Effectiveness of nursing intervention for adult patients experiencing chronic pain: a systematic review

PROTOCOL

The Spanish Centre for Evidence Based Nursing: Collaborating Centre of the Joanna Briggs Institute
Review title
Effectiveness of nursing intervention for adult patients experiencing chronic pain: a systematic review.

Conductive Centre of the Revision
The Spanish Centre for Evidence Based Nursing: Collaborating Centre of the Joanna Briggs Institute

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Background

Chronic pain is defined by NANDA\(^1\) (North American Nursing Diagnosis Association) as an "unpleasant sensory and emotional experience arising from actual or potential tissue damage or described in terms of such damage (International Association for the Study of Pain); sudden or slow onset of disagreeable intensity from mild to severe; constant or recurring without an anticipated or predictable end and a duration of longer than 6 months."

Chronic pain is a widely spread and devastating problem, as pain increases morbidity and mortality in patients who suffer from it. The social and economic costs of pain affect governments as well as patients and their families. The annual cost of chronic pain in the United States alone is estimated to be $100 billion\(^2\).

While statistics may vary, one study has shown that in Europe one in 5 adults (19\%) suffers chronic pain\(^3\). The major conclusion of another study about chronic pain in the community\(^4\) informs that half of the European population suffers some kind of chronic pain and the frequency increases with age, similarly for men and women. The two most frequent causes of chronic pain are backache and arthritis, which increase with age. These data report that not only is pain experienced for half of this population, it also indicates that such pain is seldom treated. There is a potentially great demand for more and better services to alleviate the experience of pain in the community.

Among the European population, the elderly deserve special attention due to the high incidence of pain in this group (more than 40\% have persistent pain)\(^5\). This population has special characteristics, such as pluripathology, which adds to pain the problem of being treated with drugs. Thus, nursing interventions may acquire more importance than pharmacological interventions. It has been forecast that by 2020, 20.1\% of the Spanish population will be older than 65 years of age\(^6\). This has implications for the growing demands on healthcare in the near future. Pain management has achieved worldwide recognition over the last fifty years\(^7\), and consequently research and development have been undertaken from the perspective of different disciplines. This has been done in order to advance the scientific and humanitarian understanding of chronic pain and to capitalise on the therapeutic approach.

Pain has been understood as a protective mechanism that warns about the existence of possible problems (potential and real)\(^8\). However, pain not only indicates the existence of a physical problem, but also has an affective component that could cause great emotional and psychological problems. Furthermore, disabilities and limitations for all facets of a person’s life (including family, social and work aspects) can appear if the pain becomes chronic. When assessing patients with chronic pain, the only data available to us to assess their level of pain is subjective, and derives from verbal and non-verbal communications (sighs, limitations in movements, facial expressions, etc). Consequently, we may find it difficult to judge whether the pain is real or not. Neither pain nor derived needs should ever be underestimated.

It has also been recognised that depending on the patient’s mood and his/her pain threshold, people endure pain in different ways. The pain perception is modulated directly from the patient’s interpretation of pain, for example, one’s beliefs about how an illness progresses. On the other hand, we must realize that pain threshold increases due to factors such as distractions and the state of a person’s social and family relationships\(^9\). Chronic pain can have a profound impact on mood, sleep patterns, physical and social activities, and therefore has the potential to damage a person’s quality of life\(^10\); controlling chronic pain, however, improves functionality and quality of life\(^11\).

At present, interest in growing in non-pharmacological interventions to control pain. The Royal College of Nursing Complementary Forum (United Kingdom) advises that complementary interventions for pain management should include relaxation techniques, training and educational programmes\(^12\). Elsewhere, the Department of Rheumatology at the Clinic Hospital of Barcelona (Spain) conducted a study\(^13\), which described the outcomes of a multidisciplinary therapeutic programme applied to a sample of patients on
sick leave because of incapacitating chronic pain, resistant to medical treatment. This programme included medical techniques for pain control, cognitive behavioural therapy, physical interventions and occupational therapy. The authors concluded that the results demonstrated that multidisciplinary treatments for incapacitating chronic pain are effective, and reduce sick leave.

In a randomized clinical trial\(^\text{14}\) undertaken in a hospital in Thailand, the effectiveness of relaxation therapy was examined. The treated group learned relaxation techniques with audi-tapes. The main outcome of this trial was that the treated group had less pain and distress than the control group \((p = 0.001)\). However, two systematic reviews could not find sufficient evidence to confirm the effectiveness of relaxation for chronic pain relief\(^\text{15,16}\). Listening to music\(^\text{17}\), like many non-pharmacological treatments such as hypnosis or distraction, has the advantage of being inexpensive, simplicity of administration and being safe. Nevertheless, it has not been established that these interventions do not have the same effectiveness in reducing the intensity of chronic pain or the need to take analgesics\(^\text{18-20}\).

Although nursing interventions are widely used in the management of chronic pain, research results are non-conclusive, as shown in one meta-analysis\(^\text{21}\) including 49 clinical trials. This particular study did not manage to draw any conclusions, as different types of nursing interventions were included. Clinical practice guidelines and international organisations for quality control recommend adding non-pharmacological interventions to pain management\(^\text{23}\). It is in this situation that the role of nurses becomes important. Nurses have the skills, experience, responsibility and professionalism to assume the major role in the care of chronic pain sufferers. The patients' quality of life depends on them\(^\text{24,25}\). Consequently, we consider that a systematic review on the effectiveness of nursing interventions for chronic pain is warranted. In particular, this review sets out to understand which interventions are effective and what results can be obtained from them.

**Question / Objectives**

The major objective of this review is to determine the best available evidence regarding the effectiveness of nursing interventions for adult patients experiencing chronic pain.

**Criteria used for considering studies for this review**

**Type of studies**

This systematic review considers studies that are based on randomised controlled trials and pseudo- or quasi-randomised controlled trials of nurses' interventions to investigate the effectiveness of such interventions for adult patients with chronic pain. In the absence of such studies, observational studies will be considered.

**Type of participants**

**Inclusion:**

- Patients with chronic pain.
- Patients undergoing treatment outside the hospital (Primary Care and/or Outpatients Units).
- Adults (i.e. 18 years of age and older).

**Exclusion:**

- Hospitalized patients.
• Oncology patients.
Hospitalized patients have been excluded because chronic pain presents different characteristics in a hospital environment than in an outpatient one. Care of outpatients with chronic pain has a high social impact and socio-economic cost. These are patients who have less external resources and therefore need more knowledge to manage their self-care.

Cancer patients usually interpret chronic pain as a worsening of their condition, so the psychological impact of this experience is different from that of a non-cancer patient, who does not feel that his/her life is threatened. On the other hand, the side effects of cancer treatments (chemotherapy and radiotherapy) often give way to another range of problems, such as burns, muscular weakness and nausea, which complicate the treatment of pain. Therefore, the effectiveness of nursing intervention in cancer patients experiencing chronic pain should be assessed in a different systematic review.

Types of interventions / phenomena of interest
This review will consider studies that assess the effectiveness of the nursing intervention for chronic pain listed below. A nursing intervention is defined as: "Any treatment, based upon clinical judgment and knowledge, that a nurse performs to enhance client outcomes. Nursing interventions include all interventions performed by nurses, both direct and indirect care, targeted at individuals, families and communities, whether treatments are initiated by nurses, doctors or other professionals"[26].

This review will consider studies that evaluate the effectiveness of non-pharmacological nursing interventions. These include the following:

• Nurses’ active listening interventions (individual or group-based) regarding chronic pain sufferers’ fears, anxieties and expectations

• Education, training and health awareness interventions (individual or group-based) regarding patients’ ability to manage their self-care:
  - Lifestyle factors: nutritional, physical and postural exercises, etc.
  - Massages
  - Cold-heat therapy, e.g. ice packs
  - Teaching relaxation techniques
  - Social activities during free time, relationships, etc.

• Nurses’ training of family interventions:
  - Improving knowledge and/or modifying attitudes concerning the disease and resulting pain.
  - For caregivers to manage patient’s chronic pain better

Type of outcomes
The positive or negative outcomes to be considered for adult patients are as follows:

• quality of life
• satisfaction with nursing interventions
• increasing (or otherwise) independence in daily activities
• compliance or non-compliance with medical treatment
• pain threshold
• medication for chronic pain
• improvement in and/or maintenance (or otherwise) of social relationships and free-time activities
• level of anxiety and symptoms of depression
• return to work and/or reduction in sick leave days
• health care requests
• when patients decide not to follow nursing interventions

Search strategy for identification of studies

The search strategy will incorporate studies published in both the English or Spanish languages, between 1997 and 2007.

The following keywords and/or Subject Headings (for example, MeSH, EMTREE, etc.) will be used: Pain; chronic pain; adult patient; disability; disabilities; non-pharmacological treatment; nurse intervention; nursing intervention/interventions; nursing care; psycho-social intervention;

It uses the limits: adult patient, randomized and pseudo-randomized or quasi-randomized controlled trial.

The following databases will be searched:

1. PubMed (MEDLINE)
2. Central Cochrane Registry of Controlled Trials (CENTRAL and the Kovacs Registry of Backache Reviews)
3. Cochrane Pain, Palliative Care and Supportive Care Group.
4. CINAHL (Cumulative Index to Nursing and Allied Health database)
5. CUIDENplus (Nursing of the Index Foundation database)
6. EMBASE
7. PsycINFO (American Psychological Association database)
8. BDIE (Nursing and Allied Health of the Institute of Health Carlos III database)
9. LILACS (Latin American and Caribbean Literature on the Health Sciences, BIREME System’s cooperative database)
10. PSICODOC (Psychology and allied disciplines database)
11. REHABDATA (National Rehabilitation Information Centre)
12. IME (Biomedical Database of Spanish National Research Council-CSIC)
13. ACADEMIA SEARCH PREMIER (Multidisciplinary database (social medicine, biology, sciences, education, psychology )
14. Scielo (Scientific Electronic Library Online)
15. The Oxford Pain Internet Site
16. Current Contents
17. SCOPUS
18. EBM Reviews (Cochrane DSR, ACP Journal Club, DARE, CCTR, CMR, HTA, and NHSEED)
19. Web of Science or Web of Knowledge
Furthermore, unpublished or grey literature will be sorted for this systematic review from the following sources:

1. National Library of Medicine Gateway
2. Grey Literature Report (through New York Academy of Medicine website)
3. Grey Source: A Selection of Web-based Resources in Grey Literature
4. Database for Spanish Dissertations: TESEO
5. www.Scirus.com
6. NurseScribe
7. SIGLE (System for Information on Grey Literature in Europe)
8. www.science.gov
9. NHS Library
10. AltHealth Watch
11. World Health Organization
12. Proquest Dissertations and Theses
13. Index to Theses
14. AHRQ: Agency for Health Care Research and Quality
15. TRoPHI (Trials Register of Promoting Health Interventions)
16. Trialscentral.org
17. Australian and New Zealand Clinical Trials Registry (ANZCTR)
18. Lancashire Care Library and Information Service
19. Current Controlled Trials (CCT)
20. NIH Clinical Alerts and Advisories
21. National Research Register (UK)
22. Conference proceedings databases (e.g. ProceedingsFirst)

Appropriate nursing journals will also be hand-searched for relevant citations by checking their reference lists. Communication will also be established with key organizations and key researchers in this area of healthcare. Postgraduate and doctoral dissertations will be identified and searched for additional literature to limit publication bias.

**Methods of the review**

**Assessment of methodological quality**

Eight reviewers (in groups of two) will evaluate independently the methodological quality of each study, using the Joanna Briggs Institute checklist for RCTs (Appendix I).

Quality and usefulness of studies will be assessed with regard to:
• Internal validity
• Clinical relevance
• External validity

The inclusion criteria that were not met by the rejected trials will be specified.

Any disagreements that arise between the reviewers will be resolved by discussion, followed by consensus or majority vote. If consensus cannot be achieved, the following experts in research methodology or documentation will be consulted:

• María Ruzafa Martínez (PhD. BA in Social and Cultural Anthropology. BA in Nursing. Lecturer at the School of Nursing, University of Murcia. MSc in Statistical Design and Health Sciences. University expert in Advanced Methods in Applied Statistics).

• Julio Sánchez Meca (PhD in Psychology. Professor of Basic Psychology and Methodology, School of Psychology, University of Murcia. Member of the Campbell Collaboration. Director of the ‘Meta-analysis Unit’ at the University of Murcia).

• Mariano Escámez Jimenez (BA in Biblioteconomy and Documentation. Documentalist of the Centro Tecnológico de Información y Documentación Sanitaria de la Consejería de Sanidad de la Región de Murcia).

• Mª Teresa Martínez Ibáñez. (GP. PhD in Medicine and Surgery. Health Technician at the Unidad Docente de Medicina Familiar y Comunitaria. Member of the Editorial Committee of the Spanish Society of Family and Community Medicine and of the work group of Evidence Based Medicine of the Canary Society of Evidence Based Medicine).

• Ana Arricivita Verdasco (BSc in Nursing. BSc in Pedagogy. Lecturer at the University School of Nursing of La Laguna).

Data extraction/collection

Data will be extracted independently by eight reviewers (in groups of two) using appropriate data extraction tools based on the work of Joanna Briggs Institute (Appendix II). If necessary, researchers will be contacted for additional information. Any disagreements that arise between the reviewers will be resolved through discussion and, if necessary, the above-mentioned advisory group will be consulted. The data collection will consider:

• Characteristics of the adult patients;
• Design of the study; and
• Results of the study.

Data synthesis

If appropriate the comparable data (i.e. study population, interventions and outcomes) will be unified into a meta-analysis using SUMARI software from the Joanna Briggs Institute. Heterogeneity among studies will be estimated using Chi-square, considering heterogeneity for p values less than 0.05. The corresponding effect measures will be calculated using Odds Ratio (for dichotomous variables data) or weighted mean differences (for continuous variables). The corresponding confidence intervals of 95% will be calculated for all analyses. If unifying the outcomes into a meta-analysis is not possible or statistically appropriate, these will then be summarised in a narrative way. The recommendations will be supported by the levels of evidence devised by the Joanna Briggs Institute.
Potential conflict(s) of interest

There are no conflicts of interest to report for this systematic review. The reviewers are employed by the Spanish Health System (Servicio Murciano de Salud de la Consejería de Sanidad de Murcia y el Servicio de Atención Primaria, Planificación y Evaluación de la Dirección General de Programas Asistenciales del Servicio Canario de Salud).

Acknowledgements

Our sincere thanks to Dr Don Juan Antonio Sanchez Sanchez, General Practitioner and member of the Technological Centre of Information and Documentation of the Ministry of Health of Murcia.

References


Appendices

Appendix I

RCT Critical Appraisal Form

Reviewer________________ Date____________________
Author__________________________ Year________
Record Number______________

1) Was the assignment to treatment groups truly random?  
   Yes   No   Unclear

2) Were participants blinded to treatment allocation?  
   Yes   No   Unclear

3) Was allocation to treatment groups concealed from the allocator?  
   Yes   No   Unclear

4) Were the outcomes of people who withdrew described and included in the analysis?  
   Yes   No   Unclear

5) Were those assessing outcomes blind to the treatment allocation?  
   Yes   No   Unclear

6) Were the control and treatment groups comparable at entry?  
   Yes   No   Unclear

7) Were groups treated identically other than for the named interventions?  
   Yes   No   Unclear

8) Were outcomes measured in the same way for all groups?  
   Yes   No   Unclear

9) Were outcomes measured in a reliable way?  
   Yes   No   Unclear

10) Was appropriate statistical analysis used?  
    Yes   No   Unclear
**Appendix II**

**Data Extraction Form for RCT**

Author/s _________________________________________________

Year_________________________________________________

Journal ________________________________________________________

Title____________________________________________________________

Record Number/Article Reference No _______________________________

Reviewer _______________________________________________________

Method _________________________________________________________

Setting _________________________________________________________

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<td>Group B (control)</td>
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<table>
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<tbody>
<tr>
<td>Intervention A</td>
<td>Intervention B</td>
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**1. Outcome Measures**

Outcome Description Scale/Measure

**2. Results**

**3. Dichotomous Data**

Outcome Treatment Group

Number/total number

Control group

Number/total number
4. **Continuous Data**
   
   Outcome Treatment Group
   Mean & SD (number)

   Control group
   Mean & SD (number)

5. **Author's Conclusion**
   
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
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6. **Reviewer's conclusion**
   
   __________________________________________________________
   __________________________________________________________
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