

Original Article

Pain in the Nursing Home: Assessment and Treatment on Different Types of Care Wards

Wilco P. Achterberg, MD, PhD, Anne Margriet Pot, PhD, Erik J. Scherder, PhD, and Miel W. Ribbe, MD, PhD

Institute for Research in Extramural Medicine (EMGO) (W.P.A., A.M.P., M.W.R.), and Departments of Nursing Home Medicine (W.P.A., A.M.P., M.W.R.) and Clinical Neuropsychology (E.J.S), Vrije Universiteit Medical Center, Amsterdam; and Program on Aging (A.M.P.), The Netherlands Institute of Mental Health and Addiction, Utrecht, The Netherlands

Abstract

*The assessment and management of pain in nursing homes have been shown to be suboptimal, but no study has evaluated differences in clinical setting within these homes. The prevalence and management of pain on different care wards (psychogeriatric, somatic, and rehabilitation) was studied on 562 newly admitted Dutch nursing home residents. Pain was measured according to the Nottingham Health Profile (perceived pain) and the Minimum Data Set pain observation items (frequency and intensity). Pain frequency differed significantly across the different ward types: on psychogeriatric wards (n = 247), it was 27.1%; on somatic wards (n = 181), 53.9%; and on rehabilitation wards (n = 129), 57.8%. Being admitted on a psychogeriatric ward was significantly related to less pain compared to being admitted on a somatic ward, even when adjusted for possible confounders such as age, gender, cognitive status, activities of daily living, pain-related disorders, and depression (odds ratio [OR] 0.38 [95% confidence interval (CI) = 0.23–0.62]). Patients on psychogeriatric wards who had pain received less pain medication, adjusted for frequency and intensity of pain (OR 0.37 [95% CI = 0.23–0.59]), compared to patients on somatic wards. We conclude that admission to a psychogeriatric care ward, independent of cognition, is associated with lower pain prevalence, and also with lower levels of pain treatment. *J Pain Symptom Manage* 2007;34:480–487. © 2007 U.S. Cancer Pain Relief Committee. Published by Elsevier Inc. All rights reserved.*

Key Words

Pain, nursing home, dementia, MDS, psychogeriatric care ward

Address reprint requests to: Wilco P. Achterberg, MD, Department of Nursing Home Medicine & EMGO Institute, VU Medical Center, Van der Boechorstraat 7, 1081 BT Amsterdam, The Netherlands. E-mail: wp.achterberg@vumc.nl

Accepted for publication: December 22, 2006.

Introduction

Pain is highly prevalent in nursing homes (45%–80%) and has a serious impact on quality of life and functional impairment.¹ There is an increase in pain-related pathology with advancing age, and although this could mean older people experience more pain,

they appear to report less pain.² There are several factors that influence experience and report of pain, such as mood state, perception of control, expectations, and social or cultural conditions.³ The presence of dementia is even more complicating in the assessment of pain, because the neuropathology related to dementia may also influence the pain threshold and experience. There is accumulating evidence that patients with Alzheimer's disease (AD) have an unchanged pain threshold but an increased pain tolerance.⁴ Another difficulty in the assessment of pain in dementia patients is that the validity of the assessment instruments is difficult to establish.⁵⁻⁷

The issue of pain management in nursing homes has received little attention in research. Although there are specific problems in this population, such as sensitivity to side effects of drugs, the consensus is that good pain management is very well possible, but often inadequate in quantity and quality.¹ Pain management in dementia patients is assumed to be even worse because of communication and detection difficulties, and the fear of inducing side effects and polypharmacy.² Earlier studies suggest that Alzheimer patients generally receive less pain medication.⁸ More insight into factors that influence the assessment and management of pain in dementia patients is, therefore, necessary.^{2,7}

The care setting might be responsible for some differences in the assessment and management of pain. One study found that hip fracture patients received significantly less medication during the first 24 hours in the nursing home as compared with the last 24 hours of hospitalization.⁹ It is not unlikely that there are also differences between assessment and management of pain on different types of wards within nursing homes. In The Netherlands, residents with dementia are admitted on specialized psychogeriatric wards and residents with other diseases are placed on long-term care, palliative, or rehabilitation wards. The specialized psychogeriatric wards are comparable to the Special Care Units (SCU) for AD in the USA. SCUs have special attention for behavioral interventions while minimizing the use of psychotropic medication and restraints.¹⁰⁻¹³ This study compares the assessment of pain and pain management on three different types of nursing home

wards: rehabilitation, psychogeriatric, and chronic somatic care.

Methods

Design and Sample

There are 325 nursing homes with 53,800 beds (26 per 1,000 elderly people) in The Netherlands.¹⁴ All nursing homes have specialized nursing home physicians on their staff (approximately one for every 100 patients). Data collection was carried out by registered physicians in a specialist-training program for nursing home physicians. This vocational training consists of two years of medical practice in a teaching nursing home, with a one-day theoretical course per week at a University Institute for Nursing Home Medicine.¹⁵ The present study was part of the research training that is one of the elements of the core curriculum. In 65 nursing homes throughout the country, the physicians included and assessed newly admitted residents within 10 days after admission. The only exclusion criterion was being readmitted after a temporary discharge (less than 90 days). The physicians were encouraged to include all admitted residents, but if this intervened with other curriculum activities, other random inclusion methods were allowed (e.g., the first five new admissions, or the first of every five new admissions).

The study was approved by the ethical committee of the VU Medical Centre.

Patients

Five hundred sixty-two patients were included and assessed (64.6% female). The mean age at admission was 78.5 years (SD 10.5; range: 28-101), which is a representative sample of all Dutch nursing home patients.¹⁶ Age was categorized in four groups for the logistic regression model: 7.5% was younger than 65 years, 17.1% was between 65 and 74, 46.6% was between 75 and 84, and 28.8% was older than 84 years.

Ward Type

All patients were defined as admitted on a somatic ward, psychogeriatric ward, rehabilitation ward, or other. Two dummy variables were constructed: one for psychogeriatric

ward and one for rehabilitation ward, both with the somatic ward as reference category.

Measurement Instruments

Most variables were derived from the Minimum Data Set (MDS) 2.0 items for nursing home care.¹⁷ These items have shown good reliability in several countries.^{18–20} Dutch nursing home physicians are on the ward on a daily basis; they received instructions and filled out the MDS themselves; however, consultation with others could take place.

Pain was assessed by two questionnaires as discussed in the following sections.

*The Nottingham Health Profile (Pain).*²¹ The Nottingham Health Profile (NHP) for pain is an eight-item (yes/no) questionnaire that could be answered by 412 (of the 562) patients. Reasons for not completing the NHP were the following: cognitive deficits ($n=128$), low consciousness ($n=9$), problems with hearing and reading ($n=5$), severe aphasia ($n=21$), other reasons ($n=11$), or more than one of these ($n=22$).

The MDS. Pain was also measured using the MDS Item J2a (pain frequency) and J2b (pain intensity). This item is based on observations of caregivers. Pain frequency consists of no pain, less than daily pain, and daily pain in the last seven days. Pain intensity consists of mild pain, moderate pain, and times when pain is horrible or excruciating in the last seven days.

Pain was dichotomized into never pain versus daily or less than daily pain for logistic regression analysis and Chi-square analysis. The accuracy of the measurement of pain with MDS items has been established in a large nursing home sample against a Visual Analog Scale (kappa 0.707).²² The correlation between the MDS pain frequency and the NHP in this sample was 0.772 (Spearman's rho).

Confounding Variables

Pain-Related Disorders. Patients who had one of the following diagnoses were considered as being at greater risk for having pain: arthrosis/osteoarthritis, hip fracture (with or without surgery), total hip replacement, other fracture (e.g., upper arm), total knee, other orthopedic

surgery, osteoporosis, contractures, and any malignancy.^{23,24} The presence of one of these diagnoses was used in multivariate regression analysis as a confounding variable. The distribution of these pain-related diagnoses for the different ward types is shown in Table 1.

Pain Medication. The use of opioid and nonopioid pain medication was registered as the actual use in the last week, and could range between zero and seven days in the week. In the logistic regression model, this was dichotomized into "no use in the last week" versus "used at least for one day in the last week."

Level of Cognitive Functioning. Cognitive function was measured according to the MDS Cognitive Performance Scale (CPS), which is based on five MDS items. The CPS is a hierarchical seven-category index, ranging from cognitively intact to very severely impaired.²⁵ It has shown substantial agreement with the Mini-Mental State Examination in the identification of cognitive impairment in research.²⁶

Mood/Depressive Symptoms. Mood was measured using the MDS Depression Rating Scale, which is a seven-item scale. With a cut-point of 3, it differentiates well between residents with few or many depressive symptoms. Compared to the Diagnostic and Statistical Manual IV psychiatric criteria for depression, it has a high

Table 1
Distribution of Pain-Related Disorders Diagnosis on Different Wards

| Active Diagnosis | Somatic Ward ($n=181$) | | Psychogeriatric Ward ($n=247$) | | Rehabilitation Ward ($n=129$) | |
|--------------------------|-----------------------------|------|-------------------------------------|------|------------------------------------|------|
| | <i>n</i> | % | <i>n</i> | % | <i>n</i> | % |
| Arthrosis/osteoarthritis | 23 | 12.7 | 32 | 13.0 | 20 | 15.5 |
| Hip fractures no surgery | 0 | — | 1 | 0.4 | 0 | — |
| Hip surgery | 4 | 2.2 | 8 | 3.2 | 7 | 5.4 |
| Total hip | 0 | — | 1 | 0.4 | 6 | 4.7 |
| Total knee | 2 | 1.1 | 1 | 0.4 | 6 | 4.7 |
| Other fracture | 7 | 3.9 | 6 | 2.4 | 4 | 3.1 |
| Other accident | 3 | 1.7 | 4 | 1.6 | 1 | 0.8 |
| Osteoporosis | 9 | 5.0 | 10 | 4.0 | 7 | 5.4 |
| Contractures | 9 | 5.0 | 8 | 3.2 | 1 | 0.8 |
| Other surgery/orthopedic | 4 | 2.2 | 4 | 1.6 | 4 | 3.1 |
| Any malignancy | 14 | 7.7 | 11 | 4.5 | 4 | 3.1 |

sensitivity (91%) and a lower specificity (69%).²⁷

Activities of Daily Living. Activities of Daily Living (ADL) classification is based on six MDS items on self-performance of ADL, each consisting of five categories, ranging from independent to totally dependent, and one item concerning urinary incontinence. The seven-category (hierarchical) ADL index ranges from minor oversight to highly dependent.

Demographic Variables. Sex and age (in four categories: <65, 65–74, 75–84, ≥85) were recorded.

Analysis

Chi-square statistics and multivariate logistic regression models were used to analyze differences between the care wards. First, unadjusted regression analysis was performed, and then adjusted for pain-related diagnoses; finally, we performed additional adjustment for demographics, ADL, mood, and cognition (SPSS 10.1).

Results

There were 181 (32.0%) patients admitted on a somatic ward, 247 (44.0%) on a psychogeriatric ward, and 129 (23.0%) on a rehabilitation ward. Five patients (1.1%) were admitted on another type of ward, and were not included in the analysis. This sample had more patients admitted on psychogeriatric wards (44%) than the national average in that year, which was 33.6% (significance of the difference $P < 0.001$).²¹ There are no national data available on the other types of wards described.

Prevalence of Pain on Different Wards

There were 412 patients (46.8) that reported any pain with the NHP; measured with the MDS, the prevalence of any pain was 50.3%. Arms and legs, back, joint, and hip were the most frequent locations of pain (Table 2): more than 10% of the residents reported pain in one of those places.

Perceived pain (measured with the NHP) was significantly lower on psychogeriatric wards: 27.1% versus 53.9% on somatic wards and 57.8% on rehabilitation wards. The

Table 2
Location of Pain

| Location of Pain | <i>n</i> | % |
|------------------|----------|------|
| Back | 69 | 12.3 |
| Bone | 30 | 5.3 |
| Thorax | 7 | 1.2 |
| Head | 28 | 5.0 |
| Stomach/abdomen | 25 | 4.4 |
| Pelvis | 13 | 2.3 |
| Hip | 58 | 10.3 |
| Joint | 64 | 11.4 |
| Arms and legs | 80 | 14.2 |
| Surgical wound | 23 | 4.1 |
| Soft tissue | 48 | 8.5 |
| Phantom pain | 5 | 0.9 |
| Other place | 42 | 7.5 |

differences in the individual items of the NHP are shown in Table 3. All eight items show marked lower frequencies on psychogeriatric wards than on the other types of wards.

Observed pain (MDS pain frequency) was also lower on psychogeriatric wards: 33.6% versus 61.7% in the somatic wards and 65.9% on rehabilitation wards ($\chi^2 = 49.387$; $P < 0.001$). These differences were more distinct for daily pain, than for pain that was present less than daily (Table 4).

The unadjusted odds ratio (OR) (logistic regression analysis) for having pain on a psychogeriatric ward was 0.32 (95% confidence interval [CI] = 0.21–0.47) compared to having pain on a somatic ward. The strength of the relation did not change when the model was adjusted for cognitive impairment: OR 0.35 (95% CI = 0.22–0.56). The OR did not change much, when in the final model we additionally adjusted for having at least one diagnosis that can contribute to pain, age, gender, ADL, and depressive symptoms (OR 0.38, see Table 4).

Pain Management/Medication Use

Three hundred fifty-one residents (62.5%) received no pain medication at all, 196 (34.9%) used nonopioid pain medication, and 36 (6.4%) received opioid medication; 21 residents (3.7%) received opioid and nonopioid medication, and 190 (33.8%) opioid or nonopioid medication.

There was a strong relation between the presence of pain measured with the MDS and the use of medication (Spearman

Table 3
Distribution of Perceived Pain According to the Nottingham Health Profile (NHP)
for Different Types of Care Wards

| | Somatic Ward (<i>n</i> = 152) (84.0% of Total) | | Psychogeriatric Ward (<i>n</i> = 129) (52.2% of Total) | | Rehabilitation Ward (<i>n</i> = 128) (100% of Total) | | All (<i>n</i> = 412) (73.3% of Total) ^a | |
|-----------------|---|------|---|------|---|------|--|------|
| | <i>n</i> | % | <i>n</i> | % | <i>n</i> | % | <i>n</i> | % |
| At night | 39 | 25.7 | 3 | 2.3 | 33 | 25.8 | 75 | 18.2 |
| Unbearable pain | 15 | 9.9 | 0 | 0 | 5 | 3.9 | 20 | 4.9 |
| Change position | 52 | 34.2 | 18 | 14.0 | 45 | 35.2 | 117 | 28.4 |
| Walking | 30 | 19.7 | 18 | 14.0 | 46 | 35.9 | 95 | 23.1 |
| Standing | 31 | 20.4 | 13 | 10.1 | 34 | 26.6 | 79 | 19.4 |
| Walking stairs | 26 | 17.1 | 4 | 3.1 | 17 | 13.3 | 47 | 11.4 |
| Constant pain | 26 | 17.1 | 2 | 1.6 | 9 | 7.0 | 16 | 3.9 |
| Sitting | 36 | 23.7 | 3 | 2.3 | 28 | 21.9 | 67 | 16.3 |
| Mean NHP (SD) | 1.53 (1.8) | | 0.47 (1.0) | | 1.70 (1.9) | | 1.25 (1.72) | |

^aIncluding five from other types of wards.

$\rho = 0.475$, $P < 0.001$; for pain measured with the NHP, this was 0.389 , $P < 0.001$).

Somatic patients had a mean of 2.83 days per week receiving nonopioid pain medication. The corresponding values were 1.13 for psychogeriatric and 3.31 for rehabilitation patients ($P < 0.001$). The use of opioid medication was expressed as the number of days per week that this medication was used; the mean was 0.11 for psychogeriatric patients, versus 0.71 for somatic patients ($P < 0.001$).

Sixty percent of residents with any pain received pain medication, opioid or nonopioid. For residents with high cognitive performance, this was 60.9%; for residents with low cognitive performance, it was 55.8%. On the somatic wards, 67.7% of patients with pain received any pain medication; on the rehabilitation wards, this figure was 70.6%. On the psychogeriatric wards, only 39.8% of patients with pain received any pain medication (Table 5).

In a multivariate logistic regression model, patients on psychogeriatric wards had

significantly less pain medication compared to residents on a somatic ward, even when we adjusted for the presence and intensity of pain (OR 0.41, 95% CI = 0.25–0.67, $P < 0.001$; see Table 5).

Discussion

This study found that half of all newly admitted Dutch nursing home residents have pain, according to both an observational (MDS) and a perceived (NHP) pain scale. This prevalence is in concordance with other studies in nursing homes, although some studies have found even higher prevalence rates.¹ Patients on psychogeriatric wards had less pain than patients on somatic or rehabilitation wards. This relation was strong (OR 0.45 compared to somatic ward) and did not come as a surprise, because it is known that cognitive impairment could be associated with less pain.² However, the decrease in pain experience on

Table 4
Pain Frequency on Different Ward Types and OR for Having Pain^a

| Pain | Less Than | | | Adj. OR ^b | 95% CI | <i>P</i> |
|-----------------------------------|-------------------------|----------------------------|----------------------------|----------------------|-----------|----------|
| | No Pain (<i>n</i> [%]) | Daily Pain (<i>n</i> [%]) | Daily Pain (<i>n</i> [%]) | | | |
| Somatic ward (reference group) | 69 (38.3) | 34 (18.9%) | 77 (42.8%) | — | — | <0.001 |
| Psychogeriatric ward | 164 (66.4) | 37 (15%) | 46 (18.6) | 0.38 | 0.23–0.62 | <0.001 |
| Rehabilitation ward | 44 (34.1) | 28 (21.7) | 57 (44.2) | 1.34 | 0.80–2.25 | 0.274 |
| Total | 277 (49.8) | 99 (17.8) | 180 (32.4) | | | |

OR = odds ratio.

^aAccording to the Minimum Data Set on different care wards, adjusted for cognition, sex, age, activities of daily living (ADL), pain-related diagnosis, and depression (logistic regression model).

^bAdjusted for cognition, sex, age, ADL, pain-related diagnosis, and depression.

Table 5
Percentage of Patients on a Ward with or Without Pain That Receive Any Pain Medication (Opioid and/or NonOpioid) and OR for Receiving Pain Medication on Different Care Wards

| | %Receiving Any Pain Medication | | Adj. OR ^a | 95% CI | P |
|--------------------------------|--------------------------------|--------------------|----------------------|-----------|--------|
| | Patients without Pain | Patients with Pain | | | |
| Somatic ward (reference group) | 20.3 | 67.6 | — | | <0.001 |
| Psychogeriatric ward | 10.4 | 39.8 | 0.41 | 0.25–0.67 | <0.001 |
| Rehabilitation ward | 18.2 | 70.6 | 1.15 | 0.68–1.94 | 0.596 |

OR = odds ratio.

^aAdjusted for Minimum Data Set intensity of pain (logistic regression model).

psychogeriatric wards was not explained by the level of cognitive functioning or by differences in demographics or mood status. These findings suggest that other important factors may influence the prevalence or detection rates of pain.

There may be several explanatory mechanisms responsible for the differences between nursing home patients of different ward types found in this study. In addition to possible disease-related differences (e.g., dementia), there are several environmental differences, such as physical environment, activity patterns, and care provision. Pain might indeed be less prevalent on psychogeriatric care wards, because there may be more emphasis on the role of a friendly move home-like environment. Possibly this leads to less stress which may lead to a lower pain perception or a higher pain threshold. Pain might be less prevalent on psychogeriatric care wards if the majority of the patients suffer from AD. Results of previous studies have shown that AD patients indicate less pain than the elderly without dementia.²⁸ On the other hand, patients with vascular dementia may report an increase in pain experience that should alert the nursing staff which pain is a clinical symptom that needs attention and treatment.^{6,7} Pain also may present itself in different ways that might lead to a lower “index of suspicion.”² For example, it is known that pain might be presented as behavioral disturbances.²⁹ This other presentation of pain or discomfort is effectively being used in an intervention for the improvement of the assessment and treatment of pain in end-stage dementia.³⁰

Patients in this study admitted on the psychogeriatric wards received less pain medication, something that has been found in an earlier study.⁸ This study also showed that

receiving less medication was not explained by the presence or the intensity of pain. This suggests that next to the detection of pain, the reaction of physicians and nurses to pain is influenced by the environment: on rehabilitation wards, pain is more prevalent, and there are only a few residents in pain who do not receive pain medication. This is in accordance with the findings of Cadogan et al., showing that a high prevalence of pain according to the MDS was associated with better pain assessment and treatment care processes.³¹ Pain is apparently not so prevalent on psychogeriatric wards, and might, therefore, not be high on the priority list of physicians and nurses, resulting in a smaller inclination to give pain medication. One of the strengths of specialized psychogeriatric wards is that they are generally not so inclined to use (psychotropic) medication, more likely to aspire to fewer medications, especially for behavioral problems.¹¹ The fear of inducing side effects and polypharmacy in these frail patients is well known.² This could have a negative impact on the quality of pain management. Education and information on pain recognition and management for nurses and physicians, especially those who work with dementia patients, could then be appropriate.

This was a study on recently admitted nursing home patients, and both the assessment and management differences we found could represent the quality of the care setting before admission (e.g., hospital or primary care) instead of the quality of care in the nursing home ward. In Dutch nursing home care, it is expected of the nursing home physician to perform a physical assessment and draft a preliminary care plan together with the responsible nurse within two working days after admission. Therefore, it seems logical that

the assessment and management of pain reflect the situation in the nursing home wards. Future research with patients who are admitted for a longer period of time is the only way to confirm our findings and hypothesis.

The MDS pain scale has shown adequate to excellent reliability in research settings.²² In some studies, questions have been raised about the validity of the MDS pain scale in patients with low cognitive functioning.^{32,33} We used a validated measure for perceived pain (NHP) in addition to the MDS pain scale. In our study, the validity of the observational MDS pain data, collected by trained physicians, seems to be adequate regarding the high correlation found between the scores on the MDS pain scale and perceived pain measured by the NHP, at least for those patients who were not severely cognitively impaired.

This study focused on newly admitted patients, and the findings might be different for patients who become long-term residents. This was a cross-sectional study, and, therefore, no claims on the causality of relations can be made. It is possible that other factors on which we have no data are responsible for the different pain prevalence and management ratios on psychogeriatric wards. Psychological or psychosocial factors, such as personality, beliefs, stress, coping mechanisms, and social support, are not represented in this study.^{34,35}

We recommend that the assessment and treatment of pain in dementia patients should receive more attention, both in research and in clinical practice. There are several reliable and valid instruments that are available for the assessment of pain in this group, and even simple treatment (such as 3 g of acetaminophen a day) may have a wide range of beneficial effects.^{36,37}

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