

Cognitive status and analgesic provision in nursing home residents

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SUMMARY

Background: Although it is becoming acknowledged that pain management is generally poor for older people, little is known about pain management for nursing home residents in the United Kingdom, and the specific problems for those with cognitive impairments.

Aims: This section of a larger study of pain aimed to explore analgesic prescription and administration according to nursing home residents' cognitive status.

Design of study: A survey of nursing home residents and their medication documentation.

Setting: The sample included 113 nursing home residents from 15 nursing homes in large city in the north of England.

Method: Residents' cognitive status was assessed using the mini-mental state examination (MMSE). Pain was measured with a four-point verbal rating scale and a 10-point horizontal numeric rating scale. Residents' medications — including name, dose, and frequency of administration — were noted, as well as provision within the previous 24 hours.

Results: There were no statistically significant differences in pain scores according to level of cognitive impairment. The prescription and administration of opioid and non-opioid analgesics were highest for residents with low cognitive impairment; these decreased as impairment increased. Those who were prescribed neither opioid nor non-opioid analgesics had significantly lower MMSE scores than those who were. A low MMSE score indicates a high level of cognitive impairment.

Conclusion: It is not clear why those with greater cognitive impairment received fewer analgesics than others. More research is needed into the relationships between pain assessment, pain experience, cognitive impairment, and analgesic provision. It is likely that improvements in carers' knowledge of pain assessment and the risks and benefits of commonly used analgesics could improve analgesic provision.

Keywords: aged; analgesics; cognition; dementia; nursing homes; pain.

Introduction

AWARENESS of the neglect of pain in older people has increased in recent years, but specific problems for those who may not be able to communicate effectively due to cognitive or other difficulties has been given less attention. Nursing home residents comprise a population with a high level of cognitive impairment as well as pain.¹⁻⁷ The effective provision of analgesics to this group depends on both their judicious prescription and administration, which depends on the ability of health professionals to make accurate assessments of pain. Most relevant studies of this group have been undertaken in the United States (US) and Canada but, so far, very little is known about the situation in the United Kingdom (UK).

At least four studies in the US have indicated that a quarter of nursing home residents experiencing pain were managed ineffectively.⁸⁻¹¹ Another indicated that more than a third of nursing home residents with chronic pain in the US were neither prescribed nor given analgesics,² and this was corroborated by Hall-Lord *et al*¹² who found that almost a quarter of 128 Swedish nursing home residents, whose families reported them as being in pain, were not prescribed analgesics.

In a recent UK study of 68 nursing homes, analgesics that were reportedly used 'often' for chronic non-malignant pain, were paracetamol (91%), non-steroidal anti-inflammatory drugs (NSAIDs [46%]), weak opioids (52%) and strong opioids (12%).⁷ How this reported provision related to actual provision, and whether it provided effective pain relief for the residents was not studied. An investigation of the quality of prescribing in 22 nursing homes showed unsafe prescribing of paracetamol, where a fifth of all prescriptions allowed doses exceeding the maximum recommended dose of 4 g over 24 hours.¹³ This evidence suggests that the prescribing of analgesics for this group of people is a cause for concern.

Those with severe cognitive impairment may have difficulty in communicating their pain to caregivers, sometimes leading to the assumption that they are not in pain. A US study showed that disorientated and withdrawn residents were prescribed and administered significantly less analgesia, while a larger study of almost 50 000 nursing home residents indicated that being aged 85+ years or having cognitive impairment increased the risk of receiving no analgesics.^{4,10} Research that has focused on pain in those with cognitive impairments has consistently shown that this group under-reports pain when compared with their peers who have no cognitive impairment,^{3,14,15} and that those with better cognitive functioning were more likely to receive analgesics than others.¹⁶

Little is known about the relationship between level of cognitive impairment and the influence this may have on various aspects of pain management. The data reported here focus on analgesic prescription and administration and are taken from a wider study of approaches to the assessment of pain in nursing home residents in the UK. The aim of this section

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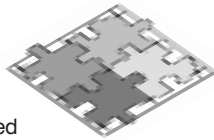
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HOW THIS FITS IN*What do we know?*

Pain management is known to be often inadequate in nursing homes in the United States, Canada and some European countries, but little is known about the situation in the United Kingdom. Pain management of nursing home residents with cognitive impairment, in particular, is under-researched.

*What does this paper add?*

For this sample of nursing home residents, as cognitive impairment increased, both the prescription and administration of analgesics decreased significantly. This occurred regardless of pain intensity. An increased understanding of relationships between the residents' ability to communicate pain experiences and needs, the carers' ability to identify pain, and attitudes towards analgesic prescription and provision may provide a basis for improved pain management.

of the study was to explore the association between analgesic provision and nursing home residents' cognitive status.

Method

Ethical approval was gained from Leeds Local Research Ethics Committee; consent or carer assent was obtained for all residents who participated in the study. Residents had to have lived in the same nursing home for at least 2 months, but were excluded if they:

- were in the terminal or acute stages of any illness, or operationally defined as too ill, weak, or frail to participate,
- had severely impaired hearing and sight, operationally defined as inability to participate even when using hearing and sight aids, or
- were experiencing any distressing social circumstances, for example recent death of a close relative or friend.

All 406 residents in the 15 largest nursing homes in Leeds were screened: 246 were eligible for inclusion; 131 of these were unable to provide consent/assent; and two died, leaving a total of 113 who participated.

The residents' cognitive status was assessed using the mini-mental state examination (MMSE).¹⁷ Their pain scores were elicited using a range of five pain scales presented in random order;¹⁸ the two most successful — the verbal rating scale (none, mild, moderate, or severe) and a numeric rating scale (0 [no pain]–10 [worst possible pain]) — are reported here.

Residents' medications (each drug, its name, dose, and frequency of administration), as presented on their medication charts, were recorded. The number of doses of each analgesic actually given within the previous 24 hours was also noted. Data were analysed using SPSS version 11.

Results*Characteristics of the sample of residents*

The sample included 86 women and 27 men with a mean age of 84.5 years (standard deviation [SD] = 9), ranging from 56–103 years. The mean MMSE score for the whole sample was 15 (SD = 9) with roughly equal proportions falling within

each of the four accepted categories: 22 with no impairment, (score = 24–30); 24 with mild impairment, (score = 18–23); 31 with moderate impairment (score = 10–17); and 28 with severe impairment (score = 0–9). A Kruskal–Wallis test showed no significant differences in pain intensity according to the four levels of cognitive impairment using either the verbal rating scale ($\chi^2 = 4.07$, degrees of freedom [df] = 3, $P = 0.25$) or the numeric rating scale ($\chi^2 = 0.26$, df = 3, $P = 0.97$).

Prescription and administration of analgesics

The wide range of analgesics identified in the residents' medication records (including aspirin, paracetamol, ibuprofen, diclofenac and rofecoxib, co-codamol, co-proxamol, codeine sulphate, dihydrocodeine, morphine sulphate, meptazinol, fentanyl, and tramadol) were considered in two categories: non-opioid and opioid. The numbers of residents prescribed and given these analgesics over the 24 hours prior to data collection are shown in Table 1. These data show that those with moderate or severe impairment were less frequently prescribed or given either opioid or non-opioid analgesics.

A Kruskal–Wallis test was used to show whether there were statistically significant differences in the prescription and/or administration of analgesics according to level of cognitive impairment. For the prescription of non-opioid analgesics $\chi^2 = 15.2$, df = 3, $P = 0.002$; and for opioids $\chi^2 = 17.5$, df = 3, $P = 0.001$. Higher proportions of those with no or mild impairment were prescribed non-opioid analgesics. Virtually all of those who were prescribed opioids were cognitively unimpaired.

When the same test was used to compare analgesic administration, results were similar: for non-opioids $\chi^2 = 11.8$, df = 3, $P = 0.008$; and for opioids $\chi^2 = 14.7$, df = 3, $P = 0.002$. A similar pattern is seen as for that regarding prescription. More of those with none to mild impairment than moderate or severe impairment were administered non-opioids; for the most part those who were administered opioids had no impairment.

With regard to non-opioids, there were consistently fewer doses administered than had been prescribed (ranging from 13–25%), at all levels of cognitive impairment. The picture was somewhat different to that for opioids, which were nearly always given if they had been prescribed.

Discussion*Summary of findings*

No statistically significant differences in pain scores according to level of cognitive impairment were found. Prescription and administration of non-opioid analgesics were highest for residents with none or mild cognitive impairment, each decreasing

Table 1. Percentage of residents at each level of cognitive impairment who were prescribed and given opioid and non-opioid analgesics over the previous 24 hours.

Analgesic provision	Level of cognitive impairment			
	None	Mild	Moderate	Severe
Non-opioid prescribed	68.2	75.0	35.5	28.6
Non-opioid administered	54.3	50.0	22.6	11.6
Opioid prescribed	40.9	4.2	6.5	7.1
Opioid administered	36.4	4.2	3.2	7.1

as impairment increased. Opioid prescription and administration was highest for residents with no cognitive impairment, with infrequent prescription or administration for those with mild to severe impairment. The administration of non-opioids was consistently lower than the prescription across levels of cognitive impairment. This was not the case for opioids.

For this sample of nursing home residents, although pain intensity scores were similar for all levels of cognitive impairment, the frequency of analgesic prescription and administration decreased as cognitive functioning declined. This study is only a 'snapshot' of the UK situation in a geographically co-located sample of nursing homes, but the results reinforce those of US, Canadian, and Scandinavian studies. It is noteworthy that there were no differences in pain scores at each level of cognitive impairment. It could be that residents at all levels of impairment experienced similar intensities of pain, but that it was not assessed accurately. However, although the reliability of pain scores for those with no, mild, and moderate impairment was shown to be high, for those with severe impairment it was low.¹⁸ The trustworthiness of pain scores should only be questioned for those with severe impairment.

Both prescription and provision of analgesics diminished progressively as cognitive impairment increased. Those with severe impairment were both prescribed and administered fewer analgesics than others, but it is not possible to draw clear inferences about the relationships between pain severity, cognitive function, and analgesic provision. One study undertaken on post-operative pain in older people attempted to disentangle these variables and found that it was pain, rather than analgesic intake, that predicted mental decline.¹⁹

Virtually none of those with any cognitive impairment at all were prescribed or given opioid analgesics. This may be because residents did not have had sufficient pain to merit it, they may not have communicated the fact that they did require it, or they may have wished not to take analgesics for a variety of reasons. Medical staff may not have felt it prudent to prescribe opioids or other analgesics due their side-effects, nursing staff may not have administered them for similar reasons, or the residents' families may have vetoed the use of opioids.

Earlier research suggests that these explanations and others may influence pain management. A US study of attitudinal barriers to the treatment of pain in nursing home residents suggested that residents feared addiction to, and dependence on, analgesics.²⁰ In particular, the inadequate use of opioids is a recognised phenomenon, sometimes called 'opiophobia'. This is usually due to an overestimate of the potential for patients to become addicted to medications, or to suffer other undesirable side-effects, such as constipation and confusion.

Recently there have been some helpful and detailed recommendations for the appropriate use of opioids.²¹ Education of healthcare professionals and the general public is much needed in order to dispel misapprehensions about opioids and improve understanding of how to balance the potential benefits and harms of a wide range of common analgesics.²² This could reduce unfounded concerns about the use of both opioid and non-opioid analgesics, thereby increasing the likelihood of both prescription and administration of appropriate analgesics. In particular, the careful titration of such analgesics to those with communication difficulties has the potential to reduce pain, which is currently unacknowledged in this group.

The data presented here show a clear pattern of fewer analgesics being either prescribed or administered to residents with cognitive impairment, and the greater the impairment, the lesser the provision. Interpretation of these data is difficult, but there is no reason to assume that those with severe cognitive impairment were in less pain than others. More research is needed into how to assess and meet the pain management needs of people who are unable to communicate their pain experience. Education is also important, so that nursing home residents and their carers have a realistic understanding of the risks and benefits of analgesic drugs. Attention to these issues is much needed if ethical and compassionate care is to be provided to frail, older people in an effective manner.

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