The patient-rated elbow evaluation was successfully translated into the Arabic language

Mohamed Abdelmegeed, PT, DPT, MSc, DSc, OCS [a,*], Catherine Awad, PT [b], Joy MacDermid, PT, PhD, FCAHS, FRSC [c], Mohamed Kaddah, MD, PhD [d], Nadia Fayaz, PT, PhD [a]

[a] Orthopedic Physical Therapy Department Faculty of Physical Therapy, Cairo University, Egypt
[b] Senior physical therapist at the ministry of health, Egypt
[c] Physical Therapy and Orthopedic Surgery Department, University of Western Ontario, Canada
[d] Orthopedic Surgery Department, Faculty of Medicine, Cairo University, Egypt

ARTICLE INFO

Introduction

Original measures

The original measure includes the Patient-Rated Elbow Evaluation (PREE), originally developed by MacDermid.[1]

Construct measured

The PREE is a region-specific outcome measure intended to quantify the level of pain and function in patients with elbow dysfunctions. The questionnaire covers specific and usual functional tasks which directly address how far elbow pathology has affected the patient's ability to perform these tasks.[1]

Structure and scoring

The PREE is divided into two sections: the pain section has five questions scored out of 50 and the function section has 15 items scored out of 150 (divided into specific and usual activity subsections). As explained in the original version of the questionnaire,[1] the total score of the function section is divided by three to generate scores out of 50 for each function subscale. The total score of

the PREE ranges from 0 to 100. All questions are scored on a scale from 0 to 10 and the lower the scores, the better the outcome.[1]

Current language and cultural context

The PREE has been culturally adapted and translated into Turkish,[2] Persian,[3] French,[4] Japanese,[5] and German,[6] An Arabic version, however, does not yet exist to the authors' knowledge. Arabic is spoken by many people across the world and the Arabic version of PREE (PREE-AR) is expected to provide a cost-effective and time-saving means of communication with Arabic-speaking patients with elbow pain.

Cross-cultural translation process

Contributors

Two independent bilingual translators whose native language was Arabic, two bilingual persons whose native language was English, and a research assistant were involved in the translation process. The expert committee was composed of the study investigators, an English language professor, an Arabic language teacher, a researcher, a statistician, and ten healthcare providers including physical therapists, college professors, and physicians. Beaton et al.[7] was used as a guideline for the translation process.

Forward translation

Initial forward translation of the English version into the Arabic language. This was performed by two independent bilingual trans-

Table 1
Different Arabic meanings for some words of the original PREE that were reconciled among the expert committee.

Words/ terminologies in the original questionnaire	Different Arabic meanings
Elbow	الكوع OR المرفق
Use my arm to raise from a chair	استخدم ذراعي لأنهض من الكرسي OR في القيام من الكرسي OR لاقم من الكرسي
Wash my opposite armpit	اغسل ابطي العكسي OR اغسل ابطي المقابل
Washing	الاستحمام OR الاغتسال
Rate	قم بتقييم OR قيم

Table 2
Comparison of reliability measures among different versions of the PREE.

Reliability measure	PREE total and subscale items	Present study (PREE-AR)	Original PREE[1]	PREE-Turkish[2]	PREE- Persian[3]	PREE-French[4]	PREE-Japanese[5]	PREE- German[6]
Internal consistency (Cronbach's alpha)	Pain	0.90	-	0.96	0.93	-	0.92	0.93
	Function	0.98	-	0.94	0.95	-	0.97	0.95
	Total	0.97	-	0.96	0.91	-	0.97	0.96
Test-rest reliability (ICC)	Pain	0.90	0.88	0.92	0.95	-	0.92	0.73
	Function	0.98	0.89	0.98	0.97	-	0.93	0.82
	Total	0.97	0.95	0.97	0.98	0.89	0.94	0.80

lators whose native language was Arabic. One translator was an expert physical therapist, and the other was an English language professor. This resulted in having two initial Arabic versions of the PREE.

Backward translation

Back translation of the preliminary version was performed by two bilingual persons whose native language was English. They were neither aware nor informed of the original version of the PREE and were asked to independently translate the preliminary PREE-AR back into English.

Reconciliation and harmonization

The two initial versions were reconciled for any discrepancies and a preliminary version of the PREE-AR was produced. This step involved 10 health care providers along with the principal investigator and a research assistant

The reconciled PREE-AR and the two back-translated English versions of the PREE were collected and discussed with the expert committee. Terminologies of all versions were revised, and the necessary corrections were made. Words like "pounds," "washing," "turn the doorknob," "wash my opposite armpit," "use my arm to rise from a chair," "do up buttons on the front of my shirt," "rate," and "best describe" were reconciled among the expert committee since some words have more than one meaning in the Arabic language (examples are presented in Table 1). Also, some words such as "elbow" have a colloquial meaning that most patients understand and a formal meaning which is not commonly used. For this reason, the expert committee decided to keep both words and keep the formal synonym between brackets This produced a prefinal version of the PREE-AR.

Pilot testing

The prefinal version was tested on 88 subjects with elbow pain. It was sent to the subjects either through a survey link sent to their emails or by direct contact with the study's investigators.

They were also asked to fill out the Arabic version of the disability of the arm, shoulder, and hand (Arabic DASH) questionnaire and the Arabic numeric pain rating scale (Arabic NPRS).

Validation

Validation sample

From 105 participants who were asked to participate in the study, the final sample yielded 88 participants after being assessed for eligibility and signed consent forms. They were Arabic-speaking participants with mechanical chronic elbow pain of at least three months duration with an age range between 20 and 50 years. They were 36% males and 64% females. The right elbow was involved in 40% of cases, the left elbow in 27%, and both elbows in 27%. Only 3% of participants have gone through surgical treatment.

Procedure for validation

The PREE-AR was correlated with the Arabic DASH and the Arabic NPRS for concurrent and construct validity. Patients were asked to fill out the PREE for a second time within a 2-7 day interval for test-retest reliability. Internal consistency of the PREE-AR was also calculated. Interpretation of Pearson's correlation coefficient values were as follows: 0-0.19 very weak, 0.2-0.39 weak, 0.4-0.69 moderate, 0.7-0.89 strong, and 0.9-1.00 very strong correlation.[8] Following the same guidelines, The Intraclass Correlation Coefficient (ICC) values were estimated as follows: poor (ICC < 0.4), moderate to good (ICC is between 0.4 and 0.74), and excellent reliability (ICC > 0.75). Internal consistency of the items of the newly developed questionnaire was also calculated using Cronbach's alpha. Values greater than 0.70 was considered excellent.[8]

Validation results

Thirty-nine participants completed the questionnaires in person and 49 through a survey link. Table 2 shows the reliability measures of the PREE-AR in comparison to the different available versions. Scaling the PREE-AR when an individual item is deleted exhibits good to excellent Cronbach's alpha values. No single item in

Table 3
Comparison between validity measures across the different versions of PREE.

Correlated measure	PREE total and subscale items	Present study (PREE-AR)	Original PREE[1]	PREE- Turkish[2]	PREE- Persian[3]	PREE- Japanese[5]	PREE- German[6]
DASH	Pain subscale	0.65**	0.71¥	0.56**	0.66**	0.74**	0.45**
	Function subscale	0.82**	0.78¥	0.64**	0.53**	0.86**	0.87**
	Total score	0.81**	0.85¥	0.64**	0.66**	0.84**	0.73**
NPRS	Pain subscale	0.79**	-	-	-	-	-
	Function subscale	0.68**	-	-	-	-	-
	Total score	0.60**	-	-	-	-	-

** $P < 0.001$,

¥ : P-value was not reported.

the PREE-AR seems to change Cronbach's alpha substantially when it is deleted. The ICC values of the single items ranged from 0.93 to 0.98. All the reported ICC values are considered excellent and indicate sufficient reproducibility of the PREE-AR.

Table 3 shows the construct and concurrent validity measures of the PREE-AR agaisnt the Arabic DASH and the Arabic NPRS of the different available versions using Pearson's correlation coefficient. Face validity of the PREE-AR was also examined by asking the patients "do you think the items of this questionnaire adequately address your elbow problems?" and "do you think anything is still missing or not addressed in the questionnaire items?". All 88 participants were included in the face validation process. None of the patients reported any negative feedback and all of them reported that their problems is represented in one or more of the questionnaire items.

Conclusion

The PREE-AR demonstrated good to excellent internal consistency and test-retest reliability, as well as acceptable concurrent validity against the DASH-AR. It also has comparable psychometric properties to the other versions.

Limitation

Not all Arabic dialects were tested in this study; we had only patients from Egypt and Iraq. Some terminologies in the current version may be interpreted differently in other dialects. Also, the validity of the PREE-AR was tested against DASH and NPRS only. We recommend correlating the PREE-AR against other outcome measures.

References

1. MacDermid JC. Outcome evaluation in patients with elbow pathology: issues in instrument development and evaluation. *J Hand Ther*. 2001;14:105–114.
2. Hazar Kanik Z, Pala OO, Karabicak GO, Citaker S. Cross-cultural adaptation, validity, and reliability of the Turkish version of the Patient-Rated Elbow Evaluation. *Clin Rheumatol*. 2019;38:3289–3295.
3. Farazdaghi MR, Mansoori A, Vosoughi O, Kordi Yoosefinejad A. Evaluation of the reliability and validity of the Persian version of Patient-Rated Elbow Evaluation questionnaire. *Rheumatol Int*. 2017;37:743–750.
4. Beauchemin G, MacDermid JC, Bourduas K, Poirier MF, Gaudelli C, Rouleau DM. Translation and validation of the PREE (Patient Rated Elbow Evaluation) to a French version. *Orthopaedics & Traumatology: Surgery & Research*. 2015;101:405–409.
5. Hanyu T, Watanabe M, Masatomi T, et al. Reliability, validity, and responsiveness of the Japanese version of the patient-rated elbow evaluation. *J Orthop Sci*. 2013;18:712–719.
6. John M, Angst F, Pap G, Junge A, Mannion AF. Cross-cultural adaptation, reliability and validity of the Patient Rated Elbow Evaluation (PREE) for German-speaking patients. *Clin Exp Rheumatol*. 2007;25:195.
7. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine*. 2000;25:3186–3191.
8. Cacchio A, Necozione S, MacDermid JC, et al. Cross-cultural adaptation and measurement properties of the Italian version of the Patient-Rated Tennis Elbow Evaluation (PRTEE) questionnaire. *Phys Ther*. 2012;92:1036–1045.

Please cite this article as: M. Abdelmegeed, C. Awad, J. MacDermid et al., The patient-rated elbow evaluation was successfully translated into the Arabic language, Journal of Hand Therapy, https://doi.org/10.1016/j.jht.2022.07.006