Original Article

Pain in Cognitively Impaired Nursing Home Patients

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Abstract
Pain is an understudied problem in frail elderly patients, especially those with cognitive impairment, delirium, or dementia. The focus of this study was to describe the pain experienced by patients in skilled nursing homes, which have a high prevalence of cognitive impairment. A random sample of 325 subjects was selected from ten community skilled nursing homes. Subjects underwent a cross-sectional interview and chart review for the prevalence of pain complaints, etiology, and pain management strategies. Pain was assessed using the McGill Pain Questionnaire and four unidimensional scales previously utilized in younger adults. Thirty-three percent (33%) of subjects were excluded because they were either comatose (21%), non-English speaking (3.7%), temporarily away (sick in hospital) (4.3%), or refused to participate (3.7%). Of 217 subjects in the final analysis, the mean age was 84.9 years, 85% were women, and most were dependent in all activities of daily living. Subjects demonstrated substantial cognitive impairment (mean Folstein Mini-Mental State exam score was 12.1 ± 7.9), typically having deficits in memory, orientation, and visual spatial skills. Sixty-two percent reported pain complaints, mostly related to musculoskeletal and neuropathic causes. Pain was not consistently documented in records, and pain management strategies appeared to be limited in scope and only partially successful in controlling pain. None of the four unidimensional pain-intensity scales studied in this investigation had a higher completion rate than the Present Pain Intensity Scale of the McGill Pain Questionnaire (65% completion rate). However, 83% of subjects who had pain could complete at least one of the scales. We conclude that cognitive impairment among elderly nursing home residents presents a substantial barrier to pain assessment and management. Nonetheless, most patients with mild to moderate cognitive impairment can be assessed using at least one of the available bedside assessment scales. J Pain Symptom Manage 1995;10:591–598.

Key Words
Cognitive impairment, pain assessment, pain scales, elderly patients

Introduction

Pain is a serious problem among frail elderly people.[1,2] Impaired mobility, decreased socialization, depression, sleep disturbances

and increased health care utilization and costs have each been associated with the problem of pain in elderly patients.[3-6] Deconditioning, gait disturbances, falls, slow rehabilitation, polypharmacy, cognitive dysfunction, and malnutrition are among the many common geriatric conditions that are potentially worsened by the experience and treatment of pain.[1] The Agency for Health Care Policy and Research (AHCPR) has recognized the elderly as a population with special needs for pain assessment and management strategies.[7,8]

Today there are more than 1.5 million frail elderly persons residing in approximately 20,000 nursing homes in the United States. Nursing homes represent more than triple the number of acute care hospitals and more than double the number of acute hospital beds.[9] The National Nursing Home Survey of 1985 described this population as 80% female and more than 40% over 85 years of age.[10] The nursing home population exhibits an extremely high prevalence of functional disability, which is potentially worsened by the experience and treatment of pain. More than 88% need assistance with bathing, almost 75% need help with dressing, and more than 60% need help with transfers. More than 50% of nursing home residents are incontinent, and more than 40% need assistance with eating. In addition to these impairments, more than 65% of nursing home residents have cognitive dysfunction or mental illness. Visual acuity and hearing impairments are common. Nursing home residents often have multiple medical diagnoses and require numerous medications.[9] In a study of pain in a single nursing home, the average patient had more than six clinical problems and was prescribed more than seven medications.[6]

Cognitive impairment, such as dementia and delirium, represents a major barrier to pain assessment and management in this population. Nursing home residents with dementia related to cerebrovascular disease or dementia of the Alzheimer type often have cognitive deficits in memory, attention, visual spatial skills, and language (aphasia).[11] Behavioral problems are not uncommon. Despite these potential barriers, Parmelee and colleagues found no evidence of "masking" of pain complaints by cognitive impairment in a study of 758 residents of a single long-term

care facility in Philadelphia.[12] Data from this study suggest that, "although cognitively impaired elderly may slightly underreport experienced pain, their self-reports are generally no less valid than those of cognitively intact individuals."[12]

To our knowledge, previous research of pain in long-term care facilities has been limited to single facilities that have included mixed populations of residential and skilled levels of nursing care. The purpose of this investigation was to explore the problem of pain in skilled nursing homes using multiple settings that might be more generalizable to community nursing homes. The study was designed to answer two study questions: (a) What is the prevalence of pain complaints in skilled nursing homes? and (b) What is the percentage of nursing home patients with pain that can be assessed using one of several available bedside pain-intensity scales?

Methods

Design

The study design was a randomly selected cross-section chart review and interviewer-assisted survey of residents of community skilled nursing homes.

Settings

Ten skilled nursing homes in Los Angeles were included in the study. Sixty percent of the facilities were proprietary, and 40% were nonprofit with an average of 100 beds (range, 50–200 beds). The facilities had an average of 15 staff physicians (range, 8–59), and 45% (range, 0%–76%) of residents were receiving Medicaid (Medical) reimbursed care.

Subject Selection

Subjects were randomly selected from the census at each facility. Thirty-five percent of all residents at each facility were chosen for chart review and interview. This study was conducted as a quality assurance activity in each of the facilities. Thus, participation was not contingent on the ability of subjects to participate in a typical written informed consent procedure. Instead, prior to data collection, each subject was read a statement that briefly indicated the nature of the study, the protocol,

and their rights to refuse participation. Family or surrogate decision makers for the patients as well as the primary care physicians were informed of the study and of the patients' potential inclusion. If the patient, their family, surrogate decision maker, or primary care physician indicated an objection or desire not to participate, the subject was excluded from any further interview or data collection. The protocol and verbal "consent" procedure were approved by the Sepulveda VAMC Human Subjects Protection Committee and the internal review boards of each of the participating facilities in view of the overall goals, minimal invasiveness of the study, and the desire to maximize subject recruitment.

Data Collection Instruments

Demographic data was extracted from the medical record review, including variables of age, gender, medical diagnoses, prescribed medications, and whether consultants or other nondrug pain management strategies had been employed or ordered. A structured interview was then conducted using several established instruments to evaluate cognitive impairment, functional status, and pain.

Cognitive impairment was evaluated by the Folstein Mini-Mental State Exam.[13] This 30-item instrument has been shown to have broad validity and reliability for the diagnosis and assessment of geriatric delirium and dementia. Functional status was characterized by the Katz activities of daily living scale.[14] This six-point instrument is used widely in nursing homes in the assessment of individuals' ability to independently preform activities including bathing, toileting, transfer, continence, eating, and dressing.

Pain was evaluated using a 33-item questionnaire adapted from the investigators previous research in nursing home populations.[6] This instrument included questions regarding the frequency, location, and character of pain as well as the existence of multiple pain sources obtained by patient self-report and review of existing medical records. Pilot studies of the adapted instrument among 20 frail elderly subjects with chronic pain at a veterans nursing home demonstrated internal consistency of 0.85 (Chronbach's alpha) and test–retest reliability (comparison of two assessments 24

hours apart) of 87% (mean individual item weighted agreement; range, 60%–100%).

The evaluation of pain was also assessed using the McGill Pain Questionnaire.[16] This 78-word descriptor scale has been used in a large number of populations and settings.[16] Subjects with more than one pain problem were ask to concentrate on the most severe problem. The McGill Pain Questionnaire was administered by recording each of the 20 subsections of words in one inch letters on 8.5 by 11 inch cards. Cards were shown to and simultaneously read to subjects as they were asked to indicate words that described their pain. The McGill Pain Questionnaire was scored by the sum of the rank values of words chosen in each of 20 categories (Pain Rating Index Total), as well as the four subscales (Pain Rating Index Sensory, Pain Rating Index Affective, Pain Rating Index Evaluative, and Pain Rating Index Miscellaneous subscales).[16] Also the Present Pain Intensity (PPI) scale was recorded. This six-point combination word-number scale is an additional subscale of the McGill Pain Questionnaire used as an indicator of pain intensity at the moment.

In addition to the PPI scale, patients who indicated the presence of pain problems during the interview and pain questionnaire were presented four other unidimensional pain intensity scales shown in Figure 1. These included a verbally administered 0–10 scale;[17] a 100-mm horizontal visual analogue scale;[18] a subscale of the Memorial Pain Card (modified Tursky Scale)[19]; and the Rand COOP Chart for pain.[20] These scales were presented in a structured systematic random order and, except for the verbal scale, were also presented on 8.5 by 11 inch cards. The verbal 0–10 scale was administered by verbally reading the scale to the subject and waiting for a verbal reply.

Subjects were given at least 30 sec for a reply, and the scale was repeated at least three times before subjects were considered unable to respond. The horizontal visual analogue scale consisted of a 100-mm horizontal line with word anchors of "no pain" and "worst possible pain." Subjects indicated their level of pain by placing a mark on the line indicating the intensity of pain at the moment. Subjects unable to hold a pencil and make a mark on the line were considered unable to com-

Fig. 1. Figure illustrating five unidimensional pain scales.

plete the scale. Responses were scored by the interviewer by measuring the distance (in millimeters) from the zero anchor ("no pain") to the patient's indicated response.

The remaining two instruments, the modified Tursky subscale of the Memorial Pain Assessment Card, and the Rand Coop Chart were administered by showing and reading each card to the subjects and waiting for a verbal reply or pointing to the appropriate response. Care was taken to give subjects ample time to complete each task, and prompting was limited to repeating the questions and directions. All data were collected by a single trained study nurse and care was taken to standardize subjects' reported pain by avoiding interviews within an hour of pain medication, physical therapy or other physical activities. Care was taken to ensure that sub-

jects were sitting upright, usually at a table or writing surface, facing the interviewer, and using appropriate ambient light and hearing assistance devices if necessary.

Results

A sample of 325 subjects was obtained from a total of 915 potential subjects. Fourteen subjects (4.3%) were not available for interview (on leave from the nursing home), and 12 subjects (3.7%) refused to participate. Following chart review and brief interview, 70 subjects (21.5%) were essentially mute and unresponsive, and no meaningful information could be obtained from the patient interview. Twelve subjects (3.7%) were non-English speaking and were subsequently excluded. Thus, 217 subjects were included in the final analysis.

Table 1
Demographic Data (N = 217)

Characteristic	Value
Age in years (mean; range)	84.9 (49–103)
Gender (% females)	84.8%
Ethnic status	
Caucasian	90%
Black	2%
Hispanic	6%
Asian (and Pacific islands)	2%
Number of medical problems (mean; range)	7.9 (1–19)
Number of prescribed medications (mean; range)	8.7 (0–25)
Katz activities of daily living	
Need help with feeding	28%
Incontinent	22%
Need help with transfers	81%
Need help with toileting	82%
Need help with dressing	96%
Need help with bathing	98%
Folstein Mini-Mental State Exam Score (mean; range)	12.1 (0–30)

Demographic and Medical Characteristics

Demographic characteristics of the sample are shown in Table 1. The mean age was 84.9 years, and about 85% were women. Subjects had an average of almost eight active medical diagnoses and were prescribed an average of almost nine medications. In general, there was a very high prevalence of cognitive impairment. Most patients had poor recall memory and were disoriented to date, time, and place. The average Folstein Mini-Mental State Exam score was 12 ± 7.9 (range, 0–30; normal being greater than 24 out of 30). Subjects were very low in physical functioning and dependent in most of the six activities of daily living described by the Katz scale, including bathing, dressing, toileting, transfer, continence, and feeding.

Frequency of Pain

One hundred and thirty-four (134) subjects (62%) reported pain complaints during the interview and pain questionnaire. Eighty-three subjects (38%) denied any painful problems or could not give meaningful responses to the questionnaire. Table 2 lists the locations and frequency of pain complaints obtained from interview and pain questionnaire. Forty percent of subjects described more than one location for pain (average 3.0), with a range of 1–14 separate locations. It was noted that 37% of subjects who complained of pain had no

Table 2
Pain Locations (N = 134)

Location	Frequency N (%)
Back	90(67.1%)
Knee	78(58.2%)
Foot/ankle	70(52.2%)
Shoulder	64(47.8%)
Neck	61(45.5%)
Wrist	60(44.8%)
Headache	58(43.3%)
Hip	56(41.8%)
Abdomen	55(41.0%)
Chest wall	48(35.8%)
Elbow	39(29.1%)
Heart/angina	34(25.4%)
Rectal/pelvic	34(25.4%)
Face/jaw	34(25.4%)
Other	57(42.5%)

Note: Most subjects described more than one location (mean, 3.0; range, 1–14).

documented etiology for their pain description in the medical records. Of those with some documentation, arthritis was the most common etiology identified for the primary complaint (70%) followed by old fractures (13%), neuropathies (10%), and malignancies (4%) (see Table 3). Pain was most often documented in nursing notes (including the nursing care plan) (49%), physician's notes (44%) and consultant's notes (8%). Notes regarding pain were usually nonstructured, and none of the patients were being systematically evaluated for ongoing pain on a routine basis.

Pain Treatments

Acetaminophen was ordered for 81% of subjects who complained of pain, although the exact indication for the order could not always be determined from the chart. For example, some subjects may have had acetaminophen available for fever rather than specifically for pain. Only 18 subjects (13%) were actively taking nonsteroidal antiinflammatory drugs and 8 subjects (6%) were receiving aspirin specifi-

Table 3
Etiology of Primary Pain Complaint
Identified in Medical Records (N = 84)

Etiology	Frequency
Arthritis	59(70%)
Old fractures (including prosthetic related)	11(13%)
Neuropathy	8(10%)
Malignancy	3(4%)
Muscle spasm	1(1%)
All other	2(2%)

Note: Fifty subjects (37%) with pain had no etiology identified in the medical record.

Table 4
Pain Intensity as Measured By Various Pain Scales (N = 134)

Scale	Completion rate	Median (range)
Present Pain Intensity (McGill PPI)	87(65%)	2.0(0–5)
Memorial Pain Assessment Card Subscale	79(59%)	4.0(0–7)
Rand Coop Chart	77(57%)	3.0(0–4)
Verbal 0–10 scale	64(47%)	5.5(0–10)
100-mm visual analogue scale	59(44%)	48 (1–99)

Note: Only 35 subjects (32%) could complete all five scales; however, 115 subjects (83%) could complete at least one of the scales.

cally ordered for pain. Forty-five subjects (34%) had orders for opioid analgesic medications including propoxyphene (16%), codeine (13%), hydrocodone (5%), and morphine (1%).

Thirty-three subjects (25%) with pain had received physical therapy consultation in the preceding 6 months. Only five subjects (4%) were currently using a heating pad, and only one subject had received a local nerve block. Eight subjects (6%) stated that they had been to a pain management clinic at one time.

Pain Assessment

Although it is beyond the scope of this paper to present a complete psychometric analysis of the McGill Pain Questionnaire using the methods of administration described above, most patients (80%) identified several words that described their pain (median, 8.5 words; range, 1–20). All 78 words included in the scale were used and the most frequently chosen words were "tiring" (N = 36), "nagging" (N = 32), "hurting" (N = 29), "exhausting" (N = 29), and "annoying" (N = 27). The least frequently use words included "scalding" (N = 1), "vicious" (N = 2), "drilling" (N = 2), "beating" (N = 2), "pricking" (N = 3), and "squeezing" (N = 4). An analysis of the Pain Rating Index Total and subscales revealed a median Total score of 17 (range, 0–75); median Sensory subscale score of 10.0 (range,

1–40); median Miscellaneous subscale score of 3.0 (range, 0–17); median Affective subscale score of 2.0 (range, 0–13); and median Evaluative subscale score of 1.0 (range, 1–5). There were no statistically significant correlations between severity of cognitive impairment as measured by the Folstein Mini-Mental State score and the number of words chosen or the Pain Rating Index Total score.

Of five unidimensional scales presented, most subjects (83%) could complete at least one of the scales (Table 4). The highest completion rate was observed for the Present Pain Intensity Scale of the McGill Pain Questionnaire (65% completion rate) followed by a 59% completion rate for the Memorial Pain Card Subscale and 57% for the COOP Chart. Subjects seemed to have more difficulty with the verbal scale and a high proportion of patients were unable to complete the visual analogue scale, either due to inability to follow commands or hold a pencil. Only about one-third of subjects (32%) were able to complete all of the scales. More importantly, 17% were unable to complete any of the pain rating scales presented despite having answered appropriately to yes or no questions about the presence of pain during the interview and pain questionnaire.

For subjects who were able to complete at least two of the scales, interclass correlation

Table 5
Relationships Between Pain Reports as Measured By Various Pain Rating Scales

	McGill PPI	Memorial subscale	Verbal scale	Visual analogue scale	Rand Coop Chart
Memorial Subscale	0.67(N=71)				
Verbal scale	0.54(N=60)	0.50(N=54)			
Visual analogue scale	0.55(N=55)	0.63(N=55)	0.53(N=45)		
Rand Coop Chart	0.72(N=71)	0.79(N=73)	0.48(N=53)	0.60(N=55)	
McGill PRIT	0.55(N=84)	0.38(N=77)	0.54(N=64)	0.55(N=58)	0.43(N=76)

PPI, Present Pain Intensity; PRIT, .
Note: Numbers represent Spearman rho coefficients; $P < 0.001$ for all values.

coefficients are shown in Table 5. This analysis indicated moderately strong correlations between the various scales in this patient population ($r = 0.38–0.79$; $P < 0.0001$).

Discussion

Findings from this study confirm that pain is common in elderly people requiring skilled nursing home care. Of patients who were able to make their needs known, over 60% had complaints of pain. Most of these complaints were from musculoskeletal causes, although a substantial portion arose from neuropathies and a smaller proportion from other nonmalignant sources. Nursing home patients in this study were profoundly disabled and most were unable to perform any basic activities of daily living, whether or not they had substantial pain problems.

Results indicate that pain management in skilled nursing homes is limited in scope and only partially successful. Despite the overall number of medications patients were receiving, analgesic drugs appeared to be used sparingly. Fear of adverse reactions and polypharmacy may be common decision-making issues for physicians and nurses in this setting. On the other hand, use of nonpharmacologic strategies also appeared to be limited. Although 25% had received physical therapy consultation during the preceding 6 months, few patients had received any other pain management strategy. Many patients could not cooperate in physical therapy, maintenance exercises, or other self-care strategies (such as using heating pads) because of cognitive impairment or other functional limitations. Indeed, these barriers may present formidable challenges to effective pain management in this setting.

Cognitive impairment (dementia or delirium) is a substantial barrier to pain assessment and management in this population. Twenty-one percent of patients in these skilled nursing facilities were unable to make their needs known. Of the subjects who did complain of pain, 17% could not complete any of the quantitative assessment scales presented. These patients were not comatose or incapable of feeling pain. They were able to make most of their needs known in a qualitative but not always quantitative way. None of the unide-

mensional pain intensity scales included in this study was ideal for all cognitively impaired patients with pain. However, pain assessment was usually successful using at least one of the available instruments that was suited to the individual patient and administered in a manner sensitive to the disabilities elderly patients often have. These observations indicate that self-ratings of pain in this understudied population are not only possible but are also reliable and valid as shown by Parmelee and colleagues.[12]

This cross-sectional study focused on pain complaints at the moment, and most patients were able to describe pain they were presently experiencing. The extent to which cognitively impaired patients are able to report pain "in the last month," or "in the last week" remains to be studied, but it would seem highly limited from our observations.

The findings from this study are descriptive in nature and limited in sampling from ten skilled facilities in the Los Angeles community. These potential limitations, as well as the use of a single data collector, may threaten the reliability, validity, and generalizability of the results.

Nonetheless, our observations have important implications for improving quality of care in this setting. Pain assessment and management strategies for elderly patients with cognitive impairment will likely require constant and frequent assessment of pain at the moment, so that management strategies can be maximized. Existing pain assessment scales may require altered presentation and administration techniques to compensate for common disabilities.

Experience from this study indicates that elderly patients with mild to moderate cognitive impairment often require time to assimilate questions about pain and to respond appropriately. Cognitively impaired patients and patients with severe pain often have limited attention spans and are easily distracted. Therefore it may be helpful to prepare these patients by limiting distractions in the room and by providing good ambient lighting and amplified hearing devices when necessary. Likewise, visual cues for most patients should be presented in large print.

It is clear that innovative strategies are needed to solve many of these distressing problems. As this is the fastest growing segment of the population in many countries,

much additional research is needed for effective solutions.

Acknowledgment

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