

6. Table(s) of Tools to Measure Oncology Nursing-Sensitive Outcome: Pain

These tables include tools specifically designed to measure pain along any of the following three dimensions: (a) sensation (intensity), (b) affect, and (c) behavior. The table does not include items or subscales from other multi-dimensional symptom or health-related quality-of-life scales such as the Symptom Distress Scale, the Memorial Symptom Assessment Scale, European Organization for Research and Treatment of Cancer Quality-of-Life Questionnaire for Cancer, Short Form-36, or Functional Assessment of Cancer Therapy. Languages listed in the table indicate tools for which formal descriptions of translations are available in published literature or Web sites related to the tool.

Table 6A. Description of Tools

Name of tool	Author/Year	Domains or Factors	# of Items	Scaling	Scoring	Language
UNIDIMENSIONAL TOOLS						
Numeric Rating Scale (NRS)	<i>(no author identified)</i>	Intensity <i>Also can be used to assess</i> Pain relief Frequency Duration Unpleasantness or distress	1	6 point (0–5) or 11 point (0–10) Written form: horizontal or vertical versions Word anchors at the extremes (e.g., 0 = no pain, 10 = worst pain imaginable)	Single item	English Chinese French German Greek Hawaiian Hebrew Italian Japanese Korean Pakistan Polish Russian Samoan Spanish Tongan Vietnamese
Visual Analog Scale (VAS)	<i>(no author identified)</i>	Intensity <i>Also can be used</i>	1	10 cm line Written form: horizontal or	Single item	English

Name of tool	Author/Year	Domains or Factors	# of Items	Scaling	Scoring	Language
<p>or</p> <p>Graphic Rating Scale</p>		<p><i>to assess</i></p> <p>Pain relief Frequency Duration Unpleasantness or distress</p>		<p>vertical versions</p> <p>Word anchors at the extremes (e.g., no pain at one end, worst pain imaginable at the other)</p> <p>Graphic rating scale adds words or numbers between the extreme ends of the scale</p>		
<p>Verbal Rating Scale (VRS) or Simple Descriptor Scale</p>	<p><i>(no author identified)</i></p>	<p>Intensity</p> <p><i>Also can be used to assess</i></p> <p>Pain relief Frequency Duration <i>Unpleasantness or distress</i></p>	<p>1</p>	<p>List of adjectives describing different levels of pain</p> <p>Number varies (4–15). Example: No pain Slight pain Mild pain Moderate pain Severe pain Very severe pain Most intense pain imaginable</p>	<p>Single item</p>	<p>English</p>

Name of tool	Author/Year	Domains or Factors	# of Items	Scaling	Scoring	Language
Faces Scale	Herr et al., 1998 Hicks et al., 2001 Wong & Baker, 1988	Intensity	1	Series of six to seven drawings representing facial expressions associated with varying degrees of pain Geriatric version available with more human looking faces.	Single item	English Catalan Chinese Dutch French German Hebrew Italian Persian Portuguese Spanish Swedish Thai Turkish
Finger Dynamometer	Wilkie et al., 1990	Pain intensity	1	Mechanical measure of physical force matching perceived pain intensity (0–12 kg)	Single item	English

Name of tool	Author/Year	Domains or Factors	# of Items	Scaling	Scoring	Language
MULTIDIMENSIONAL TOOLS						
Memorial Pain Assessment Card	Fishman et al., 1987	Intensity word descriptors VAS Pain relief Mood		Pain intensity: eight words describing pain intensity (no pain to excruciating) 100 mm VAS (least possible pain to worst possible pain) Pain relief: 100 mm VAS (no pain relief to complete pain relief) Mood: 100 mm VAS (worst mood to best mood)	Individual item scores <i>(No total scale score)</i>	English German
Brief Pain Inventory (BPI) BPI <i>(continued)</i>	Daut et al., 1983	Experience of pain Location Intensity Pain medications Pain relief Interference with daily activity (Long form	BPI (long form) 32 BPI (short form) 9	Experience of pain: yes or no Location: body drawing Intensity: 0–10 NRS Pain medications:	Individual item scores <i>(No total scale score)</i> Mean pain intensity: arithmetic mean of four intensity items	Arabic Cebuano Chinese Dutch English Filipino French German Greek Hindi

Name of tool	Author/Year	Domains or Factors	# of Items	Scaling	Scoring	Language
		includes demographic items)		(open ended) Pain relief: 0%–100% NRS Interference: 0–10 NRS	Pain interference: arithmetic mean of seven interference items	Italian Japanese Korean Norwegian Russian Spanish Swedish Taiwanese Vietnamese
McGill Pain Questionnaire	Melzack, 1975	Pain Rating Index Sensory Affective Evaluative Misc. Present Pain Intensity Pattern Location	25	Pain Rating Index: 20 sets of word descriptors—rank value based on position in word set Present pain intensity: 0–5 VRS Pattern: three sets of word descriptors Location: body drawing	Individual item scores <i>(No total scale score)</i> Pain Rating Index: sum of ranks values of all words chosen	Arabic Chinese Czech Danish Dutch English Finnish French German Greek Hungarian Italian Japanese Norwegian Polish Portuguese Slovak Spanish Swedish

Name of tool	Author/Year	Domains or Factors	# of Items	Scaling	Scoring	Language
McGill Pain Questionnaire–Short Form	Melzack, 1987	Pain Rating Index Sensory Affective Present Pain Intensity Location	18	Pain Rating Index: word descriptors rated 0 = none 1 = mild 2 = moderate 3 = severe Present pain intensity: 0–5 VRS 10 cm VAS Location: body drawing	Individual item scores <i>(No total scale score)</i> Pain Rating Index: sum of word descriptor scores	Croatian Czech Dutch English French German Hebrew Hungarian Italian Polish Portuguese Russian Slovakian Spanish Swedish
Pain-O-Meter	Gaston-Johansson, 1996	Intensity VAS Word descriptors Sensory Affective Location Duration	27	Pain intensity: 10 cm VAS Word descriptors assigned an intensity value (1–5) Location: Body chart of 79 locations Duration: “comes and goes” or “is continuous”	Individual item scores <i>(No total scale score)</i> Word descriptors: highest intensity score identified in each category (sensory and affective)	English

Table 6B. Psychometric Properties of Tools

A major review of reliability and validity of cancer pain measures recently was published in the Journal of Pain (Jensen, 2003) covering articles published from 1975–2001. It can be viewed at [PubMed Abstract](#).

The following table summarizes research reports published from 2001–2004 that included data regarding at least one psychometric property of the scale.

Name of Tool	Populations	Reliability and Validity	Sensitivity	Clinical Utility	Comment
Numeric Rating Scale (NRS)	<i>From Jensen (2003), pp. 5–6</i>	<p><i>Reliability:</i> <i>Test-retest (r = 0.78–0.93)</i></p> <p><i>Validity:</i> <i>Mostly strong associations with other pain measures</i> <i>Positively associated with analgesic use, pain interference, dyspnea, and number of other symptoms</i> <i>Negatively associated with treatment satisfaction and global quality of life (QOL)</i> <i>Pain affect NRS associated with maladaptive coping, emotional distress, and use of analgesics</i></p>	<i>Sensitive to changes in pain intensity associated with treatment of cancer and treatment of pain.</i>	Farrar (2000) reports that a two-point or 33% decrease in NRS score is clinically meaningful.	<p>Some concern regarding accuracy of retrospective ratings</p> <p>Support for distinction between pain intensity and pain affect (unpleasantness)</p>

Name of Tool	Populations	Reliability and Validity	Sensitivity	Clinical Utility	Comment
Visual Analog Scale (VAS) or Graphic Rating Scale	<i>From Jensen (2003), p. 5</i>	<i>Reliability:</i> <i>Test-retest (r = 0.75–0.95)</i> <i>Validity:</i> <i>Strong association with other pain intensity ratings (most r > 0.70)</i> <i>Significant association with performance status, diagnosis (cancer versus noncancer), setting, psychological distress, and QOL</i>	<i>Sensitive to changes in cancer pain intensity with treatment and time</i>	May be more difficult to understand and complete than other single item pain ratings	
	46 patients with cancer-related pain taking sustained release morphine (Quigley et al., 2003)	<i>Reliability: not reported</i> <i>Validity:</i> <i>Significant correlation between VAS pain intensity rating and Verbal Rating Scale (VRS) ratings of pain intensity at both peak and trough plasma concentrations of morphine</i>	<i>Sensitivity: no significant difference in VAS pain intensity rating between peak and trough plasma concentrations of morphine</i>		
VRS or Simple Descriptor Scale	<i>From Jensen (2003), p. 6</i>	<i>Reliability: test-retest</i> <i>Stable over minutes (kappa = 0.71)</i> <i>Not stable during one-week period (r = 0.55)</i> <i>Validity:</i> <i>Strong association with other measures of pain intensity</i> <i>Significant correlations with survival, tumor size and stage, stage of disease, anxiety related to pain, analgesic use, and response to chemotherapy</i>	<i>Sensitive to changes in pain intensity with treatment</i>		

Name of Tool	Populations	Reliability and Validity	Sensitivity	Clinical Utility	Comment
Faces Scale	<i>From Jensen (2003), p. 6</i>	<i>Validity: Strong association with other ratings of pain intensity</i>	<i>Sensitivity: not reported</i>		Possible confusion between pain intensity and emotional response to pain
Finger Dynamometer	<i>From Jensen (2003), p. 7</i>	<i>Reliability: not reported Validity: Only moderately associated with other measures of pain intensity</i>	<i>Sensitivity: not reported</i>		
Memorial Pain Assessment Card (MPAC)	<i>From Jensen (2003)</i>	<i>Moderate to strong correlation among MPAC items Significant correlation with other measures of pain</i>	<i>Sensitive to effects of pain treatment and treatment of cancer</i>		
Brief Pain Inventory (BPI)	<i>From Jensen (2003), p. 7</i>	<i>Reliability: Coefficient alpha ranges (0.75–0.97) for intensity items; (0.78–0.91) for interference items Validity: Factors analysis shows that intensity items load on one factor and interference items load on one factor. BPI pain intensity items are associated with other measures of pain intensity, performance status, and pain interference.</i>	<i>Sensitivity: no studies reported sensitivity of intensity or interference items to effects of treatment.</i>	Useful in assessing effects of 1. Staff education/awareness program 2. Pharmacologic (analgesic) interventions 3. Patient education interventions BPI is appropriate for use with medical	Hwang et al. (2002) study used Chinese version of BPI. Tittle et al. (2003) study sample was > 90% male; interference with work item was not included.

Name of Tool	Populations	Reliability and Validity	Sensitivity	Clinical Utility	Comment
BPI (continued)	37 inpatients with cancer pain (18 received educational booklet; 19 control) (Chang et al., 2002)	Reliability: coefficient alpha Pain severity = 0.89 Pain interference = 0.92 Validity: Factor analysis Significant correlation between pain severity and Eastern Cooperative Oncology Group (ECOG) performance status score Significant correlation between pain interference and ECOG performance status score.	Sensitivity: Pain intensity and interference decreased significantly two weeks after patients received the educational booklet; however, changes in pain intensity and pain interference did not differ significantly between the experimental and control groups.	and surgical patients with cancer, with the exception of the average pain item in surgical populations.	
	418 patients with cancer pain attending oncology clinics (207 before quality improvement [QI] project; 211 during QI project) (Fortner et al., 2003)	Reliability: coefficient alpha Pain severity = 0.88 Pain interference = 0.93 Validity: not reported	Significantly lower “worst pain” and “pain interference” after QI program versus before		
	103 women in remission from breast cancer after the end of radiation treatment (Gelinas & Fillion, 2004)	Reliability: coefficient alpha Pain severity = 0.88 Validity: not reported	Sensitivity: not reported		

Name of Tool	Populations	Reliability and Validity	Sensitivity	Clinical Utility	Comment
BPI (continued)	74 patients attending hematology/oncology clinic or hospitalized on hematology/oncology unit with cancer-related pain rated > 4 on 0–10 scale (Hwang et al., 2002)	Reliability: not reported Validity: Pain severity correlated with pain interference ($r = -0.40, p < .01$) Pain interference correlated with VAS rating of global quality of life Day 1 ($r = -0.56, p < .01$) Wk 1 ($r = -0.47, p < .01$) Wk 2 ($r = -0.57, p < .01$) Wk 3 ($r = -0.44, p < .01$)	Sensitivity: not reported		
	388 inpatients with cancer (229 medical, 159 surgical) (Tittle et al., 2003)	Reliability: coefficient alpha Medical patients = 0.95 Surgical patients = 0.97 Validity: All BPI pain ratings except “average pain” correlated with VAS ratings Medical ($r = 0.51-0.83$) Surgical ($r = 0.58-0.73$) BPI pain interference items correlated with VAS ratings of pain Medical ($r = 0.60-0.66$) Surgical ($r = 0.64-0.71$) All BPI pain ratings except “average pain” correlated with BPI interference items Medical ($r = 0.4-0.80$) Surgical ($r = 0.52-0.80$)	Sensitivity: not reported		

Name of Tool	Populations	Reliability and Validity	Sensitivity	Clinical Utility	Comment
BPI <i>(continued)</i>	64 ambulatory patients with cancer who had pain that required analgesics (Wells et al., 2003)	<p>Reliability: coefficient alpha Pain interference = 0.89 Moderate correlations among BPI pain severity ratings (least, average, worst, now) ($r = 0.35-0.82$)</p> <p>Validity: Worst pain correlated with pain interference ($r = 0.64$), pain-related distress ($r = 0.64$), and negative mood ($r = 0.24$)</p>	Sensitivity: not reported		
McGill Pain Questionnaire (MPQ)	<i>From Jensen (2003), pp. 10-11</i>	<p><i>Reliability:</i> <i>Consistent choice of word descriptors over one week</i></p> <p><i>Validity:</i> <i>Positive association with analgesic use and QOL</i> <i>Affective scale associated with psychologic distress</i></p>	<i>Sensitive to effects of cancer treatment</i>	<p>Word descriptors may be useful in categorizing pain types (nociceptive versus neuropathic) in conjunction with other pain ratings.</p> <p>Suggested that patients complete the questionnaire with an expert</p>	Mystakidou study used the Greek version of the McGill Pain Questionnaire.

Name of Tool	Populations	Reliability and Validity	Sensitivity	Clinical Utility	Comment
MPQ (continued)	114 patients with cancer on a pain and palliative care. (Mystakidou et al, 2002)	<p>Reliability: Coefficient alpha = 0.0962. Correlations of the three pain scores in the instrument— Number of Words Chosen (NWC), Present Pain Intensity (PPI), and Pain Rating Index: Pretreatment—ranged from 0.42–0.92 Post-treatment—ranged from 0.28–0.91 Test/retest—using Pearson’s <i>r</i> value—ranged from 0.224 (NWC)–0.436 (PPI)</p> <p>Validity: Exploratory factor analysis—a two-factor solution (sensory, affective, and evaluative loading on one factor, and miscellaneous on the other) showed an acceptable fit to the data</p>	Sensitivity: Post-treatment scores were significantly lower than pre-treatment scores for all but one subclass.		

Name of Tool	Populations	Reliability and Validity	Sensitivity	Clinical Utility	Comment
MPQ <i>(continued)</i>	149 patients with lung cancer experiencing nociceptive or neuropathic pain (Wilkie et al., 2001)	Reliability: not reported Validity: 15 MPQ descriptor words differed significantly by pain type (nociceptive versus neuropathic)	Sensitivity: Nociceptive pain descriptors (four words) had 6%–11% sensitivity, 97%–100% specificity, and 91%–100% positive predictive value for nociceptive pain. Neuropathic pain descriptors (11 words) had 4%–53% sensitivity, 74%–99 % specificity and 33%–63% positive predictive value for neuropathic pain.		
McGill Pain Questionnaire – Short Form	<i>From Jensen (2003), p. 11</i>	<i>Reliability: coefficient alpha = 0.91</i> <i>Validity: not reported</i>	<i>Sensitivity: not reported</i>		
Pain-O-Meter	<i>From Jensen (2003)</i>	<i>Validity: correlated with other measures of pain</i> <i>Correlated with anxiety, depression</i>	<i>Sensitivity: not reported</i>		