



## “Beyond Words: Advancing Pain Assessment in Cognitively Impaired Patients Through Evidence-Based Nursing Practice – A Comprehensive Narrative Review”

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**Abstract:** Pain is a universal human experience and a significant contributor to morbidity, reduced quality of life, functional decline, and psychological distress. Accurate pain assessment remains the cornerstone of effective pain management; however, assessing pain in cognitively impaired patients presents a substantial clinical challenge. Individuals with cognitive impairment, including those with dementia, delirium, intellectual disabilities, traumatic brain injury, and advanced neurological disorders, often experience difficulties in recognizing, interpreting, communicating, or expressing pain. Consequently, pain frequently remains under-recognized and undertreated, resulting in unnecessary suffering and adverse clinical outcomes. Nurses, who maintain continuous patient contact across healthcare settings, play a critical role in identifying pain through systematic assessment, behavioral observation, family involvement, and evidence-based clinical judgment. This narrative review synthesizes current evidence regarding pain assessment in cognitively impaired patients, emphasizing the epidemiology of pain, barriers to assessment, physiological and behavioral indicators, validated assessment tools, multidisciplinary approaches, technological innovations, ethical considerations, and evidence-based nursing interventions. The review also highlights emerging developments, including artificial intelligence-assisted pain recognition, digital monitoring systems, and personalized assessment strategies. Strengthening nurses' competencies in comprehensive pain assessment can significantly improve patient outcomes, reduce healthcare costs, and enhance the quality of person-centered care.

**Keywords:** Pain assessment, Cognitive impairment, Dementia, Behavioral pain scales, Nursing assessment, Non-verbal pain, Delirium, Older adults, Evidence-based nursing, Pain management.

### Introduction

Pain is recognized as the fifth vital sign and remains one of the most frequently encountered symptoms across healthcare settings. The International Association for the Study of Pain (IASP) defines pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage (IASP, 2020). Although self-report remains the gold standard for pain assessment, this approach becomes unreliable among individuals with moderate-to-severe cognitive impairment who experience communication deficits. The inability to verbally communicate pain does not imply the absence of pain. Instead, cognitively impaired patients frequently express discomfort through behavioral, physiological, emotional, and functional changes that require careful interpretation by healthcare professionals.

Globally, the prevalence of cognitive impairment continues to rise due to population ageing and increasing survival from neurological

disorders. The World Health Organization estimates that more than 55 million people live with dementia worldwide, with nearly 10 million new cases diagnosed annually (WHO, 2023). In addition, millions of patients experience cognitive dysfunction secondary to stroke, Parkinson's disease, traumatic brain injury, intellectual disabilities, or delirium. These populations commonly experience painful conditions including arthritis, fractures, infections, pressure injuries, postoperative pain, malignancies, and chronic musculoskeletal disorders. Unfortunately, studies consistently demonstrate that pain remains significantly under-assessed and undertreated in cognitively impaired individuals.

Effective pain assessment requires integrating self-report whenever possible, behavioral observation, caregiver input, clinical examination, standardized assessment tools, and ongoing reassessment. Nurses occupy a pivotal position in implementing these comprehensive assessment strategies due to their



continuous presence at the bedside. This review critically examines current evidence regarding pain assessment among cognitively impaired patients while highlighting evidence-based nursing practices that promote accurate diagnosis and effective pain management.

### Burden of Pain Among Cognitively Impaired Patients

Pain prevalence among cognitively impaired individuals is remarkably high. Studies estimate that between 45% and 80% of nursing home residents with dementia experience persistent pain, although only a fraction receive adequate analgesia (Husebo et al., 2016). Musculoskeletal disorders, osteoarthritis, osteoporosis, diabetic neuropathy, pressure ulcers, fractures, cancer, and postoperative conditions contribute significantly to pain burden in this population.

Patients with advanced dementia often lose the ability to communicate pain verbally despite maintaining intact nociceptive pathways. Neurodegenerative changes primarily affect language, memory, executive function, and communication rather than pain perception itself. Consequently, untreated pain contributes to agitation, aggression, wandering, depression, insomnia, reduced mobility, malnutrition, delirium, falls, and increased hospitalization. Pain also accelerates cognitive decline through chronic stress, sleep disturbances, inflammatory responses, and reduced physical activity. Persistent pain contributes to caregiver burden, increased healthcare utilization, prolonged hospital stay, and higher institutionalization rates. Therefore, improving pain recognition has become a major priority in geriatric and neurological nursing practice.

### Understanding Cognitive Impairment and Pain Perception

Cognitive impairment encompasses a broad spectrum of disorders affecting memory, attention, language, executive functioning, reasoning, and communication. Common causes include Alzheimer's disease, vascular dementia, Lewy body dementia, Parkinson's disease dementia, frontotemporal dementia, intellectual disabilities, traumatic brain injury, stroke, delirium, and advanced neurological diseases.

Research demonstrates that pain processing involves multiple cortical and subcortical regions including the thalamus, somatosensory cortex, anterior cingulate cortex, insula, and prefrontal cortex. Neurodegeneration may alter emotional interpretation of pain, behavioral responses, and communication without eliminating nociceptive transmission. Consequently,

patients may continue experiencing significant pain despite an inability to describe intensity, location, or quality.

Different forms of dementia affect pain expression differently. Alzheimer's disease often impairs verbal communication gradually, whereas frontotemporal dementia may produce exaggerated behavioral responses. Lewy body dementia and Parkinson's disease may complicate assessment through fluctuating cognition and motor impairments. Delirium introduces additional diagnostic complexity because acute confusion may mask pain manifestations.

Understanding these neurological differences enables nurses to interpret behavioral cues more accurately and avoid misconceptions that cognitively impaired individuals experience less pain.

### Challenges in Pain Assessment

Pain assessment among cognitively impaired patients involves numerous challenges. Communication deficits represent the most significant obstacle because patients frequently cannot describe pain location, severity, duration, or characteristics. Memory impairment limits accurate recall of painful experiences, while language deficits prevent meaningful conversations regarding symptoms.

Behavioral manifestations of pain often overlap with neuropsychiatric symptoms of dementia including agitation, aggression, restlessness, vocalization, resistance to care, and wandering. Healthcare professionals may incorrectly attribute these behaviors solely to dementia rather than considering underlying pain.

Another challenge involves inconsistent behavioral expression. Some patients become withdrawn and quiet, whereas others exhibit excessive vocalization or physical aggression. Individual personality traits, disease severity, environmental factors, medications, anxiety, depression, and fatigue further influence behavioral responses.

Healthcare system factors also contribute to inadequate assessment. Heavy nursing workload, insufficient staffing, lack of standardized assessment protocols, inadequate education regarding behavioral pain indicators, and misconceptions about ageing frequently lead to under-recognition of pain.

Family caregivers often recognize subtle behavioral changes indicating pain; however, their observations are not consistently incorporated into clinical decision-making. These multiple barriers necessitate structured evidence-based assessment approaches.



## Principles of Pain Assessment in Cognitively Impaired Patients

Pain assessment should always begin with attempts at self-report regardless of cognitive status. Even patients with mild or moderate dementia may reliably identify pain using simplified questions, visual scales, or yes/no responses. Self-report should never be abandoned solely because of a dementia diagnosis.

When self-report becomes unreliable, clinicians should identify potential causes of pain including recent surgery, fractures, infections, arthritis, pressure injuries, constipation, urinary retention, dental problems, and invasive procedures. Knowledge of medical history provides valuable context during behavioral assessment.

Behavioral observation constitutes the next essential component. Nurses should observe facial expressions, body movements, vocalizations, interpersonal interactions, activity changes, appetite, sleep, and response during movement or caregiving activities.

Physiological indicators including tachycardia, hypertension, diaphoresis, tachypnea, and pupillary dilation may accompany acute pain but are less reliable indicators of chronic pain. Therefore, physiological parameters should supplement rather than replace behavioral assessment.

Pain assessment should occur repeatedly rather than as a single event. Continuous reassessment following analgesic administration helps determine whether observed behaviors were pain-related and guides further treatment decisions.

## Behavioral Indicators of Pain

Behavioral observation remains the foundation of pain assessment when verbal communication becomes limited. Facial expressions represent one of the most consistent indicators. Grimacing, frowning, tightened lips, rapid blinking, clenched teeth, wrinkled forehead, and fearful expressions frequently accompany painful experiences.

Vocalizations provide another important source of information. Groaning, crying, moaning, sighing, calling out, repetitive verbalizations, increased breathing sounds, or unusual silence may all indicate pain.

Body movements also offer valuable insights. Protective guarding, rubbing affected areas, resisting movement, rigidity, pacing, restlessness, limping, decreased mobility, or unusual posturing often reflect discomfort.

Changes in interpersonal interactions may include withdrawal, irritability, aggression, refusal of care, reduced communication, social isolation, or increased dependency.

Alterations in daily routines including decreased appetite, poor sleep, reduced participation in activities, increased confusion, wandering, or new-onset incontinence may similarly indicate unrecognized pain.

Because individual responses vary considerably, establishing baseline behavior through family interviews remains essential.

## Validated Pain Assessment Tools

Several standardized instruments have been developed specifically for cognitively impaired patients.

The **Pain Assessment in Advanced Dementia (PAINAD)** scale remains one of the most widely used tools. It evaluates breathing, negative vocalization, facial expression, body language, and consolability, producing scores ranging from 0 to 10. PAINAD demonstrates excellent reliability, ease of administration, and clinical utility across hospitals and long-term care facilities (Warden et al., 2003).

The **Abbey Pain Scale** evaluates vocalization, facial expression, body language, behavioral changes, physiological changes, and physical changes. It is particularly useful in advanced dementia and palliative care settings.

The **Doloplus-2 Scale** includes somatic, psychomotor, and psychosocial domains and is suitable for chronic pain assessment among elderly patients with communication difficulties.

The **Checklist of Nonverbal Pain Indicators (CNPI)** assesses verbal complaints, facial grimacing, bracing, restlessness, rubbing, and vocal complaints during rest and movement.

The **Mobilization-Observation-Behavior-Intensity-Dementia (MOBID-2) Pain Scale** evaluates pain during guided movement and additionally assesses internal organ, head, and skin pain.

The **PACSLAC-II (Pain Assessment Checklist for Seniors with Limited Ability to Communicate)** includes comprehensive behavioral indicators covering facial expressions, body movements, social interactions, mood changes, and physiological symptoms.

Selection of assessment tools should consider patient characteristics, clinical setting, staff familiarity, validity, reliability, and feasibility.

## Role of Nurses in Pain Assessment

Nurses occupy a central position in identifying and managing pain among cognitively impaired patients. Their continuous bedside



presence allows frequent observation of subtle behavioral changes that other professionals may overlook.

Nursing assessment begins with obtaining comprehensive health histories, identifying painful diagnoses, reviewing medications, and interviewing family members regarding normal behavior patterns. During routine care such as bathing, dressing, repositioning, or mobilization, nurses can observe movement-related pain behaviors that remain hidden during rest.

Documentation represents another essential nursing responsibility. Accurate recording of behavioral observations, pain scores, analgesic administration, treatment responses, and reassessment findings facilitates continuity of care.

Nurses also educate caregivers regarding behavioral indicators of pain and encourage timely reporting of changes. Advocacy remains equally important, particularly when patients cannot communicate independently. Nurses should communicate assessment findings effectively to physicians and multidisciplinary teams while promoting individualized pain management plans.

Regular professional education regarding behavioral pain assessment tools significantly improves nurses' confidence, diagnostic accuracy, and treatment outcomes.

### Family and Caregiver Involvement

Family caregivers possess invaluable knowledge regarding patients' usual behaviors, personality traits, communication patterns, and responses to illness. Even subtle deviations from baseline may indicate pain.

Caregiver interviews should explore recent behavioral changes, appetite, sleep, mobility, mood, social interaction, facial expressions, and typical pain responses. Family members frequently recognize pain before healthcare professionals because they understand individualized expressions of discomfort.

Collaborative partnerships between nurses and caregivers improve assessment accuracy, treatment adherence, and patient satisfaction. Education should focus on recognizing behavioral pain indicators, medication adherence, non-pharmacological interventions, and timely communication with healthcare providers.

### Multidisciplinary Approach

Effective pain assessment requires collaboration among physicians, nurses, physiotherapists, occupational therapists, psychologists, pharmacists, speech therapists, and social workers. Physicians identify underlying pathological causes of pain and prescribe appropriate pharmacological interventions. Nurses perform continuous behavioral assessments and evaluate

treatment effectiveness. Physiotherapists assess movement-related pain while promoting functional rehabilitation. Pharmacists optimize analgesic regimens, minimize adverse drug reactions, and identify medication interactions. Occupational therapists recommend environmental modifications that reduce discomfort during daily activities.

Interdisciplinary communication promotes comprehensive pain management and prevents fragmented care.

### Evidence-Based Non-Pharmacological Assessment Support

Although analgesic therapy remains important, non-pharmacological strategies support pain assessment by reducing anxiety and facilitating behavioral observation. Comfortable positioning, massage, music therapy, heat or cold application, therapeutic touch, relaxation, familiar environments, distraction techniques, aromatherapy, and family presence often reduce distress.

Observing behavioral improvement following these interventions may provide additional evidence supporting pain-related behaviors. Nurses should incorporate individualized non-pharmacological approaches alongside standardized assessment tools.

### Technology and Emerging Innovations

Technological advances are transforming pain assessment among cognitively impaired patients. Artificial intelligence algorithms increasingly analyze facial expressions through automated video recognition systems capable of identifying subtle pain-related facial movements.

Wearable sensors continuously monitor physiological parameters including heart rate variability, skin conductance, activity levels, sleep patterns, and movement abnormalities that may indicate pain episodes.

Machine learning models integrate behavioral observations, electronic health records, medication history, and physiological data to generate personalized pain predictions.

Telehealth enables remote behavioral monitoring within community settings, while mobile applications facilitate standardized pain documentation by caregivers. Digital decision-support systems assist nurses in selecting appropriate assessment tools and recommending evidence-based interventions.

Although these technologies demonstrate considerable promise, further validation across diverse patient populations remains necessary before widespread implementation.





### Ethical and Legal Considerations

Pain relief constitutes a fundamental human right irrespective of cognitive status. Ethical principles of beneficence, non-maleficence, justice, and respect for dignity require healthcare professionals to assess pain comprehensively even when patients cannot communicate verbally.

Failure to recognize pain may constitute neglect and compromise patient safety. Decision-making frequently involves surrogate consent, advance directives, family participation, and interdisciplinary discussions.

Documentation assumes legal importance because behavioral assessment findings justify analgesic administration and demonstrate adherence to professional standards. Nurses must avoid assumptions that behavioral disturbances solely reflect dementia without investigating potentially reversible causes including pain.

### Future Directions

Future research should prioritize development of culturally sensitive behavioral assessment tools, integration of artificial intelligence into routine clinical practice, and validation of multimodal pain assessment systems combining behavioral, physiological, and digital biomarkers.

Large multicenter trials are needed to evaluate the effectiveness of technology-assisted pain assessment in improving clinical outcomes. Standardized educational programs for nurses should become integral components of undergraduate and continuing professional education.

Healthcare organizations should establish evidence-based protocols ensuring routine behavioral pain assessment, interdisciplinary collaboration, caregiver involvement, and continuous quality improvement.

### Conclusion

Pain assessment in cognitively impaired patients remains one of the most complex responsibilities in contemporary healthcare. Communication barriers, behavioral variability, overlapping neuropsychiatric symptoms, and inadequate professional training frequently contribute to under-recognition and undertreatment of pain. Nevertheless, substantial evidence demonstrates that cognitively impaired individuals continue to experience pain comparable to cognitively intact populations and deserve equitable, compassionate, and evidence-based care.

Nurses serve as the cornerstone of effective pain assessment through systematic observation, use of validated behavioral

assessment tools, comprehensive documentation, caregiver collaboration, interdisciplinary communication, and ongoing reassessment. Standardized instruments such as PAINAD, Abbey Pain Scale, MOBID-2, PACSLAC-II, Doloplus-2, and CNPI substantially improve diagnostic accuracy when integrated into routine clinical practice. Emerging technologies, including artificial intelligence, wearable sensors, and digital health platforms, offer promising opportunities to enhance behavioral pain recognition while complementing—not replacing—clinical judgment.

Ultimately, improving pain assessment requires organizational commitment, continuous professional education, evidence-based protocols, and person-centered nursing care. Accurate recognition of pain enables timely intervention, reduces unnecessary suffering, enhances functional recovery, improves quality of life, and upholds the dignity of cognitively impaired individuals across acute care, long-term care, rehabilitation, and community healthcare settings.

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