

*Original Article*

# The Psychometric Qualities of Four Observational Pain Tools (OPTs) for the Assessment of Pain in Elderly People with Osteoarthritic Pain

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**Abstract**

**Context.** Pain in cognitively impaired elderly people (CIEP) often goes unrecognized. Observational pain tools (OPTs) have been designed, but with limited evidence to support their psychometric qualities.

**Objectives.** This study compared four OPTs (the Pain Assessment IN Advanced Dementia [PAINAD], Abbey Pain Scale [Abbey PS], Pain Assessment Checklist for Seniors with Limited Ability to Communicate [PACSLAC], and Discomfort Scale—Dementia of Alzheimer Type [DS-DAT]), two self-report scales, and two proxy-report scales in assessing osteoarthritic (OA) pain among CIEP.

**Methods.** Participants ( $n = 124$ ) were divided into two groups: cognitively intact and impaired. They were observed by two raters simultaneously at rest and during a standardized exercise program. Besides reliabilities, the correlation between the OPTs and the self-report/proxy-report scores was evaluated. The OPT scores collected during different activity levels were compared to establish the convergent and discriminant validity. Confirmatory factor analysis was used to evaluate the construct validity.

**Results.** Similar and accepted patterns of reliability/validity were obtained for all OPTs, in which better levels of psychometric properties were consistently obtained during exercise. However, a single construct (OA pain) appeared only in the PAINAD and Abbey PS after deletion of the “breathing” and “physiological change” indicators, respectively. This showed that OPTs were better used to detect OA pain when pain was triggered by movement (i.e., an exercise program).

**Conclusion.** The PAINAD and Abbey PS appeared to be more reliable and valid for assessing OA pain while using an exercise program among elderly people, regardless of their cognitive ability. *J Pain Symptom Manage* 2010;40:582–598. © 2010 U.S. Cancer Pain Relief Committee. Published by Elsevier Inc. All rights reserved.

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**Key Words**

*Pain behavior, observational pain tool, cognitive impairment, elderly, pain assessment, psychometric, nursing homes*

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**Introduction**

Because of the complex and subjective nature of pain, accurate pain assessment for elderly people, especially for those who are cognitively impaired, is a major obstacle to successful pain management. During the last decade, many researchers have developed observational methods of assessing pain among cognitively impaired elderly people (CIEP).<sup>1,2</sup> However, self-reporting and proxy-reporting methods are still the most common assessment methods for CIEP.<sup>3-5</sup>

Completion rates of CIEP on self-report scales have been varied, ranging from 7% to 100%<sup>6-10</sup> and decreasing with participants' impaired levels of cognition. Among different pain scales, the verbal rating scale (VRS) has consistently had the highest completion rates, whereas the visual analog scale (VAS) has consistently had the lowest. However, it cannot be assumed that CIEP can correctly use the scales purely based on the scale completion rates. When correlation coefficients ( $r$ ) between different pain scales were calculated, strong and significant correlations ( $r=0.5-0.77$ ) could be identified among pain scales when they were used by elderly people with no to moderate cognitive impairment. However, there was no correlation among pain scales when they were used by those with severe cognitive impairment.<sup>7</sup> The significant correlations among pain scales suggested that the pain scales were measuring the same construct when used among those with no to mild impairment. In contrast, the lack of correlation among pain scales used by severely CIEP suggests that this group of people is unable to comprehend the concept of quantifying pain to a scale item, leading to poor consistency between pain scales. Hence, steps should be included to explore CIEP's comprehension of the self-reporting scales before using these scales for pain assessment. Although many CIEP can give pain scores, it has been shown that almost one-fifth of severely CIEP were unable to use any scale.<sup>8</sup>

An alternative to self-report for CIEP is commonly proxy-report by a caregiver. These include different types of pain intensity scales that were originally designed for self-report. Literature has shown that proxy ratings may be of some value when dealing with noncommunicative patients, although health care professionals tend to underestimate the presence of pain and there may be poor interrater reliability.<sup>9</sup> Although there may be a reasonable level of agreement (70%) between nursing staff and patient ratings in identifying the presence of pain, estimates of pain intensity may be poor when compared with the self-report.<sup>9,10</sup>

Because CIEPs' pain experiences may not be fully reflected by self- or proxy-report, observational pain tools (OPTs) have recently been developed for this special group of people. Their structure relies on common pain-related behavioral indicators, for example, facial expressions, body movements, verbalizations, vocalizations, physiological changes, emotional changes, and changing patterns of activities of daily living (ADL). By observing for the presence or absence of the behavioral indicators, an observer identifies the likely presence of pain in a patient. Appraisals of OPTs have been based mainly on their psychometric properties, rather than comparing them directly in a clinical setting.<sup>11-15</sup> It is unclear which OPTs should be used for pain assessment among CIEP, because all appraisals point out that the OPTs are still under development and show only moderate psychometric qualities. Therefore, further validation of the OPTs in different clinical settings is necessary.

The limitations of previous validating studies include insufficient sample size to represent the target group,<sup>16</sup> unsatisfactory methodology to avoid expectation bias from raters,<sup>17</sup> incomplete psychometric properties, and a lack of effort to investigate how various levels of cognitive impairment affect the psychometric properties of the OPTs. Additionally, most validating studies have not clearly

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