

Reliability and validity of the Turkish version short-form McGill pain questionnaire in patients with rheumatoid arthritis

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Abstract The translation of existing pain measurement scales is considered important in producing internationally comparable measures for evidence based practice. In measuring the pain experience, the short-form of McGill's pain questionnaire (SF-MPQ) is one of the most widely used and translated instruments. The purpose of this study was to examine whether the Turkish version of the SF-MPQ is a valid and reliable tool to assess pain and to be used as a clinical and research instrument. Translation/retranslation of the English version of the SF-MPQ was done blindly and independently by four individuals and adapted by a team. Eighty-nine rheumatological patients awaiting control by a rheumatologist were assessed by the Turkish version of the SF-MPQ in the morning and in the afternoon of the same day. Internal consistency was found adequate at both assessments with Cronbach's alpha 0.705 for test and 0.713 for retest. For reliability of the total, sensory, affective, and evaluative total pain intensity, high intraclass correlations were demonstrated (0.891, 0.868, 0.716, and 0.796, respectively). Correlation of total, sensory and affective score with the numeric rating scale was tested for construct validity demonstrating $r=0.637$ ($p<0.001$) for test and $r=0.700$ ($p<0.001$) for retest. Correlation with erythrocyte sedimentation rates for concurrent validity was found to be $r=0.518$ ($p<0.001$) for test and $r=0.497$ ($p<0.001$) for retest. The results of this study indicate that the Turkish version of the SF-MPQ is a reliable and valid instrument for the measurement of pain in Turkish speaking patients with rheumatoid arthritis.

Keywords Pain · Reliability · Rheumatoid arthritis · Short-form McGill pain questionnaire · Turkish version · Validity

Introduction

In spite of being the most common reason for which people seek healthcare, pain measurement is a complex issue. Unidimensional measurement scales such as the visual analogue scale (VAS), the verbal rating and the numerical rating scales have been successfully employed in recording the intensity of pain sensation. However, they are not adequate tools to collect information on the affective component or other dimensions of the painful experience [1, 2]. The complexity of assessing the sensation of pain has led to the development of multidimensional pain measures. From this aspect, the McGill pain questionnaire (MPQ) (see [Appendix](#)) was one of the most widely used test over the past 30 years, capable of assessing the sensory, affective and evaluative dimensions of pain [3, 4]. It was translated and adapted into many different languages and for various patient samples [1, 5–9]. However, criticisms were also made for the MPQ because although the MPQ usually takes less than 20 min to complete, this time interval is not always affordable because sometimes patients are unable to concentrate for such prolonged periods of time. It was also claimed that in certain therapeutic trials where information other than pain intensity is needed, the MPQ provides excessive details, which may be unnecessary and time-consuming [4].

Taking this into consideration, Melzack developed the short-form of the MPQ (SF-MPQ) in 1987 [10]. The SF-MPQ provides information on the sensory, affective and intensity component of the pain sensation. This character-

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istic allows for its usage in the routine clinical environment and in special situations where time is limited. The SF-MPQ was widely translated and used to assess the pain experience of several types of patients because it combines the properties of the standard MPQ but takes substantially less time to administer [6, 11]. For instance, it was used to assess those with chronic cancer pain [12, 13], chronic low back pain [14], fibromyalgia syndrome [15], osteoarthritic pain [11, 16], neuropathic pain [17], mastalgia [18] and pain due to rheumatoid arthritis [19].

A direct translation of questionnaires into other languages does not guarantee maintenance of validity [1]. It is now recognized that if measures are to be used across cultures, the items must not only be translated well linguistically, but also adapted culturally to maintain the content validity of the instrument across different cultures [20].

The purpose of this study was to examine whether the Turkish version of the SF-MPQ (TR-SF-MPQ) is a valid and reliable tool to assess pain and to be used as a clinical and research instrument.

Materials and methods

The main component of the SF-MPQ consists of 15 descriptive adjectives for the pain sensation (11 sensory and 4 affective), which are self-rated by the patient according to their intensity level on a point rating scale (0=none, 1=mild, 2=moderate, 3=severe). Three pain scores are derived from the sum of the intensity rank values of the words chosen for sensory, affective and total descriptors. The sensory and affective scores are calculated by adding the sensory and affective intensity values. The total score is the sum of the intensity values. The SF-MPQ also includes a pain intensity measure shown by the visual analogue scale (VAS) and the evaluative total pain intensity (ETPI) index of the standard MPQ [3].

Procedure

A permission to conduct a Turkish version and reliability–validity study was personally obtained from Dr. R. Melzack via internet correspondence. For the translation process, guidelines for cross-cultural adaptation with five stages were utilized [21]. The SF-MPQ was translated into Turkish by three health professionals. The Turkish translations were then compared for inconsistencies. The final Turkish version was then given to a medical doctor (native speaker) who was unaware of the English version, to translate back to English. The English translation was then compared with the original English SF-MPQ and checked for inconsistencies. Thus, four stages of adaptation process were completed.

To ensure that the adapted version still retains its equivalence in an applied situation, the last stage of the adaptation process is to test the pre-final version in a pilot study. Twenty subjects experiencing pain due to various reasons were tested. The only problematic data in this stage was the ninth descriptive adjective for the pain sensation where “heavy” did not convey an appropriate meaning for the Turkish population. This word was replaced with another descriptor conveying the same meaning. This version was thus finalized by consensus of a bilingual team also experienced in treating patients with painful disorders.

Patients

Informed consent was obtained from all subjects. Eighty-nine voluntary outpatients were included in the study. All patients were diagnosed by a rheumatologist as having pain due to rheumatoid arthritis. An independent assessor who was blind to the results of the numeric rating scale (NRS) (0 cm=no pain, 20=unbearable pain) and erythrocyte sedimentation rates of the patients delivered the TR-SF-MPQ for each subject. Another blinded assessor collected the erythrocyte sedimentation rate values once in the morning and NRS values in the morning and afternoon of the same patients. The subjects participating in the study completed the questionnaire twice within the same day morning and afternoon. All patients were assessed in the waiting room of the rheumatology clinic.

Statistical analysis

The means and standard deviations were determined to describe the demographic data of the patients. Cronbach’s alpha was used to assess the internal consistency of the TR-SF-MPQ. Test–retest values of sensory, affective and total scores; ETPI and VAS scores were evaluated by the Wilcoxon signed rank test. The test–retest reliability was calculated by the intraclass correlation coefficient (ICC). Construct validity was measured by comparing the TR-SF-MPQ responses with the results of the NRS of which the reliability and validity was demonstrated [22, 23]. For concurrent validity, the results of the TR-SF-MPQ were correlated with patients’ erythrocyte sedimentation rates, which is considered an important indicator of rheumatic disease [24, 25]. All statistical analysis was done with SPSS 10.0 for Windows. A probability value of $p < 0.05$ was considered to indicate a significant effect.

Results

During a period of 4 weeks, 125 patients who also had erythrocyte sedimentation rate values were assessed with

Table 1 Demographic characteristics of the subjects (N=89)

	X±SD
Age (years)	46.45±12.24
Education (years)	9.96±3.94
Erythrocyte sedimentation rate (mm/h)	22.27±18.83
	N (%)
Gender (female/male)	75/14 (84/16)

the TR-SF-MPQ in the morning, but only a total of 89 patients with a mean age of 46.45 years attended the follow-up assessment in the afternoon. Demographic data and test and retest results of the TR-SP-MPQ scores of the 89 patients are shown in Tables 1 and 2.

Reliability

According to the Wilcoxon signed rank test, there was no difference between test and retest values of the total, sensory, affective, ETPI and VAS scores. Internal consistency was found adequate at both assessments with Cronbach’s alpha 0.705 for test and 0.713 for retest. Test–retest reliability was found to be ICC=0.891 for total score, 0.868 for sensory score, 0.716 for affective score and 0.796 for ETPI score. The test–retest reliability for the VAS of SF-MPQ was found to be 0.836 (Table 3).

Validity

Correlation between the total, sensory and affective scores of the TR-SF-MPQ and the NRS was tested for construct validity. The resulting correlation was $r=0.637$ ($p<0.001$) for test and $r=0.700$ ($p<0.001$) for retest demonstrating good correlation. For concurrent validity, the results of the TR-SF-MPQ were correlated with erythrocyte sedimentation rates. The resulting correlation was $r=0.518$ ($p<0.001$) for test and $r=0.497$ ($p<0.001$) for retest demonstrating moderate correlation (Table 4).

Table 2 Test and retest results of the TR-SP-MPQ scores

	Test X±SD	Retest X±SD
Sensory	11.94±6.32	12.38±7.21
Affective	3.64±3.37	3.42±3.63
Total, sensory and affective score	15.58±8.77	15.80±9.91
VAS	4.96±2.62	5.28±2.74
Evaluative total pain intensity	2.28±1.31	2.60±1.36

Table 3 Test–retest reliability scores of the TR-SF-MPQ

	ICC	95% CI
Sensory	0.868	0.806–0.911
Affective	0.716	0.598–0.804
Total, sensory and affective score	0.891	0.838–0.927
VAS	0.836	0.761–0.889
Evaluative total pain intensity	0.796	0.705–0.861

CI: confidence interval

Discussion

In this era of evidence based practice, the translation of existing healthcare measurement scales is a popular approach for producing internationally comparable measures. In measuring the pain experience, the SF-MPQ is one of the most widely used and translated instruments. It was investigated thoroughly and recognized as a reliable, valid, useful and sensitive instrument for moderate to severe chronic or acute pain in all sorts of painful health problems [4, 6, 11, 26–28]. SF-MPQ was also shown to have good concurrent and criterion validity with the MPQ [10, 12].

Equivalence of international versions of measurement instruments is a prerequisite to their use in research literature. Developing a foreign language version of a questionnaire is not just a matter of translating the questionnaire because there are variations in the perception of health, description of symptoms and expectations of care in different societies. Therefore, while conducting the study we had to adhere to standards and guidelines [20, 21]. Consequently, a translation on which a consensus was obtained was our first objective. In our study, the Turkish version did not require any changes except one word. Consequently, it was concluded that the questionnaire was easily comprehensible to the Turkish population. Our second objective was to show that the Turkish version was a reliable assessment tool for measuring pain. Internal consistency analysis yielded acceptable reliability (Cronbach’s alpha 0.705 for test and 0.713 for retest). These results are also consistent with previous studies [1, 13]. Test–retest measurements indicated excellent reliability. TR-SF-MPQ assures the reliability of its within-day measurements with confidence equivalent to ICC values

Table 4 Construct and concurrent validity scores of the total pain rating index of the TR-SF-MPQ

	TR-SF-MPQ	
	Test <i>r</i> (<i>p</i>)	Retest <i>r</i> (<i>p</i>)
NRS	0.637 (<0.001)	0.700 (<0.001)
Erythrocyte sedimentation rate	0.518 (<0.001)	0.497 (<0.001)

above 0.80. These results are consistent with the results of Georgoudis et al. who reported correlation coefficient ranging from 0.87 to 0.98 for within-day measurements [4]. This study was designed to assess short-term test–retest reliability. Short-term (within a day) was considered important since in the clinical environment, clinicians may wish to immediately assess the analgesic result of a treatment and also because of the variability of the pain symptoms of rheumatoid disease from day to day. In a prospective observational cohort study by Grafton et al. using serial evaluation of 57 patients awaiting primary hip or knee joint replacement surgery at two time points 5 days apart, high interclass correlations were demonstrated for total, sensory, affective and evaluative total pain intensity (0.96, 0.95, 0.88 and 0.89, respectively) [11]. The results of our study showed test–retest reliability for total, sensory, affective and evaluative total pain intensity scores of 0.891, 0.868, 0.716 and 0.796, respectively. Although these values are somewhat lower than those obtained by Grafton et al. they still show excellent to good reliability.

Construct validity of the TR-SF-MPQ was obtained by correlating it with NRS values obtained on the same day. There is no other study which uses NRS as a construct validity criterion for SF-MPQ. Consequently, we cannot compare our results, but $r=0.637$ for test and $r=0.700$ for retest demonstrate good validity.

For concurrent validity, the TR-SF-MPQ was correlated with erythrocyte sedimentation rate values of the patients and showed moderate validity. Erythrocyte sedimentation rate is considered as one of the American College of Rheumatology core disease activity measures. It was formerly utilized for validity assessment studies of the Childhood Health Assessment Questionnaire [24], SF-36 [29] Korean HAQ [30], RADAI [31], BASFI and DFI [32], and Korean Multidimensional HAQ [33].

Translation into different languages and subsequent validation of questionnaires are of importance for international understanding of the measurement properties of these scales. Such studies enable them to be used in different cultural settings and to be utilized with confidence in cross-cultural comparative research trials [4, 20, 33].

Conclusion

The results of this study indicate that the Turkish version of the SF-MPQ is a reliable and valid instrument for the measurement of pain in Turkish speaking patients with rheumatoid arthritis.

In the future, the reliability and validity of the TR-SF-MPQ should be tested in different patient cohorts with pain. We also plan to assess the sensitivity of the MPQ to physical therapy interventions.

Appendix. Turkish version of the short-form McGill pain questionnaire

Short-Form McGill Pain Questionnaire

Hasta Adı:	Tarih:			
	YOK	HAFİF	ORTA	ŞİDDETLİ
Zonklama	0) _____	1) _____	2) _____	3) _____
Şimşek çarpar gibi	0) _____	1) _____	2) _____	3) _____
Bıçak saplanır gibi	0) _____	1) _____	2) _____	3) _____
Keskin	0) _____	1) _____	2) _____	3) _____
Kramp tarzında	0) _____	1) _____	2) _____	3) _____
Kemirici	0) _____	1) _____	2) _____	3) _____
Sıcak-yanıcı	0) _____	1) _____	2) _____	3) _____
Sancı verici	0) _____	1) _____	2) _____	3) _____
Ezici	0) _____	1) _____	2) _____	3) _____
Hassaslaştırıcı	0) _____	1) _____	2) _____	3) _____
Yarıcı, parçalayıcı	0) _____	1) _____	2) _____	3) _____
Yoran, takatsız bırakan	0) _____	1) _____	2) _____	3) _____
Hasta edici	0) _____	1) _____	2) _____	3) _____
Korkutucu	0) _____	1) _____	2) _____	3) _____
Cezalandırıcı-zalimce	0) _____	1) _____	2) _____	3) _____

Ağrı yok |-----| Dayanılmaz derecede ağrı

Şu anki ağrınız

- | | |
|------------------|-------|
| 0 Ağrı yok | _____ |
| 1 Hafif | _____ |
| 2 Rahatsız edici | _____ |
| 3 Sıkıntı verici | _____ |
| 4 Berbat | _____ |
| 5 Dayanılmaz | _____ |

References

- Georgoudis G, Watson PJ, Oldham JA (2000) The development and validation of a Greek version of the short-form McGill Pain Questionnaire. *Eur J Pain* 4(3):275–281
- de C Williams AC, Davies HT, Chadury Y (2000) Simple pain rating scales hide complex idiosyncratic meanings. *Pain* 85(3):457–463
- Melzack R (1975) The McGill Pain Questionnaire: major properties and scoring methods. *Pain* 1(3):277–299
- Georgoudis G, Oldham JA, Watson PJ (2001) Reliability and sensitivity measures of the Greek version of the short form of the McGill Pain Questionnaire. *Eur J Pain* 5(2):109–118
- Deschamps M, Band PR, Coldman AJ (1988) Assessment of adult cancer pain: shortcomings of current methods. *Pain* 32(2):133–139
- Burckhardt CS, Bjelle A (1994) A Swedish version of the short-form McGill Pain Questionnaire. *Scand J Rheumatol* 23(2):77–81
- Melzack R, Terrence C, Fromm G, Amsel R (1986) Trigeminal neuralgia and atypical facial pain: use of the McGill Pain Questionnaire for discrimination and diagnosis. *Pain* 27(3):297–302
- Lazaro C, Caseras X, Whizar-Lugo VM et al (2001) Psychometric properties of a Spanish version of the McGill Pain Questionnaire in several Spanish-speaking countries. *Clin J Pain* 17(4):365–374
- van der Kloot WA, Oostendorp RA, van der Meij J, van den Heuvel J (1995) The Dutch version of the McGill pain questionnaire: a reliable pain questionnaire. *Ned Tijdschr Geneesk* 139(13):669–673
- Melzack R (1987) The short-form McGill Pain Questionnaire. *Pain* 30(2):191–197
- Grafton KV, Foster NE, Wright CC (2005) Test–retest reliability of the Short-Form McGill Pain Questionnaire: assessment of

- intraclass correlation coefficients and limits of agreement in patients with osteoarthritis. *Clin J Pain* 21(1):73–82
12. Dudgeon D, Raubertas RF, Rosenthal SN (1993) The short-form McGill Pain Questionnaire in chronic cancer pain. *J Pain Symptom Manage* 8(4):191–195
 13. Truong PT, Abnoui F, Yong CM et al (2005) Standardized assessment of breast cancer surgical scars integrating the Vancouver Scar Scale, Short-Form McGill Pain Questionnaire, and patients' perspectives. *Plast Reconstr Surg* 116(5):1291–1299
 14. Grachev ID, Fredrickson BE, Apkarian AV (2002) Brain chemistry reflects dual states of pain and anxiety in chronic low back pain. *J Neural Transm* 109(10):1309–1334
 15. Richards SC, Scott DL (2002) Prescribed exercise in people with fibromyalgia: parallel group randomised controlled trial. *BMJ* 325(7357):185
 16. McCaffrey R, Freeman E (2003) Effect of music on chronic osteoarthritis pain in older people. *J Adv Nurs* 44(5):517–524
 17. Lynch ME, Clark AJ, Sawynok J (2003) A pilot study examining topical amitriptyline, ketamine, and a combination of both in the treatment of neuropathic pain. *Clin J Pain* 19(5):323–328
 18. Khan SA, Apkarian AV (2002) The characteristics of cyclical and non-cyclical mastalgia: a prospective study using a modified McGill Pain Questionnaire. *Breast Cancer Res Treat* 75(2):147–157
 19. Jamison M, Neuberger GB, Miller PA (2003) Correlates of falls and fear of falling among adults with rheumatoid arthritis. *Arthritis Rheum* 49(5):673–680
 20. Schmidt S, Bullinger M (2003) Current issues in cross-cultural quality of life instrument development. *Arch Phys Med Rehabil* 84(4 Suppl 2):S29–S34
 21. Beaton DE, Bombardier C, Guillemin F, Ferraz MB (2000) Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine* 25(24):3186–3191
 22. Childs JD, Piva SR, Fritz JM (2005) Responsiveness of the numeric pain rating scale in patients with low back pain. *Spine* 30(11):1331–1334
 23. Paice JA, Cohen FL (1997) Validity of a verbally administered numeric rating scale to measure cancer pain intensity. *Cancer Nurs* 20(2):88–93
 24. Len C, Goldenberg J, Ferraz MB et al (1994) Crosscultural reliability of the childhood health assessment questionnaire. *J Rheumatol* 21(12):2349–2352
 25. Shehab D, al-Jarallah K, Moussa MA (1998) Validation of the Arabic version of the health assessment questionnaire (HAQ) in patients with rheumatoid arthritis. *Rev Rhum Engl Ed* 65(6):387–392
 26. Blake DR, Robson P, Ho M et al (2006) Preliminary assessment of the efficacy, tolerability and safety of a cannabis-based medicine (Sativex) in the treatment of pain caused by rheumatoid arthritis. *Rheumatology (Oxford)* 45(1):50–52
 27. Zalon ML (1999) Comparison of pain measures in surgical patients. *J Nurs Meas* 7(2):135–152
 28. Dechow E, Davies RK, Carr AJ et al (1999) A randomized, double-blind, placebo-controlled trial of sclerosing injections in patients with chronic low back pain. *Rheumatology (Oxford)* 38(12):1255–1259
 29. Ruta DA, Hurst NP, Kind P et al (1998) Measuring health status in British patients with rheumatoid arthritis: reliability, validity and responsiveness of the short form 36-item health survey (SF-36). *Br J Rheumatol* 37(4):425–436
 30. Bae SC, Cook EF, Kim SY (1998) Psychometric evaluation of a Korean Health Assessment Questionnaire for clinical research. *J Rheumatol* 25(10):1975–1979
 31. Fransen J, Langenegger T, Michel BA, Stucki G (2000) Feasibility and validity of the RADAI, a self-administered rheumatoid arthritis disease activity index. *Rheumatology (Oxford)* 39(3):321–327
 32. Salaffi F, Stancati A, Silvestri A et al (2005) Validation of the Italian versions of the Bath Ankylosing Spondylitis Functional Index (BASFI) and the Dougados Functional Index (DFI) in patients with ankylosing spondylitis. *Reumatismo* 57(3):161–173
 33. Lee SS, Park MJ, Yoon HJ et al (2006) Evaluating the Korean version of the Multidimensional Health Assessment Questionnaire in patients with rheumatoid arthritis. *Clin Rheumatol* 25(3):353–357