Patient-rated Wrist/Hand Evaluation: A cross-cultural adaptation and evaluation in Thai version

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Background  :  The Patient Rated Wrist/Hand Evaluation (PRW/HE) is a specific questionnaire designed to measure wrist/hand pain and disabilities. The questionnaire was validated to provide various scales by asking questions regarding wrist-hand injury of a patient. It has also been translated into several languages. Therefore, we translated and adapted the questionnaire into Thai version for hand therapy clinic.

Objectives  :  To translate and to cross-culturally adapt the PRW/HE into Thai (PRW/HE-Thai) and to evaluate its the reliability and validity.

Methods  :  The original version PRW/HE was translated with cross cultural adaptation into Thai (PRW/HE-Thai). A total of 148 outpatients from Occupational therapy (OT) hand therapy clinic were included in the study. They completed questionnaire, PRW/HE-Thai, The Disabilities of the Arm, Shoulder and Hand (DASH-Thai) at first visit and the PRW/HE-Thai again 14 days later. Reliability was measured by determining test - retest reliability (intraclass correlation coefficient) and internal consistency (Cronbach’s alpha coefficient). Validity was performed using Pearson’s correlation test.
Result: Cronbach’s alpha coefficient and intraclass correlation coefficient (ICC) for the test-retest reliability of PRW/HE-Thai were 0.94 and 0.89, respectively. The correlation coefficient between PRW/HE-Thai and DASH-Thai scores was 0.76.

Conclusion: Thai-version of the PRW/HE is a short and easily understood self-administered questionnaire. Our results show that PRW/HE-Thai is a practical, reliable and valid instrument and can be recommended to measure patient-rated pain and disability in Thai patients. In the future, the questionnaire should also be compared to objective measurement.

Keywords: Occupational therapy, PRW/HE-Thai, questionnaire, OT hand therapy, cross-cultural adaptation.

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Received for publication. April 27, 2016.
หัทยา จงประสิทธิภูค, อิสิวรรต สันติมณีวัฒน์, ศราวุธ สมนา, วสุวัฒน์ กิติสมประยูรกุล.
แบบประเมินการใช้งานของมือและข้อมือด้วยตนเองฉบับภาษาไทย. จุฬาลงกรณ์เวชสาร
2560 มี.ค. – เมย.61(2): 183 – 92

เหตุผลของการวิจัย:
การประเมินผลเป็นกระบวนการสำคัญที่ทำให้ทราบอาการ ระดับการทำงาน ความพิการ การเปลี่ยนแปลงและประสิทธิผลของการให้การรักษาในกลุ่มที่มีการบาดเจ็บหรือมีปัญหาเกี่ยวกับมือ/ข้อมือ. คณะผู้วิจัยจึงทำการแปลและปรับแบบประเมินระดับการทำงานของมือ/ข้อมือ (PRW/HE) ซึ่งนิยมใช้ในการวัดระดับความเจ็บป่วยและการใช้งานของมือ ทั้งนี้สำหรับการทดสอบแล้วว่ามีมาตรฐานสูง. นิยมใช้ยังบริบทในภาษาที่หลากหลายในต่างประเทศ โดยนำมาดัดแปลงเป็นแบบฉบับภาษาไทยปรับปรุงให้เหมาะสมกับบริบทของไทยและที่มีมาตรฐานให้เท่าเทียมกับต้นฉบับ.

วัตถุประสงค์:
ตั้งเป้าหมายเพื่อสืบทอด PRW/HE เป็นภาษาไทยและปรับปรุงให้สอดคลองกับบริบทของคนไทยและวิเคราะห์ความเที่ยงตรงและความน่าเชื่อถือ.

ตัวอย่างและวิธีการศึกษา:
ผู้ป่วยจำนวน 148 คน ที่เข้ารับการรักษาตามช่วงเวลาที่มีการใช้งานมือ/ข้อมือижด้วยอาการรับรู้ในต่างประเทศ และ DASH-Thai ครั้งแรก หลังจากนั้น 14 วัน ผู้ป่วยตอบแบบสอบถาม PRW/HE-Thai อีกครั้งวิเคราะห์ความหมายเชิงสถิติ วัดความสม่ำเสมอ (internal consistency) โดยวิเคราะห์ความถูกต้องของคะแนน (Intraclass correlation coefficient (ICC)) วัดความเที่ยงตรงโดยวิเคราะห์ Pearson Correlation coefficient โดยนำไปเปรียบเทียบกับ DASH-Thai

ผลการศึกษา:
ผลการวิเคราะห์ความถูกต้องในการวัดช้า (Test-retest reliability)ของ PRW/HE-Thai ทั้งฉบับแสดงโดย Intracllass correlation coefficient (ICC) พบว่ามีความถูกต้องสูง (ICC = 0.89) การทดสอบความถูกต้องของภายใน (Internal consistency reliability) มีความถูกต้องสูง (Cronbach’s alpha = 0.94) และเมื่อนำคะแนนรวมของ PRW/HE (Thai version) ครั้งที่ 1 ไปเปรียบเทียบกับ DASH-Thai พบว่ามีความสัมพันธ์เชิงสถิติความเที่ยงตรงที่สูงขึ้นกัน (r = 0.76, P <0.01)
สรุป: แบบประเมินระดับการทำงานของมือ/ข้อมือ ฉบับภาษาไทยมีความเที่ยงตรงและเชื่อถือได้ที่จะนำมาใช้ในผู้ป่วยชาวไทยที่มีความผิดปกติของการใช้งานของมือ/ข้อมือได้

คำสำคัญ: กิจกรรมบำบัด, แบบสอบถามการทำงานมือ/ข้อมือฉบับภาษาไทย, การบำบัดโรคทางมือ.
Occupational therapy focuses on treatment to patients with injuries or disorders of the upper extremities, which has an important role in the rehabilitation such as reducing pain, edema, regain motion, muscle strength and dexterity. Therefore, patients can restore their hand function and ability to perform activities of daily living. Hand and wrist problems are commonly found in a hand therapy clinic which is caused by injuries or the natural process of aging. An outcome assessment is becoming important in evaluating for dysfunctions. Nowadays, evaluating physical performance in hand therapy composes of measuring grip strength, range of motion, and sensation which provides a good objective analysis of the outcomes. However, these methods do not take into account other aspects related to an analysis of outcome, such as the patient’s ability to carry out of activities of daily living, the ability to return to previous occupations and pain. Patients’ self-report measures are an integral component of describing the outcome of hand therapy, an outcome tool for routine use has been selected via systematic process in hand therapy clinic. According to a literature review of available instruments, the choice had been determined into two instruments: disability of the arm, shoulder and hand (DASH) and Patient Rated Wrist/Hand Evaluation (PRW/HE). The DASH score is the best instrument for evaluating patients with disorders involving multiple joints of the upper limb including shoulder, elbow, wrist and hand. The functional sub-score contains five items rated as: 0 = no pain; and 10 = the worst pain. The pain score is equal to the sum of the five pain items (out of 50), so the best pain score is 0 and the worst is 50. The functional sub-score contains six specific activity items and four usual activity items and is rated as 0 = no difficulty in performing the activity, and 10 = unable to perform the activity. The function score corresponds to the sum of the 10 function items divided by two (out of 50). Thus, the

Materials and Methods

The permission for translation and validation of the questionnaires were achieved by MacDermid JC. The PRW/HE questionnaire is a 15-item questionnaire which is divided into pain sub-score and function sub-score. The pain sub-score contains five items rated as: 0 = no pain; and 10 = the worst pain. The pain score is equal to the sum of the five pain items (out of 50), so the best pain score is 0 and the worst is 50. The functional sub-score contains six specific activity items and four usual activity items and is rated as 0 = no difficulty in performing the activity, and 10 = unable to perform the activity. The function score corresponds to the sum of the 10 function items divided by two (out of 50). Thus, the
best functional score is 0 and the worst is 50. The
total PRW/HE score is equal to the sum of pain plus
the function score, and is totaled out of 100, where
pain and disability are equally weighted. (11)

Translation and cross-cultural adaptation:
Translation and cross-cultural adaptation were
applied according to the guidelines of FACIT
translation methodology (19) that contains 6 stages to
be carried out. Stage I is the forward translation
consisting of an informed (medical background) and
an uninformed (no medical background) translator with
Thai as their mother tongue resulting in version T1
and T2. Stage II, a third independent translator accepts
the two Thai versions by choosing the better and
resolving discrepancies between them (T-12). Stage
III, back translation of T-12 is adapted into English by
bilingual English native speaker fluent in Thai
language in order to produce BT-12 for discrepancies
and to assess equivalence with the PRW/HE - English
version. Stage IV, the most appropriate translation for
each item or provide alternate translation were
selected by three independent bilingual reviewers.
Stage V, these recommendations are investigated by
the coordinating team and the language coordinator
until they are all finally approved. Stage VI, formation
of a pre-final Thai-version of PRW/HE is pretested with
Thai patients in hand therapy clinic. If the problems
are detected from any items, their feedbacks allow
modification in the translations and for indications of
changes that may subsequently be made to the
original source document. The final Thai version of
PRW/HE (PRW/HE-Thai) was obtained and then tested
on patients to evaluate its comprehension, reliability
and validity.

Patients and setting
One hundred forty-eight patients were
proposed from OT hand therapy practices took
parts in this study. All patients were adults with
wrist or hand pain, postoperative or undergoing
occupational therapy for wrist or hand dysfunction.
The questionnaires were distributed to patients in two
distinct times at an average interval of 14 days. The
first session showed that the patients received written
instructions and an explanation of the research study
in which they were participating. They were asked to
complete the PRW/HE-Thai 1 and the validated Thai
version of the disabilities of the arm, shoulder and
hand questionnaire (DASH-Thai)(10) onsite. In the
second session, they were also asked to complete
the PRW/HE-Thai 2.

Data analysis and Statistics
Reliability was evaluated by analyzing the
internal consistency and the test-retest stability.
Cronbach’s alpha coefficient was applied to estimate
the internal consistency. A value of 0.70 is good, 0.80
sufficient, and 0.90 excellent. (20) Test-retest stability
is assessed with the use of the intraclass correlation
coefficient between PRW/HE-Thai at baseline and
follow-up. The value should reach >0.75 for the
instrument to be considered stable. (21) Pearson
correlation was used to analyze the validity
between PRW/HE-Thai 1, PRW/HE-Thai 2 and the
DASH-Thai. The correlations were basically relied
on a predetermined hypothesis according to the
relationship between the PRW/HE-Thai scores and
the DASH-Thai. The result of the PRW/HE-Thai was
expected to be approximately the same as the result
of the DASH-Thai questionnaire.
Results
Assessment

The majority of patients in our study were female and mean age was 52-years-old. No patients had difficulty completing the PRW/HE-Thai questionnaire. All the patients considered the items of the PRW/HE-Thai questionnaire to be clear. The mean values and standard deviation of PRW/HE-Thai at baseline/follow-up and DASH-Thai total score are shown in Table 1. Mean PRW/HE-Thai pain-score decreased significantly from 25.17(SD 11.60) at baseline to 19.84(SD 11.02) at follow up, mean PRW/HE-Thai functional-score decreased significantly from 45.78(SD 26.12) at baseline to 37.27(SD 23.67) at follow up, mean PRW/HE-Thai total score decreased significantly from 71.18(SD 33.99) at baseline to 56.64(SD 31.56) at follow up are shown in Figure 1.

Table 1. PRW/HE-Thai at baseline/follow-up (test, re-test) for all patient (n = 148).

<table>
<thead>
<tr>
<th>Item</th>
<th>Baseline</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard deviation</td>
</tr>
<tr>
<td>PRW/HE-Thai-pain score</td>
<td>25.17</td>
<td>11.60</td>
</tr>
<tr>
<td>PRW/HE-Thai-function score</td>
<td>45.78</td>
<td>26.12</td>
</tr>
<tr>
<td>PRW/HE-Thai total score</td>
<td>71.18</td>
<td>33.99</td>
</tr>
<tr>
<td>DASH-Thai total score</td>
<td>40.34</td>
<td>20.48</td>
</tr>
</tbody>
</table>

Figure 1. Mean values in test and re-test for pain sub-score, function sub-score and total score of the PRW/HE-Thai were significantly (n = 148).
Reliability

The internal consistency of the PRW/HE-Thai, estimated by Conbach’s alpha was 0.89 for the pain score, 0.95 for the functional score and 0.94 for the total score. As for this analysis, it showed an excellent internal consistency that the test-retest stability was assessed by using intraclass correlation coefficient. The intraclass correlation coefficient of PRW/HE-Thai pain score, PRW/HE-Thai function score and PRW/HE-Thai total score were 0.88, 0.94, and 0.89, respectively. (Table 2).

Validity

Face validity was approved by members of the expert committee during the translation process. None of the patients reported difficulties in understanding the content of the questionnaire. The mean DASH-Thai score was 40.34 (SD 20.48) and PRW/HE-Thai score was 71.18 (SD 33.99) at baseline demonstrated that there is a very high correlation between the total scores of the both questionnaires (r = 0.76, P < 0.01).

Discussion

PRW/HE is a patient self-reported questionnaire, which is internationally, widely-used, wrist-hand specific. It has been translated into several European and Asian languages, which has also been adapted to suit the culture of each country accordingly. In Southeast Asia countries, PRW/HE have been widely used in Singapore, in which they developed and made an evaluation for Chinese version of the PRW/HE. Therefore, they are effectively used among Chinese patients by hand therapists. This study showed that PRW/HE-Thai are changed the expression in the second item for three aspects: 1) Cutting meat using a knife in an affected hand: Using a spoon/fork/knife for a meal in an affected hand instead, in which they are practically used in Thai culture; 2) Carrying a ten lbs object in an affected hand: Using five kg object (1 rice sack), the metric system is changed according to the familiarity of Thai culture and simply explain in order to make a better understanding, in which the patient can estimate weight of the object seen in common life; 3) Use bathroom tissue with my affected hand: change to cleaning after using toilet in an affected hand due to Thai has individual cleaning method in each region. Thus, there is no need to specify the method. Test-retest reliability was assessed using ICCs, and was found to be high for pain, function, and total PRW/HE-Thai scores, all 148 patients understood the PRW/HE-Thai questionnaire well enough to answer them without difficulty. Internal consistency assessed by Cronbach’s alpha coefficient was high for pain, function, and total PRW/HE-Thai scores, as was found

<table>
<thead>
<tr>
<th>Item</th>
<th>Conbach’s alpha</th>
<th>ICC</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRW/HE-Thai pain score</td>
<td>0.89</td>
<td>0.88</td>
<td>0.83 - 0.91</td>
</tr>
<tr>
<td>PRW/HE-Thai function score</td>
<td>0.95</td>
<td>0.94</td>
<td>0.91 - 0.96</td>
</tr>
<tr>
<td>PRW/HE-Thai total score</td>
<td>0.94</td>
<td>0.89</td>
<td>0.85 - 0.92</td>
</tr>
</tbody>
</table>
for the original version, and the Chinese, Swedish, German, Japanese, and Hindi versions. According to test validity of PRW/HE-Thai questionnaire, it is shown that validity coefficient was high when it was assessed with DASH–Thai questionnaire, DASH is a well-known and frequently used region-specific measure of the disable upper extremity but this questionnaire consists of as many as 30 items and has high demands for being considered completely filled out. Cross-cultural adaptation and validation into Thai of this health-related functional outcome measure questionnaire can be specifically useful to the therapist in hand clinic by providing them with a standardized tool that is easy to administer and score in the clinic and simpler for patient to complete too.

Conclusions

We conclude that the PRW/HE-Thai is a reliable and valid instrument equivalent to the original English- PRW/HE. The PRW/HE-Thai can be a useful tool for assessing the outcome in future clinical studies. It is suitable as a follow-up instrument for professionals in clinical practices. Although in future studies, the questionnaire should also be compared to objective measurements.

Acknowledgements

We would like to thank Somsak Sriborisutsakul, PhD, Pravit Kitidumrongsook, MD, and Kawee Pataradool, MD for language editing of the questionnaire.

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