

Prevalence and treatment of pain in older adults in nursing homes and other long-term care institutions: a systematic review

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Abstract

Background: The high prevalence of pain in older adults and its impact in this age group make it a public health issue, yet few studies of pain relief focus on older adults. Residents of long-term care facilities have more cognitive impairment than their community-living counterparts and may have difficulty reporting the presence and severity of pain. This systematic literature review was conducted to determine the prevalence of pain, and the type and effectiveness of interventions that have been used to treat pain in residents of nursing homes.

Methods: Studies were identified by searching MEDLINE (from January 1966 to May 1997), HEALTH (from January 1975 to May 1997), CINAHL (from January 1982 to April 1997), AGELINE (from January 1978 to April 1997) and the Cochrane Library (1997, issue 1) and by performing a manual search of textbooks and reference lists. Studies of any methodological design were included if they estimated the prevalence of pain in nursing homes or other long-term care institutions or evaluated interventions for the treatment of pain in residents. Of the 14 eligible studies, 12 were noncomparative studies, 1 was a comparison study with nonrandomized contemporaneous controls, and 1 was a randomized controlled trial. Information on several factors was extracted from each study, including study design, number of patients and facilities, main outcomes measured, methods used to identify and detect pain, prevalence and types of pain, and interventions used to treat pain. The strength of the evidence provided by each study was also assessed.

Results: In the 6 studies with data from self-reporting or chart reviews, the prevalence of pain ranged from 49% to 83%. In the 5 studies with data on analgesic use only, the prevalence of pain ranged from 27% to 44%. Only 3 studies, with just 30 patients in total, evaluated an intervention for the treatment of pain.

Interpretation: Despite the high prevalence of pain in residents of nursing homes, there is a lack of studies evaluating interventions to relieve their pain. The authors make recommendations for future studies in this area.

Résumé

Contexte : La prévalence élevée de la douleur chez les adultes âgés et son incidence dans ce groupe d'âge en font un problème de santé publique; pourtant peu d'études sur le soulagement de la douleur portent avant tout sur les adultes âgés. Les résidents d'établissements de soins de longue durée ont plus de déficiences de la cognition que leurs homologues dans la communauté et peuvent avoir de la difficulté à signaler la présence ou la gravité de la douleur. On a procédé à cette recension systématique des écrits pour déterminer la prévalence de la douleur et le type et l'efficacité des interventions utilisées pour traiter la douleur des résidents de foyers de soins.

Méthodes : On a repéré les études en faisant des recherches dans MEDLINE (de janvier 1966 à mai 1997), HEALTH (de janvier 1975 à mai 1997), CINAHL (de janvier 1982 à avril 1997), AGELINE (de janvier 1978 à avril 1997) et The Cochrane Library (1997, numéro 1) et en cherchant manuellement des manuels et des listes d'ouvrages de référence. On a inclus des études de toute conception méthodologique si l'on y estimait la prévalence de la douleur dans les



Evidence

Études

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foyers de soins ou évaluait les interventions relatives au traitement de la douleur chez les résidents de foyers de soins. Les 14 études admissibles comportaient 12 études non comparatives, 1 étude de comparaison avec témoins contemporains non randomisés et 1 étude contrôlée randomisée. On a extrait de chaque étude des renseignements sur plusieurs facteurs, y compris la conception de l'étude, le nombre de patients et des installations, les principaux résultats mesurés, les méthodes utilisées pour identifier et repérer la douleur, la prévalence et les types de douleurs et les interventions utilisées pour la traiter. On a aussi évalué la solidité des données probantes fournies par chaque étude.

Résultats : Dans les six études contenant des données relatives à la prévalence tirées d'autodéclarations ou d'examen de dossier, la prévalence de la douleur a varié de 49 % à 83 %. Dans les cinq études contenant des données sur l'utilisation d'analgésiques seulement, la prévalence de la douleur a varié de 27 % à 44 %. Dans le cadre de trois études seulement, portant sur à peine 30 patients au total, on a évalué une intervention visant à traiter la douleur.

Interprétation : En dépit de la prévalence élevée de la douleur chez les résidents de foyers de soins, les études d'évaluation des interventions pour soulager leur douleur ne sont pas assez nombreuses.

By the year 2000, the number of people in the world aged 65 and over is expected to reach about 423 million.¹ Pain is common in this age group. The prevalence of self-reported pain in older adults has been estimated at 36% to 70%.²⁻⁴ The incidence of persistent pain seems to be twice as high in those over 60 years of age than in those 60 years of age and under,⁵ and the presence of pain has been associated with depression, decreased socialization, sleep disturbances, impaired ambulation, and increased health care costs and utilization.^{6,7}

The high prevalence of pain and its impact on older adults make it an important public health issue. Nonetheless, it has been estimated that less than 1% of studies on pain relief focus on older adults.⁸

In 1991 there were approximately 256 000 Canadians aged 65 and over living in an institution.⁹ Residents of nursing homes and other long-term care facilities have more cognitive and physical impairment than their community-living counterparts. For example, 65% of nursing home residents have at least one condition that could be classified as mental illness,¹⁰ and more than twice as many nursing-home residents as noninstitutionalized older adults are likely to be dependent with regard to activities of daily living.¹¹ Because patients with cognitive impairment may have difficulty accurately reporting the presence and severity of their pain, caregivers may have to rely on observation of pain-related behaviours to assess a patient's pain. Cognitive impairment may also limit the scope of treatment strategies for pain relief. In addition, nursing home residents are often resigned to their pain and reluctant to report it.¹² To further complicate the issue, nursing home residents are often receiving several medications, which may lead to increased risk of dangerous drug interactions if analgesics are prescribed.¹³ All of

these factors are likely to magnify the challenges of establishing the prevalence of pain in older adults and evaluating the effectiveness of interventions to treat pain.

We conducted a systematic review of the literature to assess the prevalence of pain in residents of nursing homes and other long-term care institutions and to evaluate the effectiveness of interventions to treat pain in these settings.

Methods

Studies of any design, in any language, were included if they had been published in peer-reviewed journals and if they met either of the following criteria: 1) provided enough data to calculate the prevalence of pain in residents of a nursing home or other long-term care institution, or 2) evaluated interventions for the treatment of pain in such a setting.

The studies were identified using 2 methods:

- a systematic search of MEDLINE (January 1966 to May 1997), HEALTH (January 1975 to May 1997), CINAHL (January 1982 to April 1997), AGELINE (January 1978 to April 1997) and the Cochrane Library (1997, issue 1) using Medical Subject Headings and text words "nursing home," "chronic care hospital," "health services for the aged," "pain," "analgesic" and "analgesia."
- a manual search of reference lists of any relevant individual studies, chapters in textbooks¹⁴⁻²⁰ and journal review articles.^{21,22}

Two individuals with research background but no expertise in the treatment of pain or involvement in the clinical care of older adults independently reviewed paper copies of each of the 14 eligible studies and extracted the following information: study design; number of patients; type of institution; main outcomes measured; methods used to identify and detect pain; prevalence, severity and types of pain; predominant painful condition; and interventions used to treat pain. Information on the proportion of noncommunicative residents in each study was also extracted.



The prevalence of pain was estimated directly from studies that reported self-reported pain, chart reviews or the observation by caregivers of patients' pain-related behaviours. For studies that did not provide such information, the prevalence of pain was estimated indirectly, from the number of patients receiving analgesics as a percentage of all patients studied.

The paper copies of the relevant studies were masked to conceal the authors' names and affiliations, publication year and journal. After completing data extraction, the 2 individuals met to discuss and reach a consensus on the data.

The strength of the evidence in the studies that evaluated pain treatments was assessed independently by the same 2 individuals. The studies were classified as randomized controlled trials, nonrandomized comparative studies with contemporaneous controls, nonrandomized comparative studies with historical controls and noncomparative studies (including surveys and case series).

Results

Ninety-one potentially eligible studies were identified. Of these, 77 were excluded because it was not possible to determine the prevalence of pain or because there was no evaluation of an intervention for the treatment of pain (the list of excluded studies is available on request). Some of the excluded studies focused on health services, medical decision-making and quality indicators of medical care. The 14 studies that were included were published be-

tween 1977 and 1996 and included from 4 to 758 subjects. The institutions studied were described as nursing homes,²³⁻³³ geriatric long-term care facilities,^{34,35} private homes,^{23,26} a home for the aged,³⁶ a long-stay geriatric hospital,³⁰ congregate apartments²⁹ and a day hospital.³¹ Five of the studies focused on chronic pain,^{24,25,29,33,36} and 9 studies did not provide information on the type of pain. Only one study explicitly stated that noncommunicative patients were included.³²

Prevalence of pain

The prevalence of pain was reported in 11 of the 14 studies. Five of these studies were conducted in the United States, and one was conducted in each of Canada, Denmark, Ireland, Scotland, Sweden and Singapore (Tables 1 and 2). The studies that reported prevalence of pain were surveys in which face-to-face interviews had been conducted or chart reviews carried out. The prevalence of pain as determined by direct measure (either self-reporting^{24,25,29,31,32,36} or chart review^{25,32}) ranged from 49% to 83% (Table 1). In the study that reported the prevalence of pain as 49%, patients were asked only about arthritic pain.³⁶ The severity of pain was reported in 4 studies^{24,25,29,31} and was highly variable (Table 1). The predominant painful condition, reported in 4 studies, was musculoskeletal in nature^{24,25,31,32} (Table 1). In studies for

Table 1: Characteristics of studies in which prevalence of pain was determined by direct measure*

Study	Country	Main outcome	No. of participants (and no. of facilities)	Prevalence of pain, %	Predominant painful condition	Severity of pain	Tools used to measure pain
Roy and Thomas 1986 ³¹	Canada	Prevalence of pain	132 (1)	83	Back, joint and muscle pain	High to intolerable (in 18%), moderate (in 32%)	Questionnaire and a visual analogue scale
Lau-Ting and Phoon 1988 ³⁶	Singapore	Not reported	389 (5)	49	Not reported	Not reported	Questionnaire
Ferrell et al 1990 ²⁴	USA	Prevalence of pain	92 (1)	71	Low back pain	Mean intensity 2.5 (scale 0-5)	Questionnaire and 6-point pain scale
Parmelee et al 1993 ²⁹	USA	Pain and cognition	758 (1)	80	Not reported	Mean intensity 1.74 (scale 0-5)	6-item pain intensity inventory
Sengstaken and King 1993 ³²	USA	Detection of pain	100 (1)	66	Musculoskeletal disease	Not reported	Medical charts and questionnaire
Ferrell et al 1995 ²⁵	USA	Prevalence of pain	217 (10)	62	Arthritis	Median intensity 2 (scale 0-5)	McGill Pain Questionnaire and 3 pain scales

*"Direct measure" is by either self-reporting or chart review.

which analgesic use was used as an indirect measure of pain, the prevalence of pain ranged from 27% to 44%^{23,26,28,30,34} (Table 2). These studies did not report severity of pain, the predominant painful condition or pain-measurement tools.

Evaluation of interventions for the treatment of pain

Only 3 studies evaluated the effectiveness of interventions for the treatment of pain^{27,33,35} (Table 3). These included a randomized controlled trial,³³ a comparative study with nonrandomized contemporaneous controls³⁵ and a noncomparative study.²⁷ One of the studies evaluated the effectiveness of a relaxation training program to decrease pain and increase morale, but it included only 13 patients.³³ In this study there was a decrease in pain in both the intervention group and the control group. Another study evaluated humorous movies as an intervention to relieve pain and improve affect.³⁵ However, the pain scale used in the study proved “too difficult” for the subjects to complete, and the study included only 13 patients. The third study, which included only 4 patients, evaluated attention and verbal praise to facilitate exercising.²⁷

Interpretation

The reported prevalence of pain is high among older adults who are living in nursing homes and other long-term care institutions. The pain appears to be mostly due to musculoskeletal conditions and is of variable intensity. Despite these factors and the multitude of additional factors that may hinder the adequate treatment of pain in older adults in institutions (relative to their community-living counterparts), little is known about the adequacy of pain treatment in this special group. We could hypothesize that pain is overlooked and undertreated in this population. Certainly, the difference in the range of the prevalence of pain as determined by self-reporting or chart review (49% to 83%) and by analgesic use (27% to 44%) supports this hypothesis. However, the difference may be due to differences in the study populations or in the methods used to measure the outcomes. This systematic review may provide clinicians with the impetus to question their assessment and treatment strategies, and to place a higher priority on the relief of pain in patients in long-term care settings.

We may not need more surveys. The priority now is to design and execute studies to evaluate both pharmacologi-

Table 2: Characteristics of studies for which prevalence of pain was determined by indirect measure

Study	Country	Main outcome	No. of participants (and no. of facilities)	Prevalence of pain, %*
Kalchthaler et al 1977 ³⁴	USA	Not reported	100 (1)	44
Hendriksen et al 1983 ²⁶	Denmark	Drug use	474 (1)	38
Primrose et al 1987 ³⁰	Scotland	Not reported	633 (22)	32
Nolan and O'Malley 1989 ³⁸	Ireland	Drug use	301 (11)	27
Andersson 1989 ²³	Sweden	Drug use	233 (4)	33

*Prevalence of pain = (no. of patients for whom analgesics were prescribed/total number of patients in study) x 100.

Table 3: Characteristics of studies evaluating an intervention for the treatment of pain

Study	Study design	Main outcome	No. of participants (and no. of facilities)	Intervention	Tools used to measure pain	Results
Miller and LeLievre 1982 ²⁷	Noncomparative study	Reduction in pain	4 (1)	Attention and verbal praise to facilitate exercising	No. of pain medications prescribed “as required”; no. of pain-related behaviours; no. of activities; McGill Pain Questionnaire	No evidence of effectiveness (not tested for statistical significance)
Adams and McGuire 1986 ³⁵	Nonrandomized comparative study with contemporaneous controls	Not reported	13 (1)	Viewing humorous movies	McGill Pain Questionnaire; no. of pain medications prescribed “as required”	No evidence of effectiveness (not tested for statistical significance)
Moye and Hanlon 1996 ³³	Randomized controlled trial	Reduction in pain	13 (1)	Relaxation training program	5-point visual analogue scale	No evidence of effectiveness (not statistically significant)



cal and nonpharmacological interventions in these settings. Such studies should use designs that minimize bias, maximize precision and meet the needs of both the health care professionals working in these environments and the patients and their loved ones.³⁷ To achieve these goals, future studies should ideally be randomized controlled trials designed to meet all the criteria in the CONSORT statement.³⁸ The studies should include patients who are cognitively impaired and have communication difficulties, along with simple, validated pain-assessment strategies to overcome the barriers imposed by these difficulties. Furthermore, the interventions and outcome data collection tools should account for the unique environment of long-term care facilities. For example, many caregivers in these settings receive only minimal training, and physicians are frequently unavailable in these facilities. Therefore, interventions and clinical decision-making tools must be pragmatic and easy to implement.

Researchers designing these studies should work with the people providing health care in nursing homes to ensure that study treatment protocols meet the needs of the health care providers. Systematic reviews of interventions evaluated in other populations could be used as the basis for these discussions. A systematic review of the type and effectiveness of interventions for treating pain in older adults living in the community might also be helpful. Finally, consumers — particularly older adults living in the community and relatives of adults living in institutions — should be involved in the design of these studies. Consumers could participate with health care providers and researchers in the selection of outcomes and the tools to measure pain, in the identification of appropriate time points for data collection and in the definition of clinically meaningful outcomes from the interventions.

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