**Tool:** Nursing Assistant-Administered Instrument to Assess Pain in Demented Individuals (NOPPAIN)


**Country of origin:** USA

### Conceptualization

<table>
<thead>
<tr>
<th>Panel rating: 2</th>
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<tbody>
<tr>
<td><strong>Purpose</strong></td>
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<tr>
<td>The Non-Communicative Patient’s Pain Assessment Instrument (NOPPAIN) is a nursing assistant-administered instrument for assessing pain behaviors in patients with dementia.</td>
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<tr>
<td><strong>Conceptual basis</strong></td>
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<td>No definition of pain or identification of the conceptual basis for the tool is provided.</td>
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<td>There is recognition that verbal assessment of pain in patients with dementia Alzheimer type (DAT) is problematic. This tool focuses on observation of specific pain behaviors while doing common care tasks, such as bathing, dressing and transfers. Pain is assessed at rest and with movement.</td>
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</table>

### Item Generation

<table>
<thead>
<tr>
<th>Tool items</th>
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<tbody>
<tr>
<td>The tool has four main sections: In the first section questions are asked about the caregiving situation (what tasks were performed and whether pain was observed). In the second section the nursing assistant is presented with 6 pain behaviors with graphic illustrations:</td>
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<tr>
<td>• Pain words</td>
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<td>• Pain noises</td>
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<td>• Pain faces</td>
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<tr>
<td>• Rubbing</td>
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<td>• Bracing</td>
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<td>• Restlessness</td>
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<tr>
<td>For each of these items the nursing assistant is asked 1) if the behavior was observed (yes/no) and 2) to rate the intensity of the particular behavior on a 5 point scale with anchors 0=lowest possible intensity, 5=highest possible intensity.</td>
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<tr>
<td>In section four the nursing assistant is asked to rate the patient’s global pain intensity on that day on a pain thermometer accompanied by 6 verbal pain descriptors from “no pain” to “pain is almost unbearable.”</td>
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</tbody>
</table>

**Item generation**

The tool was developed by consultation with a panel of 10 clinical and research experts in pain assessment in dementia, nursing home research and psychometrics that advised about item and instrument format issues.

Little information is provided about the actual items that were generated in this process. However, the resulting items appear to reflect those on the Checklist of Nonverbal Pain Indicators (Feldt, 1998).

The basis for assessment of intensity of behaviors is not reported.

Nursing assistants’ global assessment of pain is based on the tool developer’s assumption that caregivers can reliably rate the intensity of pain in elders.

### Content Validity

The NOPPAIN has not been subjected to content validation.
The tool covers 3 of 6 pain behavior categories in the AGS Persistent Pain Guidelines: Facial expression, Verbalizations/ vocalizations, Body language. More subtle pain behaviors in the AGS Guidelines are not addressed: Changes in activity patterns or routines, Mental status changes, Changes in interpersonal interactions. Thus, the tool has limited comprehensiveness which may limit the likelihood of detecting pain, particularly in patients who do not present with obvious pain behaviors.

One justification for involving nursing assistants in pain screening is that they may observe subtle behaviors. However, the NOPPAIN only addresses typical pain behaviors. The unique “knowledge” that the nursing assistant may contribute to pain screening is not tapped.

The nursing assistant is expected to rate the intensity of a particular behavior on a 6 point scale. However, there is little indication as to what will be observed to differentiate levels of intensity.

Although recognizing presence/absence of pain-related behaviors by caregivers is appropriate, the current literature does not support the proxy assessment of pain severity in elders with dementia who are experiencing pain.

### Subjects

#### Panel rating: 3

#### Study 1
*Characteristics of nursing assistants (N=21):*
- Gender: Female: 86%, Male: 14%
- Average age: 37 years (±11.50), Range: 21-60 years.
- Racial/ethnic composition: Caucasian: 5%, African-American: 76%, Hispanic: 10%, Asian: 7%.
- Education background: High school diploma/GED: 71%
- Experience: average 9.8 years, range 3 mos. – 30 years
- All NAs were hired from the same temporary employment agency.

#### Study 2
*Setting:* Four Houston nursing homes and a VA nursing home unit

*Characteristics of residents (n=83):*
- Age of subjects: Average 83.17 years (±8.79) Range 50-100 years
- Gender: Female: 70%, Male: 30%
- Average MDS-Cognition Subscale: 5.46 (±2.86)
- Racial/ethnic diversity: Caucasian: 68%, African-American: 12%, Hispanic: 11%, Other: 9%
- Most common pain related diagnoses were arthritis (41%), “pain” (39%), osteoporosis (28%) and fractures (28%).

*Characteristics of nursing assistants (N=20):*
- Gender: Female: 86%, Male: 14%
- Average age: 37 years (±10.50), Range: 21-60 years
- Education background: High school diploma/GED: 59%
- All NAs were hired from the same temporary employment agency.

#### Panel Commentary

Focus on long term care setting is clearly identified.

The subjects are clearly identified as having severe dementia using appropriate measurements tools.
Sample is gender balanced. The sample is racially/ethnically diverse.

Using 5 subjects per item as a rule of thumb, 40 subjects (5 subjects x 8 items) would be needed. Thus, with 118 subjects sample size is sufficient.

### Administration, Scoring, Feasibility
**Panel rating: 2**

#### Administration, Scoring, Feasibility

The tool has four main sections (for specification see “Item Generation” section above).

Instructions on the form indicate that the NA should complete the form following at least 5 minutes of daily care activities while observing for pain behaviors. The form is to be completed immediately following care activities.

In a feasibility study, administration of the NOPPAIN took nursing assistants less than 30 seconds after an average of 8.71 minutes (±3.70, range 3-15 minutes) involved in care activity and observing the patient prior to completion.

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### -Panel Commentary

Method of administration is described.

Scoring procedures are unclear. No criteria are provided for establishing low-high intensity of pain behavior.

There is concern about NA rating of severity of the resident’s pain (on the pain thermometer) given inaccuracies of surrogate reporting.

Interpretation of tool score is unclear. There is no indication on how to proceed once rating of individual items is completed.

**Clinical utility**

- **Time:** The tool requires little time to complete following a period of observation consistent with time to complete care activities.
- **Skill needed:** The tool was clearly developed for use by nursing assistants. Scope of practice for nursing assistants in screening for pain must be considered. It is unclear what investment in training of nursing assistants is needed to assure accuracy in tool completion.

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### Reliability
**Panel rating: 2**

#### Internal consistency

Internal consistency of the tool has not been established.

#### Interrater reliability

**Study 2**

Interrater reliability was conducted in a subsample of NAs (See characteristics of nursing assistants under subjects above).

Interrater reliability was evaluated using 78 videotapes of NAs performing morning care tasks (e.g. cleaning, dressing, transferring, toileting) with residents with dementia. Twenty-six videos were randomly chosen and shown in random order to a group of 6 NAs who had not participated in either the video development or training session on use of the NOPPAIN.

To evaluate the effect of brief training on interrater reliability, a group of 6 NAs, independent from those who participated in the above activities, received one hour of training on how to complete the NOPPAIN. Interrater reliabilities (mean percent agreement) for each main item on the NOPPAIN for untrained and trained raters ranged as follows:
### Test-retest reliability

**Study 2**

This study was conducted with a subset of untrained nursing assistants (see under subjects above) with no previous contact with residents while providing morning care to residents. The procedure was repeated 2 hours later (n=42) and 24 hours later (n=34). Reliabilities reported were:

<table>
<thead>
<tr>
<th></th>
<th>2 hours</th>
<th>24 hours</th>
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</thead>
<tbody>
<tr>
<td>Was Pain Behavior Present?</td>
<td>.22 - .68^a</td>
<td>.27 - .67^a</td>
</tr>
<tr>
<td>Pain Behavior Intensity</td>
<td>.25 - .68^a</td>
<td>.14 - .66^a</td>
</tr>
<tr>
<td>Pain Thermometer</td>
<td>.60^s</td>
<td>.39^s</td>
</tr>
</tbody>
</table>

^a = phi correlations  
^s = spearman correlation

### Panel commentary

**Internal consistency**

Internal consistency needs to be established.

**Interrater reliability**

Interrater reliabilities were moderate to strong for all tool items. The reliabilities for observing presence of pain behaviors and pain behavior intensity improved with one hour of training.

**Test-retest reliability**

Results indicate low to moderate test retest reliability at both 2 and 24 hours. Only the Pain Thermometer was stronger at 2 hours than 24 hours.

### Validity: Criterion or construct

**Panel rating: 2**

**Construct validity/Criterion related validity**

Construct validity (study 1)

Standard videotaped patient scenarios representing a continuum of pain intensity levels were developed using an actor to portray a bed-bound patient with severe dementia receiving personal care from a nursing assistant. NAs watched and rated each video using the NOPPAIN assessment process. NAs completed the global pain rating for each video and were asked to identify the video showing the most pain from each of 15 pairs.

NAs global pain rating on the NOPPAIN and pain levels portrayed in the videos resulted in weighted Kappa=0.87 (SE: 0.2, 95% CI: 0.82-0.91).

For paired comparisons (Bradley-Terry model of paired comparisons), the parameter estimates conformed to expected responses, although borderline (Deviance GFI=18.14(10), p=0.0527, non-significance indicates a good fit). The lowest intensity pain condition had the smallest parameter, with parameter size increasing with each subsequent level of the pain response scale. Lack of agreement was mainly due to confusion between “mild pain” and “moderate pain,” which was shown by 65% of the raters. All pain level comparisons were 82-100% correct.
**Construct validity (study 2)**

Construct validity was evaluated by comparing nursing assistant NOPPAIN ratings to a physician gold standard. The gold standard for pain presence was consensus of two palliative care physicians on NOPPAIN scores and dichotomous pain classification.

According to physician consensus classifications, 15 of 75 (20%) of patients were in pain. All 15 were classified by physician consensus as having mild pain on the pain thermometer; on the 0-10 pain scale, 8 (11%) were classified as having pain of level 1, 6 (8%) had pain at level 2 and 1 (1%) had pain at level 3.

Pain behaviors were observed most often during transferring, turning, dressing. Of the pain behaviors: bracing, pain faces and pain noises were observed most often (in 67-73% of those classified as in pain), pain words (33%) and restlessness (13%) less often, while rubbing was not observed.

NOPPAIN Validity Indices using sensitivity/specificity were as follows:

<table>
<thead>
<tr>
<th>Untrained rater validity:</th>
<th>Physician ratings and NA ratings</th>
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<tbody>
<tr>
<td>NA NOPPAIN and Physician</td>
<td></td>
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<tr>
<td>NOPPAIN Classification (Pain/No pain)</td>
<td></td>
</tr>
<tr>
<td>Pain Activity Summary Score</td>
<td>.73/.86</td>
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<tr>
<td>Pain Behaviors Summary Score</td>
<td>.90/.45</td>
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</table>

**Panel commentary**

Preliminary evidence of tool validity is presented, however, additional study in clinical settings with larger samples and actual non-research caregivers is needed. The judgment of pain severity in persons with dementia by caregivers has not been substantiated in prior literature; however preliminary work on this tool using a standardized video approach suggests additional study in this area is warranted with clinical samples.

The low specificity scores on the pain behavior items suggest the tool may classify patients as having pain when they are not. A caution is warranted regarding the low levels of pain in the sample that limits evaluation of tool ability to detect pain in those with higher pain levels.

**Summary of panel evaluation of pain assessment tool**

The NOPPAIN was developed for the purpose of nursing assistant’s screening for pain in older adults with dementia. The tool has limited comprehensiveness with behaviors addressing only obvious and not subtle cues or changes indicated in the literature. However, preliminary testing has established that the screening tool is reliable and has preliminary validity, thus may be useful when combined with a more comprehensive screen for other indicators. Use of proxy report for pain severity in a nonverbal population has not been supported in the literature and this aspect of the tool should be evaluated in clinical samples. The tool has been tested in a racially/ethnically diverse sample, although further study is warranted. The tool appears to be clinically useful given the ability of nursing assistants to use and the limited time required for completion. Further psychometric testing is encouraged, including consideration of items to tap nursing assistant’s knowledge of baseline behavior and recognition of subtle changes that might reflect presence of pain. Because assessment activities are outside the scope of nursing assistant practice, it will be important to determine if the expectations of the tool for NA’s are actually screening activity.
Sources of evidence


Key to panel rating
3= Available evidence is strong
2= Available evidence supports need for further testing
1= Available evidence is insufficient and/or tool revisions are needed
0= Evidence is absent

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