation of the RMDQ in chronic LBP and evaluated the patients with an interval of 2 weeks. They

TABLE 3: Intraclass correlation coefficient values of Waddell Disability Index.

Waddell Disability Index	Intraclass correlation coefficient	95% confidence ınterval (lower-upper bound)
First question	1.000	1.000-1.000
Second question	0.955	0.933-0.969
Third question	0.972	0.959-0.981
Fourth question	1.000	1.000-1.000
Fifth question	1.000	1.000-1.000
Sixth question	0.980	0.971-0.987
Seventh question	0.761	0.665-0.833
Eighth question	0.874	0.818-0.913
Ninth question	0.859	0.797-0.903
Total points	0.957	0.937-0.971

TABLE 4: Internal consistency analysis for Waddell Disability Index.

Waddell Disability Index (n=100)	Cronbach' alpha value
Except for the first question	0.826
Except for the second question	0.850
Except for the third question	0.927
Except for the fourth question	0.826
Except for the fifth question	0.835
Except for the sixth question	0.706
Except for the seventh question	0.738
Except for the eighth question	0.870
Except for the ninth question	0.767
Total	0.816

TABLE 5: Kaiser Meyer Olkin and Bartlett's tests.

		Bartlett's test	
Waddell Disability Index	Kaiser-Meyer-Olkin test	Chi square	p value*
	0.50	155.863	<0.001

*p<0.05; significant difference.

reported that the value of the Cronbach's alpha coefficient was 0.85 and 0.89 at time 1 and time 2, respectively and the ICC score was 0.79 and 0.86 at times 1 and time 2, respectively.[10] Gunaydin et al. conducted a study concerning the validation of the BQ in chronic LBP and also applied 2 different questionnaires (RMDQ and QPDS) to the patients. They found that the value of the Cronbach's alpha coefficient was 0.914 and the ICC score was 0.962 for the BQ. They also found that the correlation between the BQ and the RMDQ was 0.703 and the correlation between the BQ and the QPDS was 0.659.[11] There are very few studies in the literature on WDI. In the study conducted by Duruöz et al., who developed a valid and reliable functional disability scale for chronic LBP, no data was given about the value of the ICC score and Cronbach's alpha coefficient. They found that their scale (İstanbul Low Back Pain Disability Index) showed good convergence with the QBPDS (r_S:0.82), the ODI (r_s:0.76), and Waddell's Functional Index (r_s:0.68).[3] The test-retest reliability of the WDI has been reported to be between r_s=0.73 and r_s=0.90.[10] Davidson et al. compared the reliability of measurements obtained with and responsiveness of the modified ODI, the QPDS, the RMDQ, the WDI, and the SF-36 physical health scales in people with LBP. They found that the ICC value was 0.84, 0.84,

APPENDIX 1: Waddell Özürlülük İndeksi.

Aşağıdaki ifadeleri okuyup her ifade için size uygun olan EVET ya da HAYIR cevabını işaretleyiniz	
Bel ağrınız nedeniyle aşağıdaki limitleriniz (sınırlamalarınız) nelerdir?	
1. Ağır yük kaldırmaktan kaçınma ya da ağır yük kaldırırken yardım gereksinimi duyuyor musunuz? (Örneğin; 30-40 kiloluk bavul, 3-4 yaşında çocuk)	
Evet (1)	Hayır (0)
2. Oturma genellikle 1,5 saatten daha az bir süre ile sınırlı mıdır?	
Evet (1)	Hayır (0)
3. Bir arabada veya otobüste seyahat etme genellikle 1,5 saatten daha az bir süre ile sınırlı mıdır?	
Evet (1)	Hayır (0)
4. Bir yerde ayakta durma genellikle 1,5 saatten daha az bir süre ile sınırlı mıdır?	
Evet (1)	Hayır (0)
5. Yürüme genellikle 1,5 saatten daha az bir süre ile sınırlı mıdır?	
Evet (1)	Hayır (0)
6. Bel ağrısı nedeniyle düzenli olarak uyku bozukluğu oluyor mu? (yani haftada 2 kez)	
Evet (1)	Hayır (0)
7. Sosyal aktiviteleri düzenli olarak kaçırma veya azaltma durumu oluyor mu? (spor hariç)	
Evet (1)	Hayır (0)
8. Cinsel aktivite sıklığında azalma durumu oluyor mu?	
Evet (1)	Hayır (0)
9. Ayak giysilerini giyerken düzenli olarak yardım gereksinimi duyuyor musunuz? (Örneğin; çorap, külotlu çorap, ayakkabı bağcığı)	
Evet (1)	Hayır (0)

0.74, and 0.53 for the ODI, the QPDS, the WDI, and the RMDQ, respectively. They also proposed that the modified ODI and the QPDS were the most reliable and had sufficient scale width to detect improvement or worsening in most subjects. Moreover, they indicated that the reliability of measurements obtained with the WDI was moderate, but it had insufficient scale width for clinical utility. Besides, they suggested that the RMDQ lacked sufficient reliability and scale width for clinical application. They conclude that one questionnaire can not be preferred over another based on the magnitude of the absolute values of responsiveness indexes because the responsiveness of the questionnaires was similar.[4] In our study, the ICC value of the Turkish version of the WDI was 0.957 and the Cronbach's alpha score of Turkish version of the WDI was 0.816. Therefore, we do not consider the WDI to be inadequate for clinical use.

Contrary to questionnaires evaluating general health, questionnaires related to regional pain and functions are considered to have higher validity because they are directed to a single body region. In clinical practice, many questionnaires have been prepared to be used for LBP and associated symptoms. The existence of such a wide range of questionnaires makes it difficult for clinicians and researchers to select an appropriate questionnaire when evaluating patients with LBP. For this reason, the scale to be used must have certain characteristics. Many scales include questions about pain (disorder), activities of daily living (disability), and the disadvantages of social or sexual life (handicap) in the same index. Because impairment, disability, and handicap are different dimensions of disease outcomes, they must be considered separately to assess the effects of diseases on subjects and to manage the correct treatment strategy. In questionnaire validity studies, it is recommended to use other questionnaires that are proven to be valid, accepted as the gold standard, and, if possible, specific to the subject. Considering this situation, RMDQ has been preferred because its validity and reliability have been proven in many languages, including Turkish, and it has been used in many studies. The RMDQ is simple to complete and easily understood by patients. The questionnaire also detects short-term changes in back pain or short-term changes in response to treatment. The RMDQ was developed to assess disability in patients with acute LBP and does not include questions about lifting, carrying, pulling, or pushing objects as well as psychological or social problems such as anxiety and depression. Similarly, BQ was chosen because of its validity and reliability in Turkish, its easy application, and its score calculation. It is stated that the pain parameter alone is not sufficient in the evaluation of patients with LBP and that biopsychosocial parameters should be evaluated with a comprehensive questionnaire. In the BQ, the questions examine daily life, social activity, and pain, as well as anxiety and depression. However, the BQ does not have any questions pertaining to body movement. The WDI obtains a more complete assessment of disability by evaluating daily living activities commonly restricted by LBP.[3,5,11,15-17] Although WDI is lacking in emotional parameters compared to BQ, according to the results of the study, WDI is as reliable and valid as BQ and RMDQ. We think that the WDI is easier to understand than BQ because of the few choices in the questionnaire. We also think that the WDI questionnaire is short, simple, and easily understandable by the patients.

The limitations of the study are as follows: it consisted of only patients who applied to the physical therapy and rehabilitation outpatient clinic, the number of patients included in the study was limited, and the analysis of which drug combinations the patient had been using and for how long were not made.

CONCLUSION

The selection of an appropriate measurement method is one of the key tasks in planning the clinical evaluation. Choosing the best outcome measure generally appears to be a difficult problem. A good scale should include questions about activities that the person commonly performs in their daily environment and help patients with LBP decide on appropriate treatment strategies to improve their function. Moreover, it should be relevant to the population being tested and provide the information that is actually needed. The results suggest that the Turkish version of the WDI was reliable and valid for the assessment of pain for patients with LBP in the Turkish-speaking popu-

lation. We think that it will be useful to use this questionnaire in the evaluation of LBP and disability and in the follow-up of patients in clinical studies to be conducted in our country.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

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