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Pain and Its Treatment in Older Nursing Home Hospice/Palliative Care Residents

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Abstract

Objectives—The objectives of this study were to determine the prevalence of pain, describe its treatment, and determine factors associated with any pain in older residents assigned to a hospice specialty unit bed or receiving services from a hospice/palliative care/end-of-life special program in US nursing homes.

Design—Cross-sectional study of data from the 2004 National Nursing Home Survey.

Setting—The setting was 1174 US nursing homes.

Participants—Participants were 303 sampled patients, 65 years or older, representing 33,413 individuals receiving hospice/palliative care.

Measurements—Facility staff was asked if, in the past 7 days, the resident had reported or shown evidence of pain. Medication use data were derived from medication administration records. Information about demographics and health status was derived from Minimum Data Set records.

Results—Cancer was the primary diagnosis in only 11.4% of residents. Overall 36.6% had any pain in the previous week. Among those with any pain, 86.4% received some analgesic; specifically, 65.5% received opioids, whereas 31.7% received acetaminophen. Those with any pain compared with those without pain had shorter lengths of stay in hospice/palliative care (mean 123 days versus 161 days, $P < .01$), were more likely to be incontinent of bowel (76.2%, versus 60.3%, $P < 0.01$) and bladder (84.5% versus 71.8%, $P = 0.01$).

Conclusions—Pain symptoms were present in more than one third of older nursing home hospice/palliative care residents despite the use of opioids in two thirds of those who had reported or shown evidence of any pain. Additional future studies are needed to improve the management of pain in older residents receiving hospice/palliative care in US nursing homes.

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Keywords

Aged; nursing home; hospice; palliative care; analgesics

Annually, more than 1.6 million residents receive care in nearly 18,000 US nursing homes. Given that most residents are adults 65 years of age or older and have high chronic disease burden, at least 30% of Americans die in this setting.¹ This has led to increasing availability of hospice/palliative care in nursing homes.^{2,3} Hospice is defined by Medicare as care for individuals whose physician certifies that they have less than 6 months to live if the disease runs its normal course. The focus is on comfort and not life prolongation. Palliative care is interdisciplinary care focusing on quality of life for patients with advanced illness.

Adequate pain management is an important part of quality care in nursing homes.^{4,5} Unfortunately, there is considerable evidence that chronic pain in older adults, whether a result of malignant or nonmalignant causes, such as falls, fractures, surgery, and musculoskeletal problems, is undertreated in nursing home settings.^{4,5} To date, there are at least 3 studies that have examined pain management in those receiving nursing home hospice care.^{6–8} These studies are limited, however, because up to 83% of these patients have a cancer diagnosis as a likely source of pain, and the authors did not examine a national sample.^{6–8} Moreover, pain management is also important in those receiving palliative care where noncancer diagnoses (eg, dementia) are a frequent cause of nursing home deaths.^{2,3}

Given this background, the objective of the current study was to determine the prevalence of pain, describe its treatment, and determine factors associated with any pain in older residents receiving hospice/palliative care in US nursing homes. This study capitalizes on existing data from the 2004 National Nursing Home Survey (NNHS).⁹

METHODS

Study Design, Source of Data, and Sample

This cross-sectional study used information derived from the resident file of the 2004 NNHS.⁹ The NNHS was conducted by the National Center for Health Statistics of the Centers for Disease Control and Prevention. Those residents who were assigned to a bed on a hospice specialty unit or were receiving services from a special program for hospice/palliative care/end of life and were 65 years of age and older were included in the current study sample. This study was approved by the VA Pittsburgh Healthcare System and University of Pittsburgh Institutional Review Boards.

Data Collection and Management

A representative sample of nursing homes was selected from a total of about 18,000 nursing home facilities in the United States. The nursing homes selected to participate were determined by using systematic sampling with probability proportional to bed size. The data were collected from a total of 1500 US nursing homes and up to 12 current residents per nursing home. The 2004 NNHS achieved a 78% response rate that included a total of 13,507 residents from 1174 nursing homes. Patient data were collected on-site in nursing homes using a computer-assisted interview of designated staff familiar with the specific sampled residents and their care. The designated staff members were asked to use the residents' medical records or Minimum Data Set (MDS) information to answer survey questions. Patient sociodemographics and health status data were collected deriving information from the MDS evaluations. Additional information about source of payments for nursing home care and recent health services use was also collected. For medication information, trained interviewers extracted from the residents' Medication Administration Record the names of up to 25 medications administered

in the previous 24 hours (including both regularly scheduled and as-needed “PRN” basis). Medications were categorized into therapeutic classes using National Drug Codes (NDC).¹⁰

Outcome Measures

To determine this outcome measure, nursing facility staff were asked whether, in the past 7 days, the resident had reported or shown evidence of pain.⁹ A dichotomous variable was created to distinguish those with any from no pain in the previous week

Pain Treatment Measures

Both nonpharmacological and pharmacological management of pain were described. Examples given for nonpharmacological treatment were distraction, heat/cold massage, positioning, and music therapy. Pharmacological management was further described as having a standing order or as-needed (PRN) order for analgesics. The use of 3 specific medication classes was also operationalized: (1) acetaminophen, (2) nonsteroidal anti-inflammatory drugs, and (3) opioid receptor agonist analgesics (including tramadol).

Independent Variables

Sociodemographic characteristics were represented by categorical measure for age. Dichotomous measures were created for gender, marital status, ethnicity (Hispanic/Latino), and veteran status. Race (American Indian/Alaska native, Asian, Black, native Hawaiian/Pacific islander, white, or other) was described by a categorical measure.

Health status characteristics included dichotomous measures for comatose status, extensive or total dependence in 4 individual basic activities of daily living (ie, bed mobility, transfer, eating, toileting), mood problems, behavior problems, pressure ulcer, bowel incontinence, urinary incontinence, and falls in past 6 months. Dichotomous measures for the primary diagnosis at the time of nursing home admission were also created. A physician (E.J.J.) grouped individual diagnoses into organ systems using International Classification of Diseases (ICD-9) codes.¹¹ Continuous measures for the number of primary and secondary diagnoses were also created.

Characteristics that may affect access to health care were represented by dichotomously scored (1 =yes, 0 =no) variables for specific source of payment for nursing home care (ie, Medicare, Veterans Affairs, Medicaid, private insurance, self-pay, other). Continuous measures were also created for the number of emergency department visits and hospitalizations in the previous 90 days and length of stay in hospice/palliative care and nursing home. Finally a dichotomous measure was created as to whether hospice/palliative care was established in the nursing home.

Statistical Analysis

In the analyses, all data were analyzed using the weights provided by the NNHS to adjust for the complex sampling design used by the NNHS. The subsetting of data to select the subpopulation of interest with age greater than or equal to 65 in hospice/palliative care was done through domain analysis to avoid affecting the provided sampling weights.^{12,13} The data were summarized by percentages and means (standard deviations) for all variables. For descriptive purposes, pain treatment (standing and as-needed or “PRN” pain medication orders) and nonpharmacological pain treatment were separately identified. Cross-sectional bivariate analyses were conducted using chi-square and Wilcoxon rank sum tests to determine factors potentially associated with the presence of any pain (yes/no). All analyses were conducted using SURVEYMEANS and SURVEYFREQ procedures in SAS version 9.2 software (SAS Institute, Inc, Cary, NC) for survey data analysis.

RESULTS

Table 1 shows the characteristics of the 303 sample members from the overall sample of 13,507 residents. These 303 sample members after applying weights represent the 33,413 hospice/palliative care residents receiving care in nearly 18,000 nursing homes nationally. Most were older than 85, female, and white. Most had limitations in basic activities of daily living. The most common primary diagnosis at admission involved neuropsychiatric problems (eg, dementia) and comorbidities were common. Self-pay was the most common source of payment.

Overall 36.63% (118/303, unweighted) had any pain in the previous week. Table 2 shows that, among those with and without pain, only one quarter of residents did not have a standing and/or “PRN” order for a pain medication and only 41.1% received nonpharmacological treatment.

Table 3 shows the comparison of analgesic use among those with and without pain in the previous week. Those with any pain were more likely to receive any analgesic than those without pain. Moreover, those with pain were more likely to receive opioid analgesics as opposed to those without pain. The only factors associated with any pain compared to none were shorter mean length of stay in hospice/palliative care (123.9 days versus 161.3 days, $P < .01$), and being incontinent of bowel (76.2%, versus 60.3%, $P < 0.01$) or bladder (84.5% versus 71.8%, $P = 0.01$).

DISCUSSION

This is one of the first national studies of pain prevalence in older nursing home hospice/palliative care residents. In particular, the unique contribution of this study is the inclusion of the palliative care population. We found that about one third of residents had any pain in the previous week. This compares favorably with the rate of nearly 50% with pain reported by family members during the last month of life of 446 older nursing home residents from 4 US states.¹⁴ It is also interesting to note that nonpharmacological treatment of pain was used in less than one half of older nursing home hospice/palliative care residents. Previous studies have shown that various physical, cognitive-behavioral, and radiation therapies can be effective in the treatment of pain in older nursing home residents.²

No analgesic therapy was received in the previous 24 hours in nearly 15% of older nursing home hospice/palliative care residents with any pain. This is consistent with the results of Miller et al,⁶ showing that 15% of 2644 nursing home hospice residents with any pain from 5 US states received no analgesics. The overwhelming majority of older nursing home hospice/palliative care residents in the current study did have a standing order for regularly scheduled analgesics. One of the basic tenets of managing chronic pain in older adults is to prevent pain and related anxiety by providing medications on an around-the-clock basis and not on an as-needed or “PRN” basis.² However it was encouraging to note that more than two thirds of residents with any pain received an opioid analgesic in the previous 24 hours. This rate of opioid use is very similar to the 65% rate of opioid use in 2644 nursing home hospice residents from 5 US states.⁶ This may reflect the fact that longer lengths of stay in hospice increase the likelihood of receiving an opioid analgesic.⁷ The higher use of acetaminophen than nonsteroidal anti-inflammatory drugs (NSAIDs) seen in the current study is also consistent with that reported in the study by Miller et al.⁶ As noted by various pain guidelines and reviews of pain management in older adults, chronic regularly scheduled NSAIDs should be avoided in older adults when possible because of an increased risk of gastrointestinal bleeds and decline in renal function.^{15–18}

This study identified few factors associated with the presence of any pain in older nursing home hospice/palliative care residents. It was encouraging to note that race was not a significant risk factor. A previous study of 49,971 nursing home residents from 4 US states showed that racial

minorities were less likely than whites to report daily pain.¹⁹ Our study finding that longer lengths of stay in hospice/palliative care was associated with no pain is logical given that health care providers would have more time to address this important quality of care issue. It is sensible that being incontinent of bowel or bladder may result in dermatitis, which can be uncomfortable as well as painful.²⁰

There are a number of potential limitations to the current study that are worth mentioning. First, we cannot determine causal relationships in this cross-sectional study. Additionally, because of the way the survey questions were asked, we were unable to tease apart those receiving hospice from those receiving palliative care. We also did not have sufficient data to report information about pain severity. Moreover, information about analgesic dosage was not available in the 2004 NNHS dataset. Another potential limitation is that, because of the relatively small sample size, we were unable to conduct meaningful multivariable analyses.

CONCLUSION

We conclude that pain symptoms were present in more than one third of older nursing home hospice/palliative care residents despite the use of opioids in two thirds of those with any pain. There is a need for future studies to better understand the causes and treatment of pain in palliative care nursing home residents. Additional future studies such as the one by Casarett et al²¹ are needed to improve the management of pain in older residents receiving hospice/palliative care in US nursing homes.

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Table 1

Characteristics of Older Nursing Home Hospice/Palliative Care Patients (Unweighted, n =303)

Variables	Weighted %	Weighted Mean (SD)
Sociodemographics		
Age, y		
65–74	13.21	
75–84	38.94	
85+	47.85	
Female gender	71.95	
Married	26.40	
Race		
White	91.42	
Black	6.60	
Other	1.98	
Hispanic/Latino ethnicity	1.65	
Veteran	6.93	
Health Status		
Comatose	1.98	
Basic activities of daily living		
Bed mobility limitation	81.85	
Transfer limitation	85.81	
Eating limitation	61.72	
Toileting limitation	91.42	
Mood problem	24.24	
Behavior problem	29.97	
Pressure ulcer	19.80	
Bowel incontinence	70.30	
Urinary incontinence	79.90	
Falls	40.59	
Primary diagnosis		
Cancer	11.42	
Cardiac	15.22	
Hematologic	2.08	
Gastrointestinal	3.81	
Genitourinary	2.42	
Metabolic	3.81	
Miscellaneous	4.15	
Musculoskeletal	4.15	
Neuropsychiatric	38.75	
Pulmonary	14.19	
Number of conditions		5.45 (3.27)
Factors that Might Affect Access to Health Care		
Payment source*		

Variables	Weighted %	Weighted Mean (SD)
Medicare	32.45	
Veterans Affairs contract	1.66	
Medicaid	29.80	
Private insurance	13.25	
Self-pay	47.68	
Other	5.62	
Number of hospitalizations		1.50 (0.90)
Number of emergency room visits		1.21 (0.49)
Hospice/palliative care established in nursing home	80.76	
Length of stay in hospice/palliative care		146.3 (135.15)
Length of stay in nursing home		687.23 (791.23)

* Sums to more than 100%, as subjects could have more than one payment source.

Table 2

Pain Treatment Among Older Nursing Home Hospice/ Palliative Care Patients (Unweighted, n =303)

Variables	Unweighted n	Weighted %
Standing order for analgesic medication	217	73.40
As-needed ("PRN") order for analgesic medication	215	75.40
Order for nonpharmacological treatment	122	41.10

Table 3

Prevalence of Analgesic Use in Older Nursing Home Hospice/Palliative Care Patients with Any Pain (n =118) versus No Pain (n =185)

Variables	Any Pain Unweighted n (weighted %)	No Pain Unweighted n (weighted %)	P Value
Any analgesic use	98 (86.42)	111 (59.60)	< .01
Acetaminophen use	39 (31.65)	71 (37.50)	.40
Nonsteroidal anti-inflammatory drug use	9 (12.04)	8 (4.20)	.03
Opioid receptor agonist use	78 (65.53)	39 (23.30)	< .01