Where Are We: Psychometric Properties of Pain Assessment Scales for Use in Chinese Children

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Disclosures

Learning Objectives

- Be familiar with pain measures for Chinese children;
- Appreciate the psychometric properties of pain measures for Chinese children;
- Understand the coding system for evaluating psychometric properties;

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Background

- In the West, for at least a decade, pain has been regarded as the 5th vital sign; American Pain Society, 1999
- Children can experience moderate to severe pain related to surgeries or other invasive procedures; Bai & Hsu, 2013; Chen et al., 2012
- Pain can cause negative consequences for children; children’s pain should be assessed as a means to control these consequences; Taddio et al, 2002; Hohmeister et al., 2009
Background cont’d

- Regular pain assessment with measures that have good psychometrics in the population of interest is the foundation of pain management;
- China’s population (1.34 Billion) is the largest in the world, and 17% of China’s population are children (0~14 years old);
- Pain management in Chinese children is far behind that for children in the West;

China.com.cn, 2011
Bai, 2014; Sun et al., 2014
Rationale

- Psychometric properties of pain measures for Chinese children are unknown;  
  Bai, 2014

- Additionally, the process used for transcultural translation of these pain measures is unclear;  
  Sun et al., 2013, 2014

- Thus, results of randomized clinical trials that use these measures must be questioned;  
  Bai, 2014; Sun et al., 2013, 2014
Research Purpose

- Review and evaluate the psychometric properties of pain measures used in published studies of Chinese children

Evaluation tool:
Psychometric property coding system
(Zwakhalen et al. 2006)
Methods

Search Strategies

- **Chinese databases**: CNKI, Wan-Fang, VIP and Sino-Med
- **English databases**: PubMed, CINAHL, Health and Psychosocial Instruments and PsycINFO
- **Search date**: Inception of the database to Sep. 2013
- **Search Terms**: (child OR toddler OR infant OR adolescent) AND (pain OR analgesia) AND (scale OR assessment); (pain OR analgesia) AND (China OR Chinese)
- **Reference list is also reviewed**;
- **Filters**: Age=0-18 years; Language = Chinese/English
Inclusion & Exclusion Criteria

Included studies

- Reported information related to the reliability and/or validity of pain measures used in the study;
- Sample comprised of Chinese children;
- Published in Chinese journals indexed by the ISTIC or in peer-reviewed English journals;

Excluded studies

- Review or translated articles;
- Not published in Chinese or English;
Psychometric Coding System

- **10 items:** origin of items for the measure under evaluation, study sample size, evidence of reliability and validity in the study, and feasibility issues

- **Scoring:** items scored 0 to 2, items scores summed for a total score 0-20)

- **Categories for the total score:** Very Good=15-20; Good=12-14.9; Acceptable= 10-11.9; Unacceptable=less than 9.9

- **Added item:** Instrument translation

Zwakhalen et al., 2006
## Results

### Study Characteristics

<table>
<thead>
<tr>
<th>Study information</th>
<th>Sample size (n)</th>
<th>Age (Year)</th>
<th>Type of pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bai et al. (2012).</td>
<td>170</td>
<td>I: 0-7, S: 0-7</td>
<td>Postoperative pain</td>
</tr>
<tr>
<td>Jia (2012).</td>
<td>20</td>
<td>I: 0-7, S: 0-5</td>
<td>Procedural pain in burn</td>
</tr>
<tr>
<td>Liu et al. (2012).</td>
<td>100</td>
<td>I: 0-7, S: 0.5-3</td>
<td>Postoperative pain</td>
</tr>
<tr>
<td>Yeh (2005).</td>
<td>317</td>
<td>I: NA, S: 3-7</td>
<td>Procedural, post-operative pain and others</td>
</tr>
<tr>
<td>Liaw et al. (2012).</td>
<td>60</td>
<td>I: NA, S: 28-37 weeks</td>
<td>Procedural pain</td>
</tr>
</tbody>
</table>
Less Tears (Pain), More Smiling

6 Studies Included

- FLACC
- Comfort-Behavior Scale
- Pain Observation Scale for Young Children
- Asian Version of the Oucher Scale
- Neonatal Facial Coding System
- Pain Assessment Scale for Preterm Infants

Two in Chinese
Four in English
# Dimension of Pain Scales

<table>
<thead>
<tr>
<th>Scale</th>
<th>Total score (range)</th>
<th>Behavioral</th>
<th>Self-report</th>
<th>Physiological</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLACC</td>
<td>0-10</td>
<td>✔️</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMFORT-B</td>
<td>6-30</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POCIS</td>
<td>0-7</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian Version Oucher Scale</td>
<td>0-10</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>NFCS</td>
<td>0-9/0-10</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PASPI</td>
<td>0-18</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>
Specific Pain Scales

Psychometric Qualities Evaluation

FLACC
COMFORT-B
POCIS
Asian Oucher
NFCS
PASPI

Score for each item (range 0-22)

# Domains
- Feasibility
- Intra-rater/test-retest reliability
- Inter-rater reliability
- Homogeneity
- Construct Validity II
- Construct Validity I
- Criterion Validity
- Content Validity
- Sample Size
- Scale Translation
- Item Origin

Less Tears (Pain), More Smiling
Overall Evaluation

![Bar chart showing overall psychometric qualities for different scales: FLACC, COMFORT-B, POCIS, Asian Oucher, NFCS, and PASPI. The chart compares raw scores (0-22) and weighted scores (0-20). The overall evaluation is indicated by a dashed line.](image)
Discussion

• Consistent with Sun et al. (2013), few randomized clinical trials with pain as an outcome assess the psychometric properties of the pain measure(s);
• FLACC, COMFORT-B and PASPI have very good psychometric properties when administrated for pain assessment in children;
• No article included in this study reported psychometric information about self-reported pain measures performed in Chinese children;
Implications

- Transcultural translation of pain measures for use in Chinese children should follow accepted standards;
- Pain measures would be theory-based, for example, informed by theories of child development;
- Future research of pain in Chinese children should include psychometric evaluation of how the pain measures performed in the study sample;
- Protocols for assessing and managing pain in Chinese children are needed. Protocols should include pain measures and interventions that are theory- and evidence-based;
Conclusion & Future Directions

- Six pain measures were examined in Chinese children and five had an acceptable to very good level of reliability and also evidence of validity.
- Future studies should be conducted to assess the psychometric properties of self-report pain measures especially in older Chinese children and in a variety of pain situations.
- Policies and procedures should be developed to help clinicians close the gap between pain assessment and pain treatment.
Key References
