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Cross-Cultural Translation, Validity and Reliability of the Turkish Version of the Northwick Park Neck Pain Questionnaire

Northwick Park Boyun Ağrısı Anketi Türkçe Formunun Kültürler Arası Çevirisi, Geçerliliği ve Güvenilirliği

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ABSTRACT Objective: The aim of this study was to translate the Northwick Park Neck Pain Questionnaire (NPQ) into the Turkish language and assess its reliability and validity among patients with neck pain in the Turkish population. **Material and Methods:** One hundred subjects (67 female, 33 male) who had chronic neck pain for at least 3 months were included in this study. All participants were asked to complete the NPQ, the Neck Disability Index (NDI) and Neck Pain and Disability Scale (NPDS) on the day of admission, and one week later. The test-retest and internal consistency analyses were applied for the assessment of reliability. The test-retest analysis were 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 46.68±12.11 years in the study. The NPQ had a good internal consistency (Cronbach alpha=0.704) and excellent test-retest reliability (ICC=0.995). Spearman's correlation coefficient of the NPQ with the NDI was calculated at 0.648 and Spearman's correlation coefficient of the NPQ with the NPDS was calculated at 0.811. These results showed that the NPQ is very good correlated with the NDI and the NPDS (p<0.001). **Conclusion:** Our results suggest that the Turkish version of the NPQ is a reliable and valid instrument.

Keywords: Neck pain; Northwick Park Neck Pain Questionnaire; Turkish version; validity; reliability

ÖZET Amaç: Bu çalışmanın amacı, Northwick Park Boyun Ağrısı Anketi'ni [Neck Pain Questionnaire (NPQ)] Türkçeye çevirmek ve Türk popülasyonunda boyun ağrısı olan hastalar arasında güvenilirliğini ve geçerliliğini değerlendirmektir. **Gereç ve Yöntemler:** Bu çalışmaya en az 3 aydır kronik boyun ağrısı olan 100 kişi (67 kadın, 33 erkek) dâhil edildi. Tüm katılımcılardan NPQ, Boyun Özürlülük İndeksi [Neck Disability Index (NDI)] ve Boyun Ağrısı ve Özürlülük Ölçeği'ni [Neck Pain and Disability Scale (NPDS)] başvuru gününde ve bir hafta sonra doldurmaları istendi. Güvenirliğin değerlendirilmesi için test-tekrar test 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 46,68±12,11 yıl idi. NPQ iyi bir iç tutarlılığa (Cronbach alfa=0,704) ve mükemmel test-tekrar test güvenilirliğine (ICC=0,995) sahipti. NPQ ile NDI arasındaki Spearman korelasyon katsayısı 0,648 ve NPQ ile NPDS arasındaki Spearman korelasyon katsayısı 0,811 olarak hesaplandı. Bu sonuçlar, NPQ'nun NDI ve NPDS ile çok iyi korele olduğunu gösterdi (p<0,001). **Sonuç:** Sonuçlarımız, NPQ'nun Türkçe versiyonunun güvenilir ve geçerli bir araç olduğunu göstermektedir.

Anahtar Kelimeler: Boyun ağrısı; Northwick Park Boyun Ağrısı Anketi; Türkçe versiyon; geçerlilik; güvenilirlik

Neck pain is almost as common as low back pain and is a major cause of disability and loss of work. It is the second most common cause of chronic pain after low back pain. About 30% of the adult population experiences neck pain at least once in their lifetime. Neck pain, in addition to restricting activities of daily living, is a leading cause of disability and work loss among adults. In most cases, the exact cause of neck pain is unknown, but a number of physical, psychological, and social medical factors may

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contribute to its occurrence. The assessment of the effects of neck pain-related disability on activities of daily living is necessary for the evaluation and effective treatment of neck pain. Therefore, there is a need for scales and questionnaires evaluating disability as it leads to loss of function.[1] Among the characteristics of the standard functional scale, it should be reproducible, reliable and valid.[2]

There are currently several relevant questionnaires developed and published in English. The most widely used scales for assessing neck pain and disability are the Neck Disability Index (NDI), Neck Pain and Disability Scale (NPDS), Neck Bournemouth Questionnaire (NBQ), Northwick Park Neck Pain Questionnaire (NPQ), and Copenhagen Neck Functional Disability Scale (CNFDS). All questionnaires have been shown to be similar in terms of high standards of validity, reliability, and sensitivity to change.[1,3-5] Although some of these scales have been reported to have the best psychometric properties so far, this may differ between societies with different socio-cultural statuses. It is also important to choose the scale that best fits the needs of population.[2] Translating a questionnaire is important in terms of allowing the comparison of different populations and the exchange of information a cross-cultural and linguistic barriers.[1] It is now widely accepted that questionnaires for cross-cultural use not only need to be well translated linguistically, but the tool must be culturally adapted to maintain content validity.[6]

The NDI and the NPQ are adaptations of the Oswestry Low Back Pain Disability Questionnaire. However, pain and disability have been identified as separate dimensions in these questionnaires. The NPDS also includes both pain and disability dimensions. Bicer et al. conducted a cross-cultural adaptation of the NPDS and reported that patients had difficulty answering the questions and it was contradictory to mark the NPDS consisting of complete vertical lines, semicomplete vertical lines, and the areas between the lines.[1] The NDI has been widely used, making it easy to compare with previous studies.[4] The NPQ is a reliable and valid assessment tool for disability. Yeung et al. proposed that the NPQ provides a valid documentation, facilitates treatment evaluation, and provides a basis for cross-disease group comparison, therefore, its practicality and comprehensiveness further support its clinical use.[7] The aim of the study was to translate the NPQ into the Turkish language and assess its reliability and validity among patients with neck pain in the Turkish population.

MATERIAL AND METHODS

STUDY DESIGN

This study was directed at the Department of Physical Medicine and Rehabilitation in Bezmiâlem Vakif University. The trial protocol was confirmed by the Ethics Committee of Bezmiâlem Vakif University (date: July 26, 2022; no: E-54022451-050.05.04-70589). Written consent was acquired by each patient enrolled. The study was conducted in accordance with the principles of the Declaration of Helsinki.

PARTICIPANTS 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.[6]

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 the sample size of 10 participants per item was sufficient for factor analysis.[9] The present study included 100 patients with neck pain. Thus, the required sample size was sufficient for the 9 items.

One hundred subjects (67 female, 33 male) who were between 18-65 years of age and had chronic neck pain 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 the causes of neck pain. Exclusion criteria are the patients with malignancy, a history of cervical spine injury or surgery, acute whiplash injuries, vertebral fractures, an infection in the cervical spine, radiculopathy with neurological deficit, cervical myleopathy, neurological or vascular diseases, rheumatic disease and psychiatric disorders.

The translation and cross-cultural adaptation process used the guidelines proposed by Beaton et al. and ISPOR's principles of good practice for the translation and cultural adaptation process for patient-reported outcome measures.[6,10] Two bilingual translators whose mother language were Turkish translated the scale 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 two new English versions of the NPQ 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 (Appendix 1). The Turkish version of NPQ was found compatible with the original English version in semantic and holistic terms. The Turkish version of NPQ was tested with 30 patients suffering from neck pain 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.

NPDS

The Turkish version of the NPDS was conducted by Bicer et al. in 2004.[1] The NPDS is a multidimensional questionnaire consisting of 20 items with 4 dimensions: neck problems, pain intensity, the effect of neck pain on emotion, and its effect on life activities. Each item has a 10 cm visual analog scale. It has six main sections, evenly spaced by vertical bars. The midpoints of each range are marked with 2 dots (half point on the vertical slash). The scoring of each item changes on a continuous scale from 0 to 5.

NDI

The Turkish version of the NDI was conducted by Aslan et al. in 2008.[11] The NPI is a multidimensional questionnaire consisting of 10 items: pain intensity, personal care, lifting, reading, headaches, concentration, work, driving, sleeping, and recreation. Each item has 6 questions. Item scores range from 0 (no disability) to 5 (total disability).

Northwick Park NPQ

The NPQ is a multidimensional questionnaire consisting 9 items: intensity of neck pain, sleep disturbance, numbness, duration of symptoms, and disability in activities such as carrying heavy objects, reading and watching television, working, social life and driving. The driving item is optional. Each item has 1 question and 5 statements with increasing difficulty or pain. The answers to each question are scored 0 to 4, 4 representing the greatest disability, and the total score is obtained by summing the scores for the 9 items (possible score: 0-36).[7]

Test-retest reliability measures the stability over time of measurements made at 2 different times. In this analysis, it is recommended that a period of time should pass for patients to forget the answers at the initial assessment. However, it is important that there is no change in the current status of patients due to the disease during this time. In addition, a one-week period was generally used for test-retest reliability studies in previous similar studies.[11,12] In this study, a time interval of 7 days was used. Participants had to answer the newly-developed Turkish version of the Waddell Disability Index (WDI) along with the previously translated Turkish version of the Roland-Morris Disability Questionnaire (RMDQ) and Bournemouth Questionnaire (BQ) 1 week apart. The scales were completed by all the patients. Written consent was obtained by each patient enrolled.

STATISTICAL ANALYSIS

All statistical analyses were performed using IBM SPSS Statistics for Windows, Version 28.0 (IBM

APPENDIX 1: Northwick Park Neck Pain Questionaire.

Read the following statements and mark the answer that suits you best for each statement.		
Pain intensity	I have no pain at the moment	0
	My pain is very mild at the moment	1
	My pain is moderate at the moment	2
	My pain is fairly severe at the moment	3
	My pain is very severe at the moment	4
Pain and sleeping	My sleep is never disturbed by pain	0
	My sleep is occasionally disturbed by pain	1
	My sleep is regularly disturbed by pain	2
	Because of pain I have less than 5 hours sleep in total	3
	Because of pain I have less than 2 hours sleep in total	4
Pins, Needles or Numbness in Arms at Night	I have no pins and needles or numbness at night	0
	I have occasional pins and needles or numbness at night	1
	My sleep is regularly disturbed by pins and needles or numbness	2
	Because of pins and needles or numbness I have less than 5 hours sleep in total	3
	Because of pins and needles or numbness I have less than 2 hours sleep in total	4
Duration of symptoms	My neck and arms feel normal all day	0
	I have symptoms in my neck or arms on walking, which last less than one hour	1
	Symptoms are present on & off for a total period of 1-4 hrs	2
	Symptoms are present on & off for a total of more than 4 hrs	3
	Symptoms are present continuously all day	4
Carrying	I can carry heavy objects without extra pain	0
	I can carry heavy objects, but they give me extra pain	1
	Pain prevents me from carrying heavy objects, but I can manage medium weight objects	2
	I can only lift light weight objects	3
	I can not lift anything at all	4
Reading and Watching TV	I can do this as long as I wish with no problems	0
	I can do this as long as I wish, if I'm in a suitable position	1
	I can do this as long as I wish, but it causes extra pain	2
	Pain causes me to stop doing this sooner than I would like	3
	Pain prevents me from doing this at all	4
Working and Housework	I can do my usual work without extra pain	0
	I can do my usual work, but it gives me extra pain	1
	Pain prevents me from doing my usual work for more than half the usual time	2
	Pain prevents me from doing my usual work for more than a quarter of the usual time	3
	Pain prevents me from working at all	4
Social Activities	My social life is normal and causes me no extra pain	0
	My social life is normal but increases the degree of pain	1
	Pain has restricted my social life, but I am still able to go out	2
	Pain has restricted my social life to the home	3
	I can not drive at all due to neck symptoms	4
Driving (if applicable)	I can drive whenever necessary without discomfort	0
	I can drive whenever necessary, but with discomfort	1
	Neck pain or stiffness limits my driving occasionally	2
	Neck pain or stiffness limits my driving frequently	3
	I can not drive at all due to neck symptoms	4

Corp., Armonk, NY). 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 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 ac-

cepted as a high level of correlation. Cronbach 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 Low Back Outcome Score 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≥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 46.68±12.11 years in the study. Of all patients, 67% (n=67) were female and 33% (n=33) were male. The mean duration of low back pain was 8.85±8.03 years. The demographic characteristics of patients including age, gender, duration of symptoms, occupation, and the total scores of all questionnaires (NPQ, NDI, and NPDS) obtained one week apart were presented in Table 1. The ICC value for test-retest of the total score was 0.995 for the NPQ, 0.998 for the NDI, and 0.991 for the NPDS. According to convergent validity results, the correlation of the NPQ was found very high with the NPDS (r=0.811) and the NDI (r=0.648) (Table 2). These results showed that the NPQ is very good correlated with the NPDS and the NDI ($p<0.001$) and the reliability of the NPQ was considerably high. ICC correlation for the retest reliability of the NPQ were presented in Table 3. The Cronbach's alpha score for the entire questionnaire was recorded as 0.704, thereby indicating that the WDI had a good internal consistency (Table 4). The KMO test value was calculated as 0.60, expressing that the sample used in the study was appropriate. The BT value is 210.191, indicating that the sample data is homogeneous and sufficient (Table 5). These findings suggest that the WDI is both appropriate and sufficient.

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

Variables	n=100	
Age	46.68±12.11	
Gender		
Female	67% (67)	
Male	33% (33)	
Duration of low back pain (years)	8.85±8.03	
Occupation		
Working	45% (45)	
Unemployed	44% (44)	
Retired	11% (11)	
The mean total score of NPQ (initial)	12.45±4.35	*12.50 (5.00-24.00)
The mean total score of NDI (initial)	42.65±9.13	*43.00 (31.00-65.00)
The mean total score of NPDS (initial)	13.41±3.72	*12.00 (9.00-21.00)
The mean total score of NPQ (after one week)	12.22±4.24	*12.00 (5.00-24.00)
The mean total score of NDI (after one week)	42.26±8.95	*42.00 (31.00-64.00)
The mean total score of NPDS (after one week)	13.00±3.71	*11.00 (8.00-21.00)

All values are expressed as mean±standard deviation; *Median (minimum-maximum), number and percentage; NPQ: Northwick Park Neck Pain Questionnaire; NDI: Neck Disability Index; NPDS: Neck Pain and Disability Scale.

TABLE 2: The correlation values of the Northwick Park NPQ.

	NPQ Spearman's correlation (initial and after one week)	
Questionnaires (n=100)	r	p*
NDI (initial)	0.648	<0.001
NPDS (initial)	0.811	<0.001
NDI (after one week)	0.667	<0.001
NPDS (after one week)	0.775	<0.001

*p<0.05, significant difference; NPQ: Neck Pain Questionnaire; NDI: Neck Disability Index; NPDS: Neck Pain and Disability Scale.

TABLE 3: Intraclass correlation coefficient values of the Northwick Park Neck Pain Questionnaire.

Northwick Park Neck Pain Questionnaire	Intraclass correlation coefficient	95% Confidence interval (lower-upper bound)
First question	1.000	1.000-1.000
Second question	1.000	1.000-1.000
Third question	1.000	1.000-1.000
Fourth question	0.990	0.985-0.993
Fifth question	0.963	0.946-0.975
Sixth question	0.940	0.911-0.959
Seventh question	0.953	0.930-0.968
Eighth question	0.963	0.945-0.975
Ninth question	1.000	1.000-1.000
Total points	0.995	0.993-0.997

TABLE 4: Internal consistency analysis for the Northwick Park Neck Pain Questionnaire.

Northwick Park Neck Pain Questionnaire	Cronbach' alpha value
Except for first question	0.711
Except for second question	0.696
Except for third question	0.679
Except for fourth question	0.717
Except for fifth question	0.725
Except for sixth question	0.706
Except for seventh question	0.709
Except for eighth question	0.681
Except for ninth question	0.706
Total	0.704

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

Northwick Park Neck Pain Questionnaire	Olkin test	Chi square	p*
	0.60	210.191	<0.001

*p<0.05, significant difference.

DISCUSSION

The restriction of activities of daily living caused by neck pain has an important place in the planning of treatment. Whatever the source of the pain, the objective assessment is difficult and the evaluation should primarily be based 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 patient's performance in daily life. For this purpose, there are specific questionnaires developed for the evaluation of patients and the quantitative determination of treatment results. 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. Previous studies have shown that the NPQ is a useful a tool as objective and semi-objective measures in evaluating neck pain.[5,11] Therefore, we attempted to adapt the NPQ into Turkish. ICC values above 0.80 were accepted as excellent reliability. In our study, test-retest reliability was found to be 0.995 with an interval of 1 week. This study showed that the NPQ is a valid and reliable method for measuring disability in Turkish patients with neck pain.

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. Therefore, the NDI was developed as the first questionnaire by Vernon and Mior in 1991 and then the NPQ was developed by Leak et al. in 1994 and then the NPDS was developed by Wheeler et al. in 1999.[16-18] Vernon and Mior applied the NDI at a 1-week interval to patients who have had neck pain due to whiplash injury and without trauma and found the ICC score to be 0.89.[16] Leak et al. found that ICC score was 0.84 for NPQ. They proposed that the NPQ is easy for patients to complete, simple to score and provides an objective measure for evaluating outcomes in patients with acute or chronic neck pain.[17] Wheeler et al. found that ICC score was 0.93 for NPDS.[18] Other studies investigating the reliability of the neck questionnaires in the Turkish population, such as the Turkish version of the NPDS and the NDI, have similar ICC scores. Bicer et al. conducted a study concerning chronic neck pain and reported that the value of the Cronbach's alpha coefficient for the reliability of the NPDS was 0.86.[1] Aslan et al. conducted a study of patients with chronic neck pain who were administered with the NDI and NPDS. They found that ICC score was 0.979 at a 1-week interval for the NDI and the correlation between the NDI and the NPDS was 0.659 to 0.728.[11] In the Spanish validity and reliability study, the ICC value for the NPQ was found to be 0.63.[12] In the French validity and reliability study, the ICC values were found to be 0.93 for the NDI, 0.91 for the NPDS, and 0.84 for the NPQ. Although all three questionnaires had a good sensitivity to change, it was found that the questionnaire that best reflected the sensitivity was the NPDS.[19] Kose et al. compared 4 disability scales (NDI, NPDS, NPQ and CNFDS) for Turkish patients with neck pain. They found that the ICC scores were 0.86, 0.85, 0.84 and 0.81 for NDI, NPQ, CDS and NPDS, respectively and the Cronbach's alpha coefficient varied from moderate to high on all 4 scales with coefficients ranging 0.80 (for NPQ and CNFDS) to 0.94 (for

NPDS). They proposed that all scales have acceptable reliability, validity, and responsiveness for Turkish-speaking patients with neck pain and the scale that best reflects the patient should be selected.[5] In addition, a validation study was conducted on patients with whiplash injuries in Australia.[20] Stefanovitch-Lawbuary et al. identified the external and internal reliability and responsiveness of the validated patient-reported outcome measures (NDI, NPQ, NBQ and CNFDS) of neck pain to a standardized regimen of physiotherapy administered acutely after mild whiplash injury in the UK population. They found that the NBQ was slightly more responsive than the NDI and Northwick Park but significantly more responsive than the CNFDS. They proposed that the NPQ, NDI, and NBQ are all reliable and responsive measures of change after physiotherapy for neck pain after an acute whiplash injury.[4] Aguirre et al. performed cultural adaptation and validation of the NPQ in patients with neck pain of mechanical origin in Argentina. They found that the ICC value was 0.89 and the value of the Cronbach's alpha coefficient was 0.86.[21] In the Brazilian validity and reliability study, the ICC value for NPQ was found to be 0.96.[22] Finding ICC values above 0.7 in both questionnaires supports the reliability of both questionnaires. In addition, the Cronbach's alpha coefficient for the NPQ was found to be 0.80, indicating that the internal consistency of the questionnaire was sufficient. In our study, the ICC value was 0.998 for NDI and 0.995 for NPQ.[23] These values indicate that the reliability of the Turkish version of the NPQ is at an acceptable level.

In the study conducted by Kose et al., for the NDI and the NPQ scales, the item about driving was not answered in approximately 70% of cases because of a lower driving rate among Turkish women than men due to socio-cultural reasons.[5] Also, in the study conducted by González et al., the item about driving was not answered in more than 50% of the patients because they either did not know how to drive or were unable to drive due to their advanced age.[12] In the study conducted by Wlodyka-Demaille et al., 5% of patients did not answer the section on driving on the NPQ. The researchers noted that they conducted the study in urban regions in which people do use community transport but the questionnaire was developed for all French citizen.[19] In the study conducted by Riddle and Stratford, it was stated that the questions about driving were skipped in the vast majority of patients and, therefore, this section was excluded from the questionnaire in the analysis.[24] In the study conducted by Hains et al., although the questions about driving were left incomplete, the questions were not removed from the analysis and the average score was evaluated.[25] Since there is no comparison of these methods used in different studies, there is no complete consensus on the exclusion of questions about driving from the questionnaire. In our study, we also attempted to apply the scales without the elimination of the item related to driving. Similarly in Türkiye, community transport is commonly preferred. Even though our study was conducted in the big city, it has been recommended that patients who do not drive should not answer these questions. In our study, the Cronbach's alpha score for the Turkish version of the NPQ was 0.706. However, it was observed that the Cronbach's alpha score was higher (0.763) when the question about driving was excluded. This may indicate that the question about driving can be ruled out.

CONCLUSION

The NPQ is a questionnaire developed to assess the level of disability due to neck pain, which focuses on subjective feelings and reduction in daily neck pain, and includes activities frequently performed by patients.[11] The results suggest that the Turkish version of the NPQ was reliable and valid for the assessment of pain for patients with neck pain in the Turkish-speaking population. We think that it will be useful to use this questionnaire in the evaluation of neck pain and disability and in the follow-up of patients in clinical studies to be conducted in our country. Moreover, further comparative studies are needed on whether to exclude the questions about driving from the questionnaire since the NDI and NPQ scales have a high rate of missing data due to the item related to driving. Further studies investigating responsiveness and minimal clinically significant change are also needed.

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.

Authorship Contributions

Idea/Concept: *Ebru Yılmaz;* ***Design:*** *Ebru Yılmaz;* ***Control/Supervision:*** *Teoman Aydın;* ***Data Collection and/or Processing:*** *Ebru Yılmaz;* ***Analysis and/or Interpretation:*** *Özge Pasin;* ***Literature Review:*** *Ebru Yılmaz;* ***Writing the Article:*** *Ebru Yılmaz.*

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