

Pain Scales for Non-Communicative Critical Care Patients

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PICO QUESTION

In non-communicative critical care patients, is the Critical Pain Observation Tool (CPOT) more reliable and valid compared to Faces, Legs, Activity, Cry, Consolability (FLACC) Behavioral Tool for assessing pain?

ABSTRACT

It is widely accepted in the nursing community that pain is considered an additional “vital sign” and should be assessed frequently. This is easily done with communicative patients based on the Numerical Rating Scale (NRS). However, the difficulty comes when assessment of pain in a noncommunicative patient is required. According to Rijkenberg, et.al. (2015) uncontrolled pain can have short and long term effects on a patient’s psychological and physiological outcomes. It is our duty as health care workers to provide adequate pain relief to help reduce agitation, caused by excessive pain, which can also distract a patient from the process of recovery (Rahu, et.al. 2015). The main pain scale most frequently utilized is FLACC, which was a “pain scale developed for use in infant and child populations less than 7 years old (Buttes, et.al. 2014)”. The pain scale most often emphasized for use in noncommunicative patients is the CPOT. The purpose of this literature review was to determine if FLACC is a reliable and valid pain scale for use with noncommunicative patients compared to the use of CPOT to assess and control pain.

FLACC SCALE			
CRITERIA	0	1	2
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant grimacing, clenched jaw
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking, or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid, or jerking
Cry	No cry (awake or asleep)	Moans or whimpers; occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging, or being talked to, distractible	Difficult to console or comfort

METHODS

Database Searches: CINAHL, PubMed
Search Inclusion Criteria: Pain Scale, Critical Care, Noncommunicative
Levels of Evidence: Levels 2, 3, & 4
Articles Reviewed: Nine

RESULTS

- Buttes, et al. (2014) sampled 75 patients in critical care units in one community hospital. Patients were evaluated by 2 nurse educators at three different times using three different pain scales in an effort to test reliability and validity of the CPOT against FLACC and the Numeric Rating Scale (NRS). The educators rated the patient’s pain before, during, and after repositioning. Type C Intra-class Correlation Coefficient testing interrater reliability shows a good correlation before repositioning (0.74) and an excellent correlation for during (0.91) and after (0.88) repositioning. In reference to criterion related validity, there was a correlation shown between CPOT and NRS but the CPOT was more highly correlated with FLACC (0.92, 0.87, 0.91) than NRS (0.51, 0.69, 0.50) (Buttes, et.al. 2014)
- In a randomized controlled study done by Rahu, et.al. (2015), researchers tested six different pain scales in 50 communicative and 100 non-communicative patients in the Virginia Commonwealth University Medical Center for validity and sensitivity. For the purpose of this literature review, only the results of the FLACC scale in reference to validity will be discussed. The study was conducted by four investigators at four different times: before (at rest) and during physical exam (assumed nonpainful), before (at rest) and during endotracheal suctioning (assumed painful). To test validity, the pain scales were tested in the communicative patients and compared to the patient’s self report of pain on the numerical rating scale to calculate the Spearman Correlation Coefficient. FLACC (and all pain scales tested) “had significant moderate to high correlations with patient’s self rating during suctioning” (Rahu, et al. 2015).
- In Rijkenberg, et.al. (2015), a study was conducted by bedside nurses in an ICU at a teaching hospital in Amsterdam to compare the reliability and discriminant validation of CPOT to the Behavioral Pain Scale (BPS). Pain scale evaluation was performed before and during a nonpainful procedure (oral care) and before and during a (presumed) painful procedure (turning). In reference to reliability, overall intra-class correlation coefficient for CPOT was deemed acceptable at 0.75.
- In Voepel-Lewis, et.al. (2010), a prospective observational study was conducted by three different investigators, independently, in 29 critically ill adults, who could not self report pain, at the University of Michigan Health System. For the purpose of evaluating validity and reliability of FLACC, two investigators used the FLACC pain scale while the third investigator used the Checklist for Nonverbal Pain Indicators (CNPI) for comparison. Assessments were performed “before administration of analgesia or during a painful procedure and 15-30 minutes after the administration or procedure” (Voepel-Lewis, et.al. 2010). Criterion validity (correlation coefficient of 0.963) and construct validity (P<.001) were considered excellent between FLACC and CNPI. In reference to reliability, scores from both investigators using FLACC were excellent in terms of agreement. The internal consistency of FLACC had a Cronbach alpha of 0.882 which increased to 0.934 when the scores for the ‘cry’ category were removed.

LIMITATIONS

- In these reviewed studies, the limitations included: small sample size, studies being conducted at only one hospital, assuming that the painful stimuli being studied was actually painful, and potential bias for bedside nurses performing the assessment.

Indicator	Score	Description
Facial expression 	Relaxed, neutral	0 No muscle tension observed
	Tense	1 Presence of frowning, brow lowering, orbit tightening, and levator contraction or any other change (eg, opening eyes or tearing during noiceptive procedures)
	Grimacing	2 All previous facial movements plus eyelid tightly closed (the patient may have mouth open or may be biting the endotracheal tube)
Body movements	Absence of movements or normal position	0 Does not move at all (does not necessarily mean absence of pain) or normal position (movements not aimed toward the pain site or not made for the purpose of protection)
	Protection	1 Slow, cautious movements, touching or rubbing the pain site, seeking attention through movements
	Restlessness	2 Pulling tube, attempting to sit up, moving limbs/thrashing, not following commands, striking at staff, trying to climb out of bed
Compliance with the ventilator (intubated patients)	Tolerating ventilator or movement	0 Alarms not activated, easy ventilation
	Coughing but tolerating	1 Coughing, alarms may be activated but stop spontaneously
	Fighting ventilator	2 Asynchrony: blocking ventilation, alarms frequently activated
or Vocalization (nonintubated patients)	Talking in normal tone or no sound	0 Talking in normal tone or no sound
	Sighing, moaning	1 Sighing, moaning
	Crying out, sobbing	2 Crying out, sobbing
Muscle tension Evaluation by passive flexion and extension of upper limbs when patient is at rest or evaluation when patient is being turned	Relaxed	0 No resistance to passive movements
	Tense, rigid	1 Resistance to passive movements
	Very tense or rigid	2 Strong resistance to passive movements, inability to complete them
Total		0-8

*Adapted with permission from Gélinas et al.¹

RECOMMENDATIONS

- Performing a larger scale study of FLACC (which is more commonly used in adults than initially intended) and other behavioral pain scales such as CPOT or the FLACC scale modified for adult use.
- Institutions should develop policies which provide guidelines for nurses on which pain scales to use in which patient populations (ex. mechanically vented patients, sedated patients, paralyzed patients, spinal cord injury patients, etc.).
- Performing a trial on an ICU floor using the CPOT.

REFERENCES

- Buttes, P., Keal, G., Cronin, S., Stocks, L., & Stout, C. (2014). Validation of the Critical-Care Pain Observation Tool in Adult Critically Ill Patients. *Dimensions of Critical Care Nursing*. Vol. 33(2). 78-81. doi: 10.1097/DCC.000000000000021
- Rahu, M., Grap, M., Ferguson, P., Joseph, P., Sherman, S., & Elswick, R.K. (2015). Validity and Sensitivity of 6 Pain Scales in Critically Ill, Intubated Adults. *American Journal of Critical Care*. Vol 24(6). 514-523. doi: 10.4037/ajcc2015832
- Rijkenberg, S., Stijlma, W., Endeman, H., Bosman, R.J., & Oudemans-van Straaten, H.M.Bukhari, S. (2015). Pain Measurement in Mechanically Ventilated Critically Ill Patients: Behavioral Pain Scale versus Critical-Care Pain Observation Tool. *Journal of Critical Care*. Vol. 30. 167-172. http://dx.doi.org/10.1016/j.jcc.2014.09.007
- Voepel-Lewis, T., Zanolini, J., Dammeyer, J., & Merkel, S. (2010). Reliability and Validity of the Face, Legs, Activity, Cry, and Consolability Behavioral Tool in Assessing Acute Pain in Critically Ill Patients. *American Journal of Critical Care*. Vol. 19(1). 55-61. doi: 10.4037/ajcc2010624