Review

Strategies for pain management: a review

Alfonso Sollami[1], Leonardo Marino[1], Simona Fontechiari[1], Marta Fornari[1], Pierangela Tirelli[2], Elisabetta Zenunaj[3]

[1]Azienda Ospedaliero Universitaria di Parma; [2]Azienda USL di Lodi; [3]Azienda USL di Piacenza

Abstract. *Problem/Background:* Pain management is a major worldwide health problem. It manifests itself in a variety of forms involving in turn a multiplicity of responses and therapeutic strategies. Following from this, the training of health personnel must deal with this situation and must not only offer technical assistance, but must also deal with the psychological and social aspects of the problem. In recent years various guidelines and protocols have become popular for pain management. The aim of this paper is to present a literature review of the major international databases. *Type of research:* Systematic review. *Objective:* To identify relevant studies in the literature on pain management and identify the guidelines recognized by the scientific community. *Materials and methods:* A literature search was conducted using the keywords "pain management" and "nurse" published since 2000 in English and Italian in the following databases: PubMed, CINAHL, Med Line. Excluding items which did not meet the inclusion criteria, 49 articles were included in the review. *Results:* Despite a growing availability of evidence-based guidelines, drugs for pain control and the enactment of legislation to promote the use of opioid analgesics in pain therapy, a substantial proportion of the European population continues to have pain. Estimates of the prevalence of pain symptoms in the literature show that between 40% and 63% of hospitalized patients reported pain, peaking at 82.3% in cancer patients in advanced stages of the disease or terminally ill (in hospital or at home). Several studies published in recent years have agreed on a definition of some key points in the management of pain. Studies agree that pain should be recognized as the 5th vital sign, hence the need for validated scales whether single or multi-dimensional, quantitative or qualitative. The approach to the management of pain must be multi-professional, and the use of pharmacology must be in accordance with the WHO three-step approach. Several studies have demonstrated that communication and training of operators, associated with accurate information to patients, are effective elements to improve health care delivered to patients. These studies have led to the publication of guidelines by various scientific societies, indicating timely strategies for effective pain management both in hospital and in the territory. A possible development of this research could be to conduct a retrospective study in accordance with the AUDIT methodology so that we can check the implementation of guidelines and propose corrective actions to meet the defined standards.

Key words: pain management, healthcare organization, health professionals, nurse, audit methodology

Introduction

Pain management is a major worldwide health problem. It manifests itself in a variety of forms involving in turn a multiplicity of responses and therapeutic strategies. Following from this, the training of health personnel must deal with this situation and must not only provide technical assistance, but must also deal with the psychological and social aspects of the problem. One of the important objectives in the control of

acute and chronic pain, whether from cancer or other conditions, is to reduce the negative clinical outcomes and to improve the conditions of the underlying diseases, in order to prevent secondary, lasting disabilities and to give rise to a significant improvement in the quality of life (1). This is important because it would also have favorable effects on the social impact, leading to a reduction in costs for the National Health Service (2).

The International Association for the Study of Pain (IASP) defines pain as "an unpleasant experience, sensory and emotional, associated to an actual or potential tissue damage." Pain is a subjective experience and is therefore influenced by cultural factors and other psychological variables. In addition to the sensory pain secondary to an organic lesion, the definition indicates the experience of pain in more complex terms, i.e. biopsychological.

Of significant importance is the document of the Emilia Romagna region, "Dossier 194-2010", which states the channels of clinical-organizational orientation to deal with pain in the medical area to improve the diffusion of good clinical practices, considering regional guidelines on "hospital-territory without pain", hence integrating primary care and ensuring continuity of care (2).

The attention to pain as a social and economic problem is high, as shown in the literature, with a high percentage of hospitalized patients reporting these symptoms, despite the guidelines, the use of drugs for pain control and regulatory measures that promote the use of opioid analgesics. Furthermore, there is also a considerably high percentage of the European population such as cancer patients in advanced stages of terminal illness (both in hospital and at home) in whom pain symptoms are not well controlled (3).

It is significant that Italy is in third place in Europe for the prevalence of chronic pain, and in first place for the prevalence of severe chronic pain (4).

The World Health Organization has for many years emphasized the importance of the prompt and full treatment of this symptom. The Joint Commission on Accreditation of Healthcare Organizations requires, in its standards of quality, that all patients are assessed for pain and that this assessment results in an appropriate treatment. All international experts therefore agree on the necessity and possibility of measuring pain, and the Joint Commission Standards of the American Pain Society (2009) identified the measurement of pain as being the fifth vital sign to be detected at each step of the treatment of a patient. From the above and on the basis of the daily professional activity, there arises the need to think in terms of a pain management path in operational units. The foundations of this path are as follows: the centrality of nursing; the need for continuous training of personnel; the need to integrate the activities of "care" with that of algologists and with those already present in the area (general practitioners and nursing home care); the need to operate in the utmost safety; and finally the ambitious goal of answering to the needs of the sufferer in the best possible way through a process that is effective in optimizing the resources available.

Pain continues to be a challenge for effective management and remains a priority for patient care. In the nursing profession, a greater awareness of pain management is currently evident.

In clinical terms, pain is currently seen as the fifth vital sign after respiratory and heart rate, temperature and blood pressure, with "the obligation to register the detection of pain within the medical record" as stated in art. 7, paragraphs 1 and 2 of Law 38 of 15 March 2010.

Method

Design and procedure

To identify relevant studies in the literature on pain management and identify the guidelines recognized by the scientific community, we conducted a literature search using the keywords "pain management" and "nurse" published since 2000 in English and Italian. By searching the following databases: PubMed, CINAHL and Med Line, 192 studies were found, to which were added 5 documents from the literature.

To include studies in the analysis the following criteria were chosen: Studies in surgery and/or medical units, studies conducted in hospitals, studies with patients aged> 19 years.

Hence studies involving pediatric patients or those conducted in the hospice and territory were ex-

cluded, as were studies that did not take into account out health but were descriptive of the activities performed by nurses in the process of pain management.

The studies that were reviewed, including studies from the literature, were 49 in number.

Analysis of literature

Despite a growing availability of evidence-based guidelines, drugs for pain control and the enactment of legislation to promote the use of opioid analgesics in pain therapy, a substantial proportion of the European population continues to have pain. Estimates of the prevalence of pain symptoms in the literature show that between 40% and 63% of hospitalized patients reported pain (3, 5, 6), peaking at 82.3% in cancer patients in advanced stages of the disease or terminally ill (in hospital or at home) (7).

The variability of the data is due to the heterogeneity of the population, both from the epidemiological and from the clinical point of view (cancer patients with chronicodegenerative diseases, undergoing surgery, different care setting etc.). A recent national study on pain in the hospital (8) has revealed that admission to a non-cancer setting represents an independent risk factor for receiving inadequate treatment of pain. In particular, the area of internal medicine is more associated with inappropriate management of pain than that of cancer, suggesting the need for a greater commitment to training in this area. Italy is the third largest in Europe, after Norway and Belgium, with regard to the prevalence of chronic pain and in first place with regard to the prevalence of severe chronic pain (13%) (4).

Several scientific societies and agencies over the last 20 years, starting from the historic guideline (9), have produced documents on pain based on reviews of the best available evidence in the literature. Most of these documents are specifically about cancer pain (10-12), stating that it is controllable in about 90% of cases thanks to the WHO three-step pharmacological approach, which for moderate to severe pain involves the use of opioid analgesics.

Numerous studies have been conducted to validate this methodological approach: over 8000 patients in different countries and in different clinical settings (hospital and home) were seen. The various case studies report effective pain control, ranging from 71% to 100% of patients treated (10).

Among the studies performed to validate the approach of the WHO, one in particular (4), conducted on 1229 patients followed for two years, has shown that the transition from the 1st to the 2nd step is due in about half of the cases to side effects and in the other half ineffectiveness analgesic, while the transition from the 2nd to the 3rd step is primarily due to the ineffectiveness of the analgesic. In recent years there has been an increasing use of opioid analgesics for the control of chronic non-cancer pain. There are no randomized controlled trials that demonstrate the analgesic efficacy and tolerability, even in chronic therapy, of opioids.

Recent years have also made available several guide line/clinical recommendations (13-15) on the use of opioids for chronic non-cancer pain, some of which addressed the sick elderly (16, 17).

These findings have some limitations arising in particular from the scarcity (both quantitative and qualitative) of the available studies, especially when compared to a clinical practice that is taking on sizeable dimensions in some European and American countries.

The International Association for the Study of Pain (IASP) defines pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage." Pain is a subjective experience and is therefore influenced by cultural factors and other psychological variables. In addition to the sensory pain secondary to an organic lesion, the definition thus indicates the experience of pain in more complex terms, i.e. bio-psychological. In particular, chronic pain reflects more clearly the character of the disease for the pathophysiological mechanisms that support it. Besides, chronic pain is taking on more and more the characteristics of a public health problem. Numerous studies have found a prevalence of chronic pain in developed countries ranging between 10% and 40% of the general population. Chronic pain can seriously and profoundly affect the quality of life of a person, in turn generating conditions such as depression and anxiety, making it an ethical priority to provide the sick with an effective treatment (18). A review of recent literature and pain guidelines published in the last 3-4 years does not suggest major changes in the management of pain,

but rather a few refinements and increased strength of the evidence supporting it. The evidence regarding the management of non-cancer pain points to on a set of general considerations about the therapeutic guidelines to be adopted in order to prescribe the correct medication. In order to ensure the control of pain in all people admitted to the medical area, during hospitalization, and also within other contexts of care (at home or in residential facilities), assuming the continuity of taking care throughout the care pathway, the main stages of the assessment and treatment of pain according to the algorithm described in figure 1 should be followed.

Given the huge number of pathological conditions related to pain, it is recommended to individual companies to develop diagnostic and therapeutic solutions that are interdisciplinary and specific to the most recurring diseases (e.g. painful conditions of the spine, pain from chronic inflammation in the patient with rheumatological disease, neuropathic pain in diabetes, ischemic pain).

These pathways involve medical personnel (internist, general practitioner and pain therapist) and the nurse, and from time to time individual relevant specialists (rheumatologist, orthopedic specialist, angiologist, diabetologist, neurologist, surgeon, etc.). The assessment and indications of pain treatment must be consistent with the underlying conditions (19, 20). The translation of the 2002 Guidelines RNAO, published by the Centre for Studies EBN Bologna (21), does not suggest major changes to the approach to pain management, but rather a few refinements and increased strength of the evidence supporting it in some aspects:

- The assessment of pain as the 5th vital sign;
- The integrated approach among several professionals with custom design;

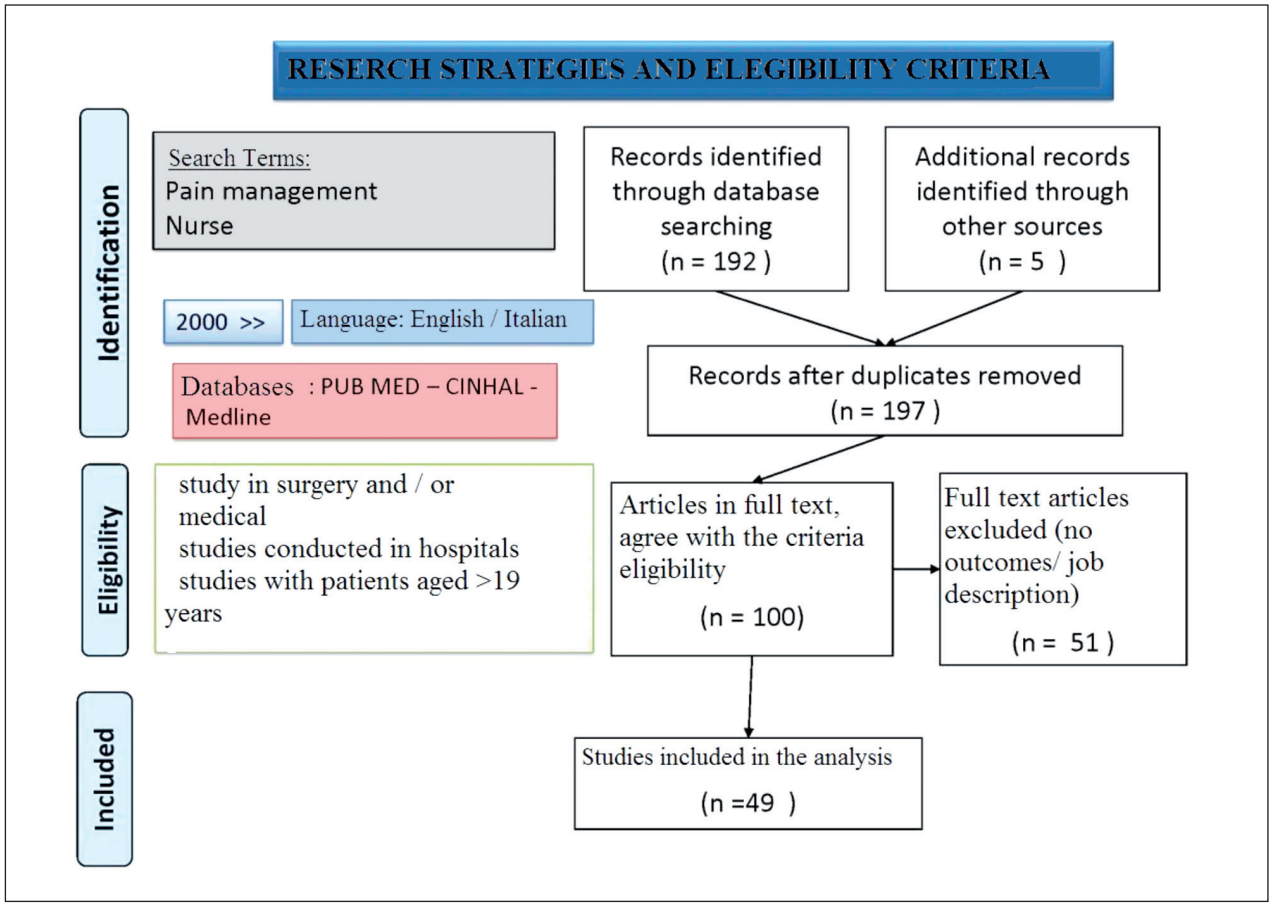

Figure 1. Flow chart

- The appropriate pharmacological management also as regards the management of early therapy;
- The correct therapeutic education of the patient and family use of analgesics, including with regard to the management of side effects;
- The importance of documenting all pharmacological interventions with a systematic pain record that clearly identifies the effect of an analgesic on pain relief .

More specifically, the guidelines indicate that pain treatment involves the measurement of pain with validated scales. This measurement includes both chronic pain and breakthrough pain (BTP). The one-dimensional and multidimensional validated scales for patients with cognitive impairment or who are uncooperative must be provided and available in the Services and Departments.

In the literature there are several validated scales for the measurement of pain, some one-dimensional and quantitative such as NRS (Numerical Rating Scale) (22, 23), (VAS) Visual Analogue Scale) (24), quantitative verbal scale (VRS -Verbal Rating Scale) (25, 2), verbal numeric scale (VNS), and Painad (pain assessment in advanced dementia) (26).

Others are qualitative: analogue scale color (a scale with facial expressions that is useful for the detection of pain in children).

The literature also describes different multidimensional scales , in addition to assessing the physical dimension of pain through other dimensions (sensory-discriminative, motivational-affective, cognitive-evaluative). The main ones are the following: Edmond symptom assessment (ESAS) (27), McGill Pain Questionnaire (MPQ) (28), and The Brief Pain Inventory (BPI) (29).

In relation to the assessment of pain, it should be noted that the Regional Committee for the fight against pain of Emilia-Romagna, in accordance with Law no. 38/2010 (30), has chosen to adopt the numerical scale (NRS) - already widely used in the region - as a single tool for measuring pain, both in hospital and in the territory.

The nurse must work out a medical plan of the manner and frequency with which the pain parameters must be measured - at least once a day, and up to several times a day depending on the clinical conditions and therapeutic indications. The nurse assesses the pain on admittance of the patient to the ward and thereafter up to several times a day whenever there is a pain issue (e.g. changes in the clinical evaluation of the effectiveness of therapies, the execution of invasive procedures) (30).

The guidelines recommend that the doctor prescribes for pain therapy and continuous administration of a rescue dose (or salvage dose) for possible episodes of intense pain. In this regard, we want to point out that it is also important to evaluate more precisely the painful episodes that emerge, in a well-controlled pain situation, from chronic analgesic therapy (at fixed times) (30); in the case of cancer patients with poorly controlled pain, the medical treatment schedule should be continuously revised, verifying the correctness of the dosing interval.

The guidelines indicate that for episodes of intense pain or breakthrough pain the doctor should prescribe the rescue dose and verify its effectiveness on a numerical scale, reviewing the therapeutic treatment if it proves ineffective (31).

Organizational procedures concerning overall management must take into account the multidisciplinary and multi-professionalism of the approach to the problem (32). The complexity of the multidisciplinary management makes it necessary to provide, at least once a year, a clinical-organizational comparison (audit) in order to verify the recommended procedure (32).

To ensure continuity of care between hospital and territory and/or residential facilities (nursing home/ residential care homes/hospice…), the guidelines indicate the use of instruments for passing information between professionals of the two care structures.

Assessment of patient satisfaction in relation to the pain treatment received is by means of the usual tools of measuring the satisfaction of the perceived quality (33).

It is advisable to follow a certain sequence in administering drugs, initiating therapy with non-opioid agents, such as acetaminophen, then moving on to anti-inflammatory drugs and, in cases of moderate and severe pain, minor and major opioids respectively (9). The routine meals at a designated time of the day (10, 12) must be accompanied by the prescription of

the rescue dose, or a dose of analgesic rescue if breakthrough pain occurs.

For pain management to be implemented effectively, it is essential to consult an algologist to ensure the diagnostic and therapeutic success of the pain plan, both for "difficult" cases and for cases where the approach can be optimized using the best that medicine today makes available (34-36)

Other recommendations on pain management in the literature include the WHO "THREE-STEP" analgesic ladder approach.

The 1996 WHO proposals for the pharmacological management of pain, including that of cancer, involve a scale with three steps based on the intensity of the pain (37): when the pain is mild (values from 1 to 4 on the NRS scale) the use of NSAIDs or paracetamol + adjuvant is indicated; when the pain is moderate (values from 5 to 6 on the NRS scale) the use of NSAIDs or minor opioids + paracetamol + adjuvant is indicated; when the pain is severe (values from 7 to 10 on the NRS scale) the use of major opioids + NSAIDs or paracetamol + adjuvant is indicated .

The modern approach provides a flexible use of this scale with a quick transition to the next step in the case of therapeutic ineffectiveness.

Some studies report the following information about the use of non-opioid drugs: Acetaminophen should be considered the drug of choice for the treatment of chronic pain, especially bone and joint.

NSAIDs and aspirin are the foundation of the treatment of chronic inflammatory diseases. Considering the toxicity of these drugs, there is no "fast"consensus (within a few days) to shift to more treatment options in the case of poor control of symptoms (16, 17)

The analgesic efficacy of opioid drugs is well proven in chronic therapy and in the treatment of arthritic or severe neuropathic pain (38, 39). Specific problems arising from the continuing use of these drugs are psychic dependence, physical dependence and the tolerance phenomenon involving the need of a higher dose of the drug to achieve the same effect. There is also a general agreement on the use and therapeutic role of opioids in elderly patients.

In refractory chronic pain the use can be considered, in combination with the most common analgesics, of drugs called adjuvants such as antiepileptics, antidepressants, neuroleptics, corticosteroids, benzoiazepine and central muscle relaxants (35).

The most common side effects from the use of opioids affect the gastrointestinal system, and constipation is certainly the most common effect. Also possible are drowsiness, dizziness, difficulty to concentrate or urinary retention (40-42). The side effects of opioids may be a limit to their effectiveness because they limit the possibility of titration of the drug on the basis of therapeutic response. Possible strategies to optimize the therapeutic efficacy and minimize toxicity are: dose reduction, symptomatic treatment of side-effects, opioid rotation, change of route of administration.

Invasive techniques are used in chronic pain refractory to drug therapy. Invasive methods are the epidural injection, placement of the epidural catheter, neurolytic techniques and neuromodulation (31, 32, 43-48).

With a view to a multidisciplinary approach to the treatment of chronic pain, the use has been validated of physical (e.g. exercise) or behavioral interventions (e.g. Technical self-help). These methods require the active involvement of the patient and aim to distract him from pain to improve control (49, 50).

In the literature there are studies in which communication and training are essential elements in the management of pain. They allow for the recognition of pain and its management by professionals and for the promotion of the relationship between hospital and territory throughout the care pathway to the patient and his family (51, 52).

Conclusion

The presence of so many well articulated studies and guidelines in the literature contrasts with the data reported as to the presence in hospital of patients who complain about pain. A study conducted in 2009 in the hospitals of the Emilia Romagna region showed a significant increase in the level of satisfaction of hospitalized patients regarding pain management (53); nonetheless, in relation to the need to implement: a) the standard required by the accreditation procedures; b) Law 38/2010, (specifically art. 7: obligation to report

the detection of pain within the medical record); c) the Guideline Project "Hospital without pain", we have identified the objectives for a study to be conducted in hospital, which can be outlined as follows:

- Evaluate the path adopted in order to make explicit the assessment, treatment and re-evaluation of pain
- Implement the procedure to "effectively manage the pain in all patients"
- Evaluate the extent to which guidelines indicated in the literature and the Region are applied in the Hospital
- Assess how the guidelines are implemented in three main clinical areas present in the Hospital, namely Surgical, Medical and Geriatric
- Propose corrective actions to achieve the standards set

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Correspondence:
Sollami Alfonso
Azienda Ospedaliero Universitaria di Parma
E-mail: asollami@ao.pr.it