

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

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Executive summary

Objectives To determine the best available evidence regarding the effectiveness of nursing interventions for adult patients experiencing chronic pain.

Types of studies Randomized Controlled Trials (RCT) and Quasi-Randomized Controlled Trials.

Types of participants Participants were adults, aged at least 18 years, suffering from chronic pain (lasting for longer than six months). Pain of oncological origin and patients admitted in a hospital, were excluded.

Types of interventions Non pharmacological nursing interventions for chronic pain.

Types of outcome measures The primary outcome measure was chronic pain, and secondary outcome measures were: disability, depression, dependence and health related quality of life.

Search strategy All studies, published and unpublished, in English and Spanish, carried out between January 1997 and December 2007 were retrieved. .

Selection of studies The methodological quality of included articles was assessed by two independent reviewers using appropriate critical appraisal tools from the Joanna Briggs Institute.

Data extraction and analysis Data were independently extracted by two reviewers, using the standardised data extraction tool from the Joanna Briggs Institute.

A meta-analysis was not possible as the trials were heterogeneous in their interventions, characteristics of the populations, intervention duration measurement instruments and outcomes measures.

Results: 1,666 references were identified that fit the aim of the review. 92 articles were retrieved, of which 13 were chosen to be critically appraised for their methodological quality. In the end, eight controlled trials were included

The main results were:

- Cognitive-behavioural and sensorial stimulation programs reduce perceived chronic pain.
- Interventions based on psycho-education and music therapy programs reduce osteoarticular pain.
- Magnetic therapy and guided imagery are interventions that may relieve chronic headache.
- An intervention including a physical exercise program in incontinent elderly increases mobility but does not relieve pain, and may even worsen it.

Other outcome measures showed an improvement in the quality of life (sensorial stimulation and guided imagery), in depression, disability and empowerment (music therapy) and physical functioning (program of psycho-education).

The main limitations of this review were: excluding studies where the professional performing the interventions was not detailed or the intervention was not carried out by a nurse and that the search strategy was limited up to 2007.

Implications for practice Listening to music, a cognitive-behavioural treatment programme, magnetic therapy, sensorial stimulation, a psychoeducation programme and guided imagery are nursing interventions that help to reduce the chronic pain in adults and may be used as contributory to the pharmacological treatment. Short exercises for increasing endurance does not reduce pain.

Implications for research For future reviews we do not recommend the inclusion of different interventions for the reduction of chronic pain, due to the great number and variability of intervention, but the development of a SR on specific interventions.

Keywords Pain, chronic pain, somatosensory disorders, arthralgia, somatoform disorders, nursing and community nursing, systematic review.

Background

Chronic pain is defined by NANDA¹ (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".

Acute pain may be considered useful, when used as a warning for the existence of a problem in our bodies^{2,3}. Nevertheless, its chronicity causes disabilities, limitations and dependence at all the life levels of a person: family, work and social levels⁴.

The main data for assessing pain are those transmitted by the patient. It is necessary to consider that the pain level is variable and it is related to the subjective perception and mood. Perception is modulated, among other aspects, by each patient's meaning of pain²⁻⁵. Besides, pain is better tolerated thanks to some factors such as entertainment or a good social and family relationship².

Chronic pain is a widely spread and devastating problem, as pain increases morbidity and mortality in patients that suffer from it. For Arias Rivera (2005)⁶ "the social and economic cost of pain affects both patients and families as well as governments". It also represents the third most frequent health problem, following cardiovascular diseases and cancer⁷.

The figures on the prevalence of chronic pain vary across different studies: Thus, the survey *Pain Europe*⁸ reports that one out of 5 adults (19%) suffers chronic pain. Another study in the community results in the fact that half of the population suffers any kind of chronic pain and the frequency increases with age, both in men and women⁹. The most frequent cause of chronic pain is arthritis. The most common location is the back. Pain is important for half of the participants. Besides, this study reports that a big part of pain is barely treated, thus existing a potential great demand of more and better services for the relieving of pain in the community.

On the other hand, the survey *Pain Europe*⁸, reports that 20% of patients with chronic pain in Europe have lost their job, the average work absenteeism among people with chronic pain is 15 days per year and 40% of them have a limited ability for carrying out their daily lives. González-Escalada et al. (2006)¹⁰ states: "chronic pain is one of the most expensive health problems in our society, due to direct and indirect costs (sick leave, poor work performance, loss of productive capacity, etc.). At present, its cost amounts to 2.5% of the Gross Domestic Product". Correa (2007)¹¹ states that: "Chronic pain is responsible for half a million working days lost in the United States, its annual cost is 150.000.000 million dollars, for care attention, disability and related costs".

Special attention must be given to elderly, due to the high incidence of pain in aged people (more than 40% of this population present persistent pain)¹², and to peculiarities such as the presence of pluripathology and plurimedication¹³, that contribute to the pain problem with the fact that the common drugs for relieving it can not always be used.

Besides, it must be taken into account that, as a consequence of the ageing of population (it is estimated that by 2050 79% of world population will be older than 60 years old¹⁴ and elderly population will have reached 2000 million¹⁵), it is expected that the needs and demand of healthcare in this sector will increase.

Pain affects mood, sleep patterns and physical and social functioning by deteriorating the quality of life¹⁶ which could be improved by means of a good control of pain³.

In the last fifty years¹⁷, the issue of pain and its treatment has reached a global recognition and, as a consequence of such interest, its study and development have been considered from the approach of several disciplines, with the aim of making progress in the scientific and humanitarian understanding of this condition and consequently optimise its therapeutic approach.

Chronic pain is a multifactor suffering, thus, the right approach should include three different aspects: psychological, physical and pharmacological¹¹.

At present, non pharmacological interventions for the control of pain arouse more and more interest. The UK's Royal College of Nursing Complementary Forum¹⁸ reports that complementary interventions for the management of pain include relaxation, education and information techniques.

The literature widely recommends to add non pharmacological interventions to pain treatments, recommendations made by international quality control organs¹⁹ and by clinical practice guidelines^{20,21}. Exercise programs²⁰, massages²⁰, cognitive-behavioural therapy^{22,23}, music listening^{7,24-26}, as well as hypnosis or entertainment, offer potential low cost advantages, with easy administration that are safe. Nevertheless, it has not been established that these interventions have the same effectiveness for reducing pain intensity or the need of taking analgesia^{25,26}.

Although many nursing interventions are widely used in the management of chronic pain, a meta-analysis²⁷, carried out in 1996, including 49 clinical trials showed the need for research into the effectiveness of these interventions.

Bearing in mind the importance of the problem that chronic pain represents at a global level and the relevant role of nurses, because they have a wide acting scope and a direct and close relationship with the patient, being able to influence their level of quality of life^{28,29}, there is a need of knowing some aspects on their interventions in chronic pain, such as: which intervention must be chosen, in which patients and how long the interventions should last.

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 the results can be obtained from them.

Objectives

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

Criteria for considering studies for this review

Type of studies This systematic review considered Randomized Controlled Trials (RCTs) and Quasi-Randomized Controlled Trials.

Type of participants This review included studies that participants were adult patients older than 18 years old, presenting chronic pain, defined as the pain lasting more than six months.

Type of interventions This review considered studies that assess the effectiveness of non-pharmacological nursing interventions for chronic pain.

Nursing interventions were considered as internationally defined by the NANDA³⁰: "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".

Therefore, the studies that clearly reported that the interventions focused on relieving /reducing chronic pain were exclusively performed by nurses or they participated together with other members

of the multi-professional team, were considered for inclusion. That is, if the study did not clearly report that a nurse had been involved in the intervention, it was not included.

Type of outcome measures The primary outcome measure considered was chronic pain; and secondary outcome measures were: disability, depression, dependence and quality of life related to health.

Exclusion criteria

The review excluded:

- Studies excluded the following types of participant:
 - a – Patients who were suffering from chronic pain with an oncologic origin:** as cancer patients are used to interpret chronic pain as worsening of their condition, so the psychological impact of this experience is different from that of a non cancer patient, who does not feel his/her life threatened³¹. 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.
 - b –Hospitalized patients:** as chronic pain presents different characteristics in a hospital environment than in an outpatient one^{9,10}. 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.

Search strategy

The aim of the search was to identify all relevant studies, published and unpublished, published in English or in Spanish between January 1997 and December 2007 were searched. Detailed search strategies were developed for each database [Appendix I]. The following **key words** and their correspondent terms were used [MeSH]: pain, chronic pain, somatosensory disorders, arthralgia, somatoform disorders, nursing and community nursing. The same key words were used in Spanish for searching in the Spanish data bases. The **limits** applied were: adult patient (18 years old or more); Randomized Controlled Trial; Quasi-Randomized Controlled Trial.

The search was done in the following **sources**:

Electronic data bases:

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
5. CUIDENplus (Nursing of the Index Foundation database)
6. EMBASE
7. PsycINFO
8. LILACS
9. PSICODOC

10. REHABDATA
11. IME (Biomedical Database of Spanish National Research Council-CSIC)
12. ACADEMIA SEARCH PREMIER
13. Scielo
14. The Oxford Pain Internet Site
15. Current Content.
16. Current Controled Trial.
17. ACP Journal Club: Evidence-Based Medicine for Better Patient Care
18. BiomedCentral.com
19. TRIP Database
20. DARE
21. SUMSearch
22. Biological & Medical Sciences
23. National Research Register Google scholar

Unpublished literature or grey data bases:

1. Database for Spanish Dissertations: TESEO
2. National Library of Medicine Gateway
3. Scirus
4. World Health Organization
5. Proquest Dissertations and Theses
6. TRoPHI

Secondary Search

A secondary search was done in the bibliography of the selected studies, by title and abstract.

Methods of the review

Assessment of methodological quality

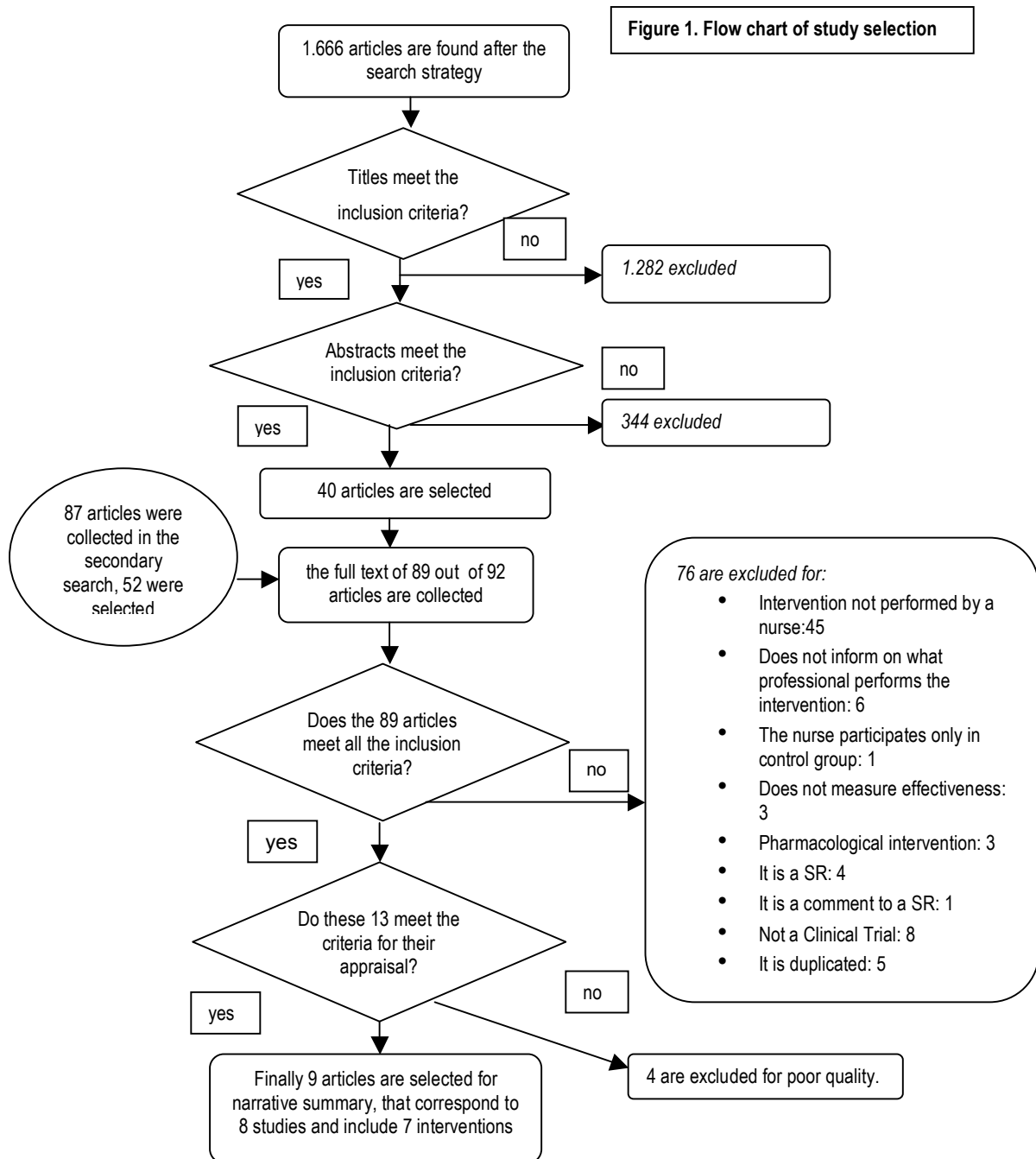
The articles that met the inclusion criteria (13) were independently appraised by two reviewers for their methodological quality. For this purpose, the standardised critical appraisal tool from the JBI-MAStARI was used (Joanna Briggs Institute-Meta Analysis of Statistics Assessment and Review Instrument) [Appendix III]³². Studies were considered that they met a minimum of quality when they obtained 7 yes out of 10 questions of the checklist criteria from both reviewers.

Data extraction

The data of the 8 studies that passed the methodological quality appraisal were independently extracted by two reviewers, using the standardised data extraction tool from the JBI-MAStARI [Appendix VII]³². The data extracted by the reviewers matched in all cases.

Data synthesis

The studies finally selected included very different populations, examined different nursing interventions and used different instruments for outcome measures, thus the quantitative results could not be combined in meta-analysis. Therefore the results were reported in the form of a narrative summary.



Review results

Description of studies

Selection of the studies [Figure 1]

Assessments were carried out by independent peers throughout the whole process.

1st selection: 1,666 references were found in the primary search, which began in May 2008. A selection was made by titles, rejecting 1,282 references because they did not meet inclusion criteria. 384 references were obtained after this first filtrate.

2nd selection:

The abstracts of these 384 references were consulted, to determine whether they met the inclusion criteria. This led to the rejection of 344. Therefore, as a result of this process 40 articles were selected.

When the information in the abstracts was not clear, the correspondent complete text was read. If doubts continued, the authors were contacted for additional information.

3rd selection:

The complete texts of the 40 selected articles were read and a secondary search was carried out in their references, where 87 articles were identified. After the reading of the title and abstract, 35 out of 87 articles did not meet the inclusion criteria, thus 52 articles were selected, which, together with the 40 articles selected in the initial search, made a total of 92 articles meeting the inclusion criteria.

4th selection:

The complete reading of these 92 articles was carried out, except for 3, which were unavailable. After the reading of the 89 articles, 76 studies were excluded for one of the following reasons: the intervention was not carried out by a nurse (45); the professional carrying out the intervention was not specified (6); the nurse participated only in the control group (1); it did not measure effectiveness (3); the intervention was pharmacological (3); it was a systematic review (4); it was a commentary of a systematic review (1); it was not a clinical trial (8); it was duplicated (5). [Appendix II].

When the information of any of the studies was not clear, the authors were contacted.

Finally 13 articles were selected for critical appraisal of their methodological quality.

Four articles were excluded as they were considered of poor quality [Appendix IV]. Nine articles fulfilled the minimum quality established and passed to the stage of data extraction. The consensus between evaluators was unanimous. The 9 selected publications were actually 8 studies, as two of them^{33,34} were from the same study, thus we included 8 studies.

The characteristics of the 8 included studies are described in Appendix V, where the Evidence Level and the Grade of Recommendation are indicated according to the Joanna Briggs Institute classification [Appendix VI]³⁵.

Nine articles, containing 8 studies, were included in this review, of which 7 were randomized controlled trials (Schofield et al. 1998 A³³, Schofield et al. 1998 B³⁴, McCaffrey & Freeman 2003³⁶, Siedliecki & Good 2006³⁷, Becker et al. 2000³⁸, LeFort et al.1998³⁹, Simmons et al. 2002⁴⁰, Kim 2001⁴¹) and one a quasi-randomized controlled trial (Mannix et al. 1999⁴²).

Seven types of nursing interventions used for relieving chronic pain in adults were identified: Sensorial stimulation^{33,34} (Snoezelen), in two articles on the same study; Music Therapy^{36,37}, in two controlled trials; Behavioural-cognitive Programs³⁸; Psycho-education Programs³⁹; Physical Exercise Programs⁴⁰; Magnetic Field Therapy⁴¹ and Guided Imagery⁴².

Methodological quality

Of the eight controlled trials that met the quality criteria for their inclusion [Appendix V], three studies³⁶⁻³⁸ did adequate blinding of the assignment; four studies^{33,34,39,40} were unclear about the adequacy of the blind assignment; one study⁴¹ included a non-adequately blinded assignment, another study⁴² did not include randomized assignment.

The outcomes, measured with different instruments, were: Pain: intensity^{34,36-38,40-42}, quality^{34,39}, severity³⁹ and frequency⁴²; coping³⁴; quality of life^{34,38,39,42}; depression^{37,38,39}; disability^{37,39,42}; power^{37,41} (Empowerment); psychological well-being³⁸; sleep quality³⁸; physical function³⁸; dependence³⁹; uncertainty³⁹; skills³⁹; resources³⁹; self-help³⁹; satisfaction with life³⁹.

Description of measurement instruments

A distinction was made between objective measurement instruments, with demonstrated validity and reliability, and open questions, that were measured in all cases with a Likert scale or a Visual Analogue Scale.

The description's depth of the measurement instruments was proportional to the information published by the authors in the different studies.

A summary of the main features of the instruments as described in the included studies:

1.-PAIN measurement instruments

Mc Gill's Pain Questionnaire (MPQ)^{33,34}

Useful and quick-use instrument used in clinical practice for identifying the predominant components of pain perceived by the patient. Validated and reliable both for acute pain and chronic pain. It is a self-completed instrument. Based on the concept that pain perception is multidimensional: sensorial, affective and evaluative. The instrument assesses quantitatively these three dimensions of pain. It is made up of sixty two descriptors distributed in 15 categories. The patient is asked to mark one descriptor or none for each subcategory. The total score is obtained from the addition.

Short-Form Mc Gill's Pain Questionnaire^{36,37,39}

A short version of Mc Gill Pain Questionnaire, was used for faster and easier administration. Its validity and consistency with the long version have been widely studied. It is composed of fifteen descriptors where the patient scores from 0 to 3 according to his pain: "*none*", "*light*", "*moderate*" and "*intense*".

Visual Analogue Scale (VAS)^{33,34,36-39,41}

Developed for measuring intensity, change and memory of pain in patients with moderate or intense pain. It is a numerical scale with a length of 100 mm, where the patient must indicate how intense the pain is. It ranges from "*without pain*" to the "*worst possible pain*". It allows to numerically quantify the intensity of the pain suffered by the patient. It is a valid, reliable and widely used instrument, due to its simplicity.

Survey of Pain Attitudes (SOPA-D)³⁹

This instrument aims to measure the beliefs of the patient about pain and the idea of the subjective capacity to control it. It includes scales for measuring Pain Control, Disability, Damage, Emotion, Medication, Interest and Medical Healing.

Mishel Uncertainty in Illness Scale (MUIS-C)³⁹

This instrument contains a scale of 5 points. The patient must indicate the degree of agreement or disagreement with issues related to ambiguity, complexity, inconsistency and unpredictability of his symptoms and treatment. The evidence supports the reliability and validity of the instrument with the different groups of chronic diseases including sufferers of chronic lumbar pain.

The Coping Strategies Questionnaire (CSQ)^{33,34}

The CSQ is an instrument for assessing the strategies for coping with chronic pain. It has been developed for assessing the coping strategies in patients with chronic lumbago. It includes six cognitive strategies: diverting attention, reinterpreting pain, coping self-statements, pain ignoring, praying or hoping and catastrophizing. It is a widely used measure, tested in different populations and countries. It is valid and reliable.

Modified 13-item Geriatric Pain Measure (GPM-M)⁴⁰

Instrument used for a multidimensional assessment of pain in geriatric ambulatory patients with several medical problems. It emphasizes the role of external qualifiers and proposes that a nociceptive stimulus leads to the sensation of pain, followed by the perception of pain, followed by the exhibition of external signs of pain by the patient, followed by an external evaluator for observation and interpretation of external signs. It is made up of 13 questions where the possible answers are "yes" or "no". The range of the score goes from 0 (no pain reported) to 13 (pain reported in all 13 questions). This instrument is valid and reliable (standardised reliability coefficient α 0.85).

2.- Instruments for measuring HEALTH status**The Sickness Impact Profile (SIP)**^{33,34}

This profile provides a way of measuring health conditions that can be used at different degrees of severity and with different cultural and demographic groups. It measures dysfunction and is based on behavioral changes related to the disease. It's been grouped within 12 categories: rest and sleep, work, nutrition, housework, leisure and hobbies, movement, mobility, care and body movement, social relationships, intellectual activity, emotional activity and communication.

The Psychological General Well-being Scale (PGWB)³⁸

Instrument originally designed for measuring subjective psychological well-being in the general population. It evaluates how individuals feel their "own internal status" rather than how they feel about external conditions. The instrument reflects both positive and negative feelings. It consists of 22 items grouped in six dimensions: anxiety, depression, positive mood, vitality, self-control and general health. It is designed for self-administration. It has been widely validated and several clinical studies have shown that it has good psychometric properties.

3.- Instruments for measuring DEPRESSION**Beck Depression Inventory (SF-BDI)**³⁹

Questionnaire created to distinguish depression from pain. It assesses the symptoms at cognitive, motor, affective and somatic levels. It consists of 21 items, where the patient must choose, from four possible options for each item (which range from 0 to 3 according to the severity of the symptom), that best describes his average status during the last week including the day when he completes the questionnaire. Its reliability and validity have been tested in different populations and countries.

The Hospital Anxiety and Depression Scale (HAD)³⁸

Designed for detecting affective disorders in patients suffering from physical diseases, though it is sometimes used to measure the quality of life. It consists of two series of seven questions each, that correspond to the subscales of depression and anxiety. Every item is evaluated according to a scale of four points ranging from 0 to 3. Although it was designed in a Hospital it may also be used in community work. This instrument has been well accepted and it is easy to complete, valid and

reliable. This scale has demonstrated a great sensitivity and specificity in the detection of anxiety and depression of the physically ill patient.

Centre for Epidemiologic Studies Depression Scale (CES-D) ³⁷

This scale was created with the purpose of identifying risk factors associated to depression, in base to other scales and clinical experience. It is made up of twenty items grouped in four sections: positive affection, negative affection, inter-personal relations and delayed activity and somatisation. With a reliability that ranges, according to the publication³⁷, between Cronbach's α of 0.81 to 0.84. Answer categories range from: "0= any day, less than one day" to "3= from five to seven days". It measures the number and frequency of the depressive symptoms during the last week. It may be self administered or administered by non-expert interviewers. It has been used in different populations and countries. Its validity and reliability have been tested in a number of publications.

4.- Instruments for measuring DISABILITY

Pain Disability Index (PDI) ³⁷

This index is made up of eleven items to be answered with a Likert-type scale. It measures the degree to which pain interferes with the functioning of the patient in seven areas: family and home responsibilities, recreation, social activity, occupation, sexual behaviour, self-care and life support activities. Its validity and reliability are good (Cronbach's α of 0.87).

Headache Disability Inventory (HDI) ⁴²

This scale can be used to assess a patient with headache on a regular basis, and determine the effectiveness of a management strategy over time. It consists of 25 items divided into two fields: emotional (13) and functional (12). It is a 0 to 100 scale, with a maximum score of 52 regarding the emotional field, and 48 regarding the functional one. The total HDI decreased by 29 points as a result of a management strategy, which is considered as a significant improvement. The 1-week test-retest reliability of the total score was 0.76. As for the 6-week test-retest reliability the score was 0.83. [12:57:36] marta: It should be noted that there is a limitation, a person with a low total HDI (< 29 points) would not be able to meet the criteria for significant improvement.

5.- Instruments for measuring QUALITY OF LIFE

Health Questionnaire SF-36 ^{38,39,42}

This instrument is used to provide a health status profile and is one of the most used in the assessment of clinical outcomes. However, its usage as measure tool for quality of life has widened. It is applicable both to patients and to general population. Its reliability and validity have been tested in different populations and countries. It detects both positive and negative health status. It was developed from a battery of questionnaires including forty items related to health. It covers eight dimensions of health status. Its contents is focused on functional status and emotional well-being.

Satisfaction for Life Domains Scale (SLDS) ³⁹

This questionnaire was developed for assessing the impact on quality of life. It consists of 15 items covering several aspects such as the satisfaction with accommodation, meals, neighbourhood, leisure and relationships with family and other people.

6.- Instruments for measuring POWER (EMPOWERMENT) and SELF-EFFICACY

The Power as Knowing Participation in Change Tool (version II) (PKPCT II).^{37,41}

Semantic differential test of 52 items, that measures the individual's ability for knowing participation in change. It contains four dimensions, each of them made up by 12 pairs of bipolar adjectives that measure the four concepts of "awareness", "choices", "freedom to act intentionally", and "involvement in creating change." A bipolar pair appears twice per each concept, representing re-test assessment items. Each scale of PKPCT has a value from 1 to 7, from less to more power, 4 representing a neutral answer. The range of total scores of the tool is from 52 to 364, where the higher scores mean more power. The instructions of the PKPCT were evaluated, for increasing clarity, and a new set of instructions was developed⁴³. The stability coefficient in re-test items varied from 0.57 to 0.90. The scales' construct validity was supported again by a factorial analysis in the national validation study (N = 625)⁴⁴. Barrett reported factor loads and validation coefficients from 0.56 to 0.70 for the validation study. In both studies, one of the factors arose with a value higher than 1,0, which represents 43% of variance in the pilot study and 48% of variance in the validation study. The data evaluation for the PKPCT, Version II indicates a high internal homogeneity. Cronbach's alfa coefficients reported for the total of items of the PKPCT Version II were of 0.94^{45,46}, 0.95⁴⁷, 0.96⁴⁸ and 0.97^{49,50}.

Self-Efficacy Scale (SES)³⁹

This scale measures self-efficacy perception for the successful management of pain and other associated symptoms. The patient answers every item through a 10 points graph of a scale ranging from 10 (very uncertain) to 100 (very certain).

VAS version of the Self- Control Schedule (SCS)³⁹

It assesses the trend to use each cognitive concept, problem resolution and behaviour skills in stress circumstances. It is made up of 36 items. It uses an analogue visual scale for its evaluation.

Inventory of Adult Role Behaviour (IARB)³⁹

The IARB uses a visual analogue scale for measuring the scope of people's instrumental participation in the activities related to the family, leisure and recreational, social activities, work and self-care, and functions such as the use of resources for being healthy, paying attention to their body's status, trying to eat well and making the appropriate exercise, for instance. The instrument has been used with several chronic diseases groups such as arthritis and its reliability and validity have been proved.

Results

Description of the studies and interventions

Sensorial stimulation

The Snoezelen's technique is based on multi-sensorial stimulation for sharpening the primary senses of view, hearing, touch, taste and smell, through the use of illumination effects, tactile surfaces, meditative music and relaxant essential oils perfume.

Schofield PA, 1998 A³³

Schofield PA, 1998 B³⁴

Material and methods: randomized controlled trial published in two articles, first and second part, that is why the summary of both has been done together.

The first part Schofield et al. 1998³³, describes the methodology of the project of the RCT. The second part Schofield et al. 1998³⁴ presents the results obtained in the study and the discussion about the implications for research and practice.

The objective of the RCT was to compare the use of the Snoezelen's intervention (sensorial stimulation) as a potential strategy for relaxation and distraction, with the traditional relaxation approach used in a Pain Clinic, for chronic pain, irrespective of its origin. The intervention was applied at three levels, from low to higher intensity.

The sample was made up by 98 patients who were referred to the nurse of the Pain Clinic by the medical specialist, when considered appropriate for being part of the study. Finally only 73 met the inclusion criteria (adult patients with chronic pain, as defined by the "International Association for the Study of Pain"), with medication stability and would not be eligible for any other way of pain management during the study period. The 73 patients were randomized in two groups: intervention group (Snoezelen) (n=43) and control group (relaxation techniques based on Bernstein and Borkovec-1975) (n=30). Both groups received two 3-hours-per-day sessions on the correspondent techniques during 3 months. The measurement was carried out before the intervention, one month and three months after the end of the study. Different aspects were measured: pain intensity and quality, through the Visual Analogue Scale (VAS) and McGill's Pain Questionnaire. The VAS was done with the presence of an assistant of the researcher, in case help was needed. Disability related to the multidimensional nature of chronic pain for psychological and physical aspects was measured through the Sickness Impact Profile (SIP) scale. The cognitive coping and behaviour were examined through the Coping Strategies Questionnaire (CSQ).

The effects on the quality of life (qualitative information) were determined through the observation of patients during the sessions and by using a semi-structured interview, where the patients were encouraged to express their thoughts, sensations and experiences related to the healthcare centre.

Results: (pre-intervention, at one month and at 3 months after the end of the study; not recorded measures =nr) In the experimental group the results showed a significant reduction of: sensorial pain 19-17-17 (p=0.002), pain ratio index 36-28-26 (p=0.002) and disability associated to the psychological 9.6-nr-8.8 (p=0.009), physical 9.6-nr-8.8 (p=0.009) and recreational category 10.0-nr-7.9 (p=0.001), with "a high reduction of the significance in the categories of sleep 8.0-nr-4.0 (p=0.000) and global disease impact 11.9-nr-9.4 (p=0.000)". The control group also showed a significant improvement after the intervention in terms of: the reduction of the disability associated to the quality of sleep 7.8-nr-6.8 (p=0.01), psychological 11.9-nr-10.1 (p=0.05) and global disease impact 11.6-nr-10.6 (p=0.004).

At the end of the study 56% of the control group was discharged without any additional intervention, while 65% of the experimental group was discharged. There were reductions in anxiety, depression and self-efficacy in both groups, although these reductions were not significant.

Authors' conclusions: despite the study's limitations, the obtained results were significant in many aspects and were favourably compared with those obtained in other similar studies. The Snoezelen intervention showed significant differences as a potential strategy for improving recreation or leisure time, the participative process being a potential explanation of success. Some differences were observed in pain values, but they must be carefully considered and further research is needed for providing more evidence. Limitations of the study were the short duration of the sessions and the short-term follow up (3 months compared with 1 year).

Reviewers' conclusions: in addition to the limitations reported by the authors, the randomization of the groups was not sufficiently reported in the study; no follow up of medication use was done and therefore the effect associated to analgesia, and the effect that could have been associated, in a more

selective way, to the intervention, were not well evaluated. It is expected that new trials will enrich the knowledge on the Snoezelen technique and will provide more conclusive evidence on the benefits of the program.

Music Therapy

It is the use of music and/or its musical elements with the aim of developing skills and/or restoring the individual's functions. It is believed that music releases endorphins and changes the levels of catecholamines, facilitating pain relieve and the reduction of blood pressure, cardiac frequency, respiratory frequency, oxygen consumption and the serum levels of lactic acid.

McCaffrey R, 2003³⁶

Material and methods: randomized controlled trial that examined the effectiveness of using music as a nursing intervention for relieving pain caused by osteoarthritis in elderly people. The experimental group was given a cassette tape player and a cassette prepared by the primary investigator on which 20 minutes of relaxation music were recorded. The tape consisted of three musical selections by Mozart: (1) Andantino from Concerto for Flute, Harp, and Orchestra in C, K.299; (2) Overture A Le nozze di Figaro, @K492; and (3) Sonata Symphonie No. 40, first movement. The sample was made up by 66 elderly suffering from chronic pain caused by osteoarthritis, 33 were randomized to the intervention group and 33 to the control group. Randomization was done separately by gender, in order to balance the sample on a gender basis, as the prevalence of osteoarthritis, in the age of the population of study, is double for women than for men. For women, 44 cards were made, 22 of which were marked with a C for the control group, and 22 marked with an E for the experimental group. These were inserted in 44 envelopes which were mixed thoroughly and put in a box. The same procedure was used for men, but in that case 22 cards were used (11 for the control group and 11 for the experimental group).

The intervention involved listening to music, selected by the researcher and considered by participants as 'nice', during 14 days, twenty minutes per day. The control group remained sat in silence during 20 minutes per day. All participants were encouraged to avoid other kind of distractions such as reading or talking on the phone. Data were collected through two sections of the short form of McGill's Pain Questionnaire (SF-MPQ), one part measuring pain and the Visual Analogue Scale (VAS) measuring pain's intensity. Measurements were done on days 1, 7, and 14 of the study. All participants completed this questionnaire.

Results: The results indicated that those who had listened to music had significantly reduced their pain. With regard to the Pain Rating Evaluation Index (based on SF-MPQ) the mean difference (md).between control group and experimental group were, on day 1, md= 45,68 ($p=0.001$), on day 7, md.= 49,65 ($p=0.001$) and on day 14 md= 55,29 ($p=0.001$). Also, with regard to the pain intensity, measured with the Visual Analogue Scale (VAS), the mean difference between control group and experimental group were, on day 1, md=36,42 ($p=0.001$), on day 7, md=40,44 ($p=0.001$) and on day 14, md= 40,53 ($p=0.001$), compared with those sat in silence and not listening to music. An analysis of variance of the duplicated measurements showed a significant reduction in pain in the participants of the intervention group compared to the control group, as measured with the SF-MPQ ($p=0.001$) and the visual analogue of SF-MPQ ($p=0.001$).

Authors' conclusion: they showed that listening to music was an effective nursing intervention for the reduction of chronic pain caused by osteoarthritis in people aged 65 years old or more living in the community.

Reviewers' conclusion: the outcomes were measured during 14 days, this could be increased in future research to find out the effects of this intervention at medium-long term. Regarding the randomization process of the sample, it seems (the authors are not very explicit about this) that the participants in the study were assigned to either the control or the experimental group by choosing a card at random, and not by a reproducible randomization process. There were no losses of participants and the statistics used were adequate for comparable samples. Results show that the experimental group experienced a decrease, both in the perception as well as in the intensity, in pain, throughout the whole period of the study, while the control group maintained relatively the same level of pain.

The study confirmed that listening to music is an effective nursing intervention for the reduction of chronic pain perceived in populations with osteoarthritis that are older than 65 and living in the community.

Siedlecki SL, 2006³⁷

Material and methods: randomized controlled trial evaluating the effect of music as a nursing intervention for coping with articular pain, depression, helplessness feelings and disability, in populations with heterogeneity of pathologies (osteoarthritis, slipped disk, rheumatoid arthritis, fibromyalgia) aged from 21 to 65 years old. The intervention was carried out according to Roger's model of Unitary Human Being⁵¹, (Rogers describes human beings as energy fields, in continuous mutual process and integral with environmental energy fields, and characterized by pattern), and the Principles of Hemodynamics^{52,53}). Power is defined by Barrett⁵² as knowing participation in change, and is characterized by awareness, choices, freedom and involvement in making changes). The research measured the effectiveness of listening to music during one hour per day, on 7 consecutive days. Music was standard in one group (SM) and it was 60-minute relaxing instrumental music tape from a collection of five tapes (piano, jazz, orchestra, harp and synthesizer), or chosen by the patient (PM), compared to the no intervention in the control group (CG).

The initial sample was made up of 64 people recruited during a two year period. There were 4 withdrawals (6%), which resulted in a final sample of 60 participants, distributed in three groups (the usual medical treatment was maintained in the three groups). The randomization process to assign participants to the different groups of the study was done using a computer program (Min-8). Twenty-two of the patients were included in a group who listened to standard music proposed by the researcher (SM), eighteen of them listened to music chosen by themselves (PM) and the other 20 of the control group did not undergo any intervention (CG), but were encouraged to remain sit and do nothing while the others listened to music.

Measurements were done pre and post intervention: Pain was measured with the SF-MPQ and the VAS, depression with the Depression Scale of the Epidemiology Studies Centre (CES-D); disability with the PDI and the capacity of promoting change was measured with PKPCT II.

Results: pre and post intervention. SF-MPQ intervention group 24.4-19.61, control group 22.10-22.50 ($p= 0.002$). VAS, intervention group 6.43-5.45, control group 6.69-7.07 ($p= 0.001$). CES-D, intervention group 24.67-19.11, control group 27.05-27.85 8 ($p< 0.0001$). PDI, intervention group 38.56-37.06, control group 37.95-40.85 ($p< 0.024$). PKPCT II, intervention group 273.50- 285.89, control group 243.35-236.60 ($p< 0.025$).

Authors' conclusion: music was a safe and cheap nursing intervention, easy to use by nurses as a complimentary application to pharmacological treatments, in adult people with chronic pain, helping to reduce pain, depression and disability and increasing capacity (empowerment), although further studies are needed for a categorical statement.

Reviewers' conclusion: music shows to be effective for relieving chronic pain, which may mean a help for pharmacological treatments in adults with articular chronic pain caused by different pathologies. Besides, it improves: depression, disability and capacity (empowerment). No significant differences were found between when the music was chosen by the patient or by the researcher. The withdrawal of 4 persons was reported in the study, although the authors did not explain the reasons for the withdrawal nor did they include them in the results. Although the sample was not very large, researchers compensated this limitation with adequate statistical analysis for all the variables analysed. Measurement scales were validated and widely used for measuring each of the variables considered in the study. For all these reasons, there is good evidence to suggest music is an effective nursing intervention in adult people with chronic pain, helping to reduce pain, depression and disability, and increasing capacity (empowerment).

Cognitive-Behavioural Programme

Cognitive therapy or cognitive-behavioural therapy is a psychotherapeutic intervention focused on the cognitive restructuring, the promotion of a collaborative therapeutic alliance and behavioural and emotional methods associated through a structured framework. Its work hypothesis is that thought patterns, called cognitive distortions, have adverse effects on the emotions and behaviour and, therefore, its restructuring, through psycho-educational interventions and continuous practice, can improve the status of the patient.

Becker N, 2000³⁸

Material and methods: this study investigated the effect of a cognitive-behavioural programme in patients of the external consultations of a "Multidisciplinary Pain Treatment Centre, that necessarily includes a nurse in the work group" (Group MPT), compared to patients in treatment with their general practitioner, after having been initially assessed by a pain specialist (group GP), and with a control group (CG) made up by patients that had been waiting for 6 months for the specialised treatment.

All the patients referred from their primary care centre to the Pain Centre were considered for eligibility, n=189 patients. The patients met the following inclusion criteria: older than 18 years old, non malignant chronic pain, non consumption of illegal drugs, non psychiatric diagnosis. 63 were assigned randomly to each one of the three groups. From the 189 initial participants, 22 were excluded for not having completed the questionnaires and 33 were excluded or withdrew after the first consultation and before 6 months (25 did not returned the questionnaire completed, 5 were excluded for ethical reasons and were returned to the MPT Centre, and 2 were excluded because of manic-depressive disorders. They were distributed as follows: Intervention group =49, General practitioner group =42, Control group =43. The intervention group received the ambulatory treatment at the Multidisciplinary Pain Centre. No significant differences were found between the demographic characteristics of the losses and the rest of the sample remaining in the study.

The treatment program was carried out individually, when considered necessary and after an initial multidisciplinary evaluation. The intervention was mainly cognitive-behavioural, and included the following components: (1) Education on the physiology and psychology of pain; (2) Teaching of pain management strategies (for instance, training in relaxation); (3) Analgesic treatment; (4) Socio-economic and advisory treatment and (5) Physiotherapy.

Physiotherapy was mainly focused in education programs, exercise and biomechanics teaching. The staff included anaesthesiologists, psychologists, physiotherapists, nurses and a social worker. Throughout the treatment period all the patients where regularly examined by pain specialists. Patients received advice as phone consultations by the nurses from the Pain Treatment Centre.

In the group treated by the general practitioner the intervention consisted of just one consultation, where the pain specialist assessed the patient together with the general practitioner in his office. The pain specialist took a clinical history and a pain analysis. A treatment plan was established by both the pain specialist and the general practitioner. The control group did not receive any intervention, other than continuing with already prescribed medication.

Patients completed evaluation questionnaires on four subjects. The outcomes were measured at the beginning, at three months and at six months. 1- Pain intensity was measured through a Visual Analogue Scale (VAS) and a Likert scale of 5 points (1= No pain, 2= Light pain, 3= Moderate pain, 4= Severe pain, and 5= Unbearable pain). 2- Quality of life (HRQL) was assessed using the (SF-36), the Psychological General Well-Being Scale (PGWB), and the Hospital Anxiety and Depression Scale (HAD), which, despite being a diagnostic instrument, was used as a quality of life measure. 3- Quality of sleep was subjectively identified as good, fair or poor. 4- For the use of drugs, analgesia types, daily doses, administration ways and timing aspects of drug intake during last week were recorded.

In the intervention group, the results show a statistically significant reduction of pain intensity from the basal measure at 3 and 6 months, both in the Likert scale ($p < 0.001$) and VAS scale (67-52-52 points respectively, within the range of 0 to 100, $p < 0.05$); an improvement in psychological well-being (PGWB, 51-56-62 points, respectively, within the range of 0 to 100, $p < 0.001$); quality of sleep (2.1-1.9-1.9 points respectively, within the range of 1 to 3, $p < 0.05$) and physical functioning subscale (SF-36-Physical Functioning, 48-51-52 points respectively, within the range of 0 to 100 SF-36-PF, $p < 0.05$). No improvements were observed in the group treated by the general practitioner and the chronic pain specialist. In the control group a statistically significant worsening was observed ($p < 0.05$) in the scores of PGWB (58-54-51), HAD-ANX (8.3 -9.1 -10), and HAD-DEP (4.5 -5.8 -6.4); and in 5 of the 8 subscales of the SF-36 ($p \leq 0.05$). The reduction in pain intensity and the improvement in quality of life (HRQL) obtained in patients treated in the Pain Centre was not accompanied by a reduction in the use of opiates although, at 6 months, most of the patients treated in the Pain Centre, had their opiates treatment stabilised using only prolonged-action opiates.

Authors' conclusion: the study results showed that patients treated in a cognitive-behavioural program (multidisciplinary) compared to those treated by the general practitioner and the pain specialist, as well as those of the control group differed significantly in the reduction of pain intensity and improvement of quality of life. Nevertheless, this reduction on the pain intensity of the patients treated in the Pain treatment Centre, was not accompanied by a reduction in the total use of opiates, despite the fact that its short-action consumption at demand did decrease, and the prolonged-action consumption increased. The simple establishment of a pain diagnosis and a pain management plan by a pain specialist was not enough for allowing improvements in the management of the general practitioner of patients with chronic pain. A multidisciplinary team intervention, within a cognitive-behavioural program helped to reduce chronic pain and improved quality of life.

Reviewers' conclusion: the treatment using a nursing approach in a multidisciplinary team was significantly better than the traditional treatment or the one with a general practitioner and pain specialist, specially concerning pain intensity, quality of life and quality of sleep, therefore the effectiveness of this intervention is confirmed, although the benefits of the treatment could not be attributed to the nursing intervention alone. The limitations of the study were mainly focused in the great number of withdrawals (55) and the short duration of the study period (6 months). Researchers reported different causes of withdrawal: maniac-depressive disorders, not answering questionnaires, ethical reasons and not accepting the informed consent. The study would be strengthened with

research measuring more exclusively nursing interventions within the multidisciplinary team and in population with a lower rate of withdrawal.

Psycho-education programme

Psycho-education refers to the education or information offered to patients with the aim of understanding and being able to manage their disease. It provides a strengthening of the patient's strengths, resources and skills for coping with the disease, and contributes to his own health and well-being. The theory is that a better knowledge of the disease will make it easier for the patient to live with their condition.

LeFort SM, 1998³⁹

Material and methods: Randomized Controlled Trials that examined the effectiveness of a Chronic Pain Self-Management Programme (CPSMP), based on the theoretical framework of Braden's Self-Help Model, as support to patients with osteoarticular pain with unknown cause. According to this model "a learned response to chronic illness indicates how a repertoire of enabling factors that enhance learning might mediate responses to the experience of chronicity" It is a theoretical explanation that aims to account for the process of change. There are six variables: perceived severity of illness, dependency, uncertainty, enabling skill, self-help, and life quality. The variables measured in this trial, were guided by Braden's Self-Help Model of Learned Response to Chronic Illness Experience and are conceptualized as antecedent variables (perceived severity of illness, dependency, uncertainty), mediating variables (enabling skill), and outcome variables (self-help activities and life satisfaction).

The sample was comprised of 52 persons in the intervention group and 50 in the control group. The intervention was adding a CPSMP, designed for maximizing the discussion and problem resolving group, promoting the participation and experimentation with autonomy of different management techniques and facilitating the support between the members, to the standard protocol. It was performed during 2h per week during 6 weeks. Each of the participants received a 150-pages-workbook and a relaxation cassette for the CPSMP, as well as several booklets on chronic pain, nutrition and walking. The control group received the standard protocol: pharmacological treatment and adjuvant therapy. The study lasted 18 months.

Pre and post treatment measurements were carried out (6 weeks after starting the treatment). The measurement tools used were: McGill's Scale (SF-MPQ) for the quality of pain; Beck's Depression Inventory (SF-BDI) for depression; the Survey on Pain Attitudes (SOPA-D) for disability; just one question for pain severity: "How serious is the problem of chronic pain in your life?", answered in a scale from 1 to 100 mm (VAS); one question was also used for dependence, "As a result of your chronic pain, are you dependant or need to stand up in others in your daily life?", answered in a scale from 1 to 100 mm (VAS); the Mishel Uncertainty in Illness Scale (MUIS-C) for incertitude; the Self-Efficacy Scale (SES) for skills; the VAS version of the Self-Control Schedule (SCS) for resources; the Inventory of Adult Role Behaviour for self-help; the Satisfaction for Life Domains Scale for satisfaction with life; and finally, the SF-36 for quality of life related to health.

Results: (pre and post intervention). Pain Severity-VAS, intervention group (IG) 72.67- 60.98, control group (CG) 73.02 - 71.22 ($p < 0.002$). Self-efficacy- SES, IG 49.52-59.66, CG 49.00 - 46.94 ($p < 0.0001$). Initiative- SCS, IG 64.48- 67.77, CG 64.81- 62.52 ($p < 0.0001$). Role behaviour- IARB, IG 55.32 - 60.41, CG 52.76 - 51.22 ($p < 0.0001$). Satisfaction with life- SLDS, IG 68.85 -76.19, CG 67.16 - 64.28 ($p < 0.0001$). Concerning quality of life related to health, measured with the SF-36, IG 45.35- 48.69, CG 48.93 - 48.86 ($p = 0.323$), obtained significant improvements in some items of the

questionnaire in the intervention group: physical role ($p < 0.001$), body pain ($p < 0.002$) and vitality ($p < 0.0001$).

Authors' conclusions: the effectiveness of the Chronic Pain Self-Management Program (CPSMP) was verified at six weeks from the intervention and should be considered as an intervention complementary to traditional therapy. It is unknown if the effects of the intervention persist. Future studies should include this follow up and examine any possible cost savings both for the individual and for the health system.

Reviewers' conclusion: the study measured multiple aspects related to pain with different scales, all of them previously validated with good inter-item correlations (r not less than 0.7). The study population very heterogeneous in its origin (recruited through different sources: waiting list, and professionals). Randomization of the sample and the causes of patients' withdrawal (lack of interest and transport problems) were described in a very precise manner. There is good evidence to support the effectiveness of a Chronic Pain Self-Management Program (CPSMP).

Physical Exercise Programme

"Physical exercise" is defined as the physical activity presenting a specific biomechanical structure and directed to the achievement of an objective that can be recreational, of health or sportive. It must at least fulfil the programme, intensity and volume requirements. It is believed to produce, among other benefits, the improvement and strengthening of the osteomuscular system, contributing to the increase of the quality of life and independence degree, specially in elderly people.

Simmons SF, 2002⁴⁰

Material and methods: Randomized Controlled Trial that examined the effect of exercise on musculoskeletal chronic pain in persons living in Nursing Houses (NH), with urinary incontinence, and not wearing an urinary catheter.

Of the total of 194 residents of a NH in California, 73 met the inclusion criteria and gave written consent. 3 withdrew and the remaining 70 were randomized, 35 to the control group and 35 to the intervention group. The intervention involved 4 episodes of care per day, during 5 days a week, administered by the research team that includes a nurse in the work group. Two hours passed between care episodes. Incontinence care was provided during each of them, as well as exercises for improving mobility. The residents were encouraged to use the toilet, or the diaper was changed if they were wet, either standing or on the wheelchair. On the other hand, the patient was made stand up and sit, up to 8 times, with the minimum level of help from the staff.

Endurance to physical exercise was assessed through a standardised protocol. Pain was assessed through two measurement tools: 1) 13-items Geriatric Pain Measure Modified (GPM-M) and 2) Simple count of the number of verbal expressions of pain and non-verbal pain behaviours, which were operationally defined based on the published literature and on pain assessment scales established by residents during 8 standardized physical performance assessments over 2 days. Specifically, the following pain behaviours were included in the physical performance assessment: facial grimacing or frowning, negative vocalizations such as moaning sighing or laboured breathing, and tense body language, including guarded movement, bracing or rubbing.

The participants of the intervention and control group obtained an initial average score of 4.2 (\pm 3.8) and 3.4 (\pm 2.9) respectively, out of the possible total of the GPM-M's 13 items, the range of the score being from 0 to 13, where 0 represents no pain and 13 the maximum level of pain. At 32 weeks, there was a slight increase in the score obtained in the GPM-M by the intervention group 4.8 (\pm 3.8) and a slight decrease in the score obtained in the GPM-M by the control group 2.6 (\pm 3.1). These changes

in pain, as measured by the GPM-M, were not statistically significant. The participants of the intervention group expressed an average of 0.12 (\pm 0.45) pain reports per each mobility meter, with an average of 3.8 (\pm 7.4) informed by the participants of the trial (range from 0 to 32, mode = 0), at the beginning. In comparison, the participants of the control group expressed an average of 0.05 (\pm 0.11) reports of pain per mobility meter at the beginning, with an average of 7.9 (\pm 17.1) reported per participant and per trials (range from 0 to 69, mode = 0). The differences between the two groups before the intervention were not statistically significant. Similar results were obtained after the intervention.

There were significant differences between the intervention group (IG) and the control group (CG) regarding the measurement of physical functioning at 32 weeks, as measured by the maximum number of times able to stand up and sit down within 30 sec., pretest-posttest, IG 6.2 – 7; CG 6.3 – 5.4; $p < 0.05$.

Authors' conclusion: exercise improved physical function but it was not effective for pain management among residents with incontinence, it even increased pain symptoms, thus it is suggested to use preventive analgesia or to modify exercise techniques for this fragile patient population. The limitations of this study were the duration of the intervention and the type of pain, as this was not analysed in the study, being a variable that may affect widely the results.

Reviewers' conclusions: the sample size was small and not all the participants completed all the intervention sessions. Of 51 participants, only 33 completed the GPM-M, not knowing if those who answered the questionnaires were the same who did the exercises, while the evaluations of physical endurance were 47, which could influence the fact that the results are significant for improving physical endurance but not for pain.

The same intervention should be carried out in a longer period of time and it should be checked if any change occurred in the results.

The participants included presented with musculoskeletal pain, non specifying what kind of pain. This variable may cause confusion in the results because it does not specify the localisation of pain, as the repercussion, in this study, of pain in an upper limb is not the same as that of a lower limb. This could be controlled by making subgroups of the sample for each type of pain, but the sample size would need to be substantially bigger.

Another possible confounding factor may be the analgesic effect of the participants' pharmacological treatments. No follow was done on the medication taken by each of participants.

Magnetic Field Therapy

Magnetic Field Therapy is a non invasive therapy that uses the magnetic energy produced by the movement of electrical and electronic load material. It defines Magnetic Field as the space surrounding a magnet and considers that every human being is like a magnet, as proved by diagnosis tests such as images magnetic resonance (MRI).

Kim TS, 2001⁴¹

Materials and methods: double blind randomized controlled trial for measuring the effectiveness of the magnetic field therapy in persons with primary chronic headache. It was included within the framework of the Roger's model of Unitary Human Being. This model conceives humans as unitary beings constantly interacting with their environment and explains the way the fields of energy behave following a pattern, and how these patterns evolve innovatively in the energetic field of humans and in that of the environment. This model is based on the concept of homeodynamics, which uses the

concepts of resonance (intensity of the change), helicity (evolution) and integrity (global) within a continuous change. This study suggest that the potential of magnetic fields, through the movement inherent to magnetic energy, facilitates the change towards health through the process of persons and their environments.

Twenty-six patients were recruited from specialist consultations and the general population, meeting the following inclusion criteria: being older than 18 years of age with primary chronic headache, not being included in another formal treatment program for headache during the period of the study, not using opiates as analgesic during the previous year and during the study, not having a pacemaker, not using a defibrillator or any metal prosthesis, not being pregnant or having plans to get pregnant during the secondary studies, and able to read and speak fluent English.

The participants were randomized by the director of the project, using a randomized numbers table for distributing the sample in 3 groups: magnet group, placebo group and the standard treatment group.

Nineteen persons finished the study, 6 in the magnet group, 8 in the placebo group and 5 in the standard treatment group.

The group assignment was blind to the patients and the researcher during the study. The director of the project gave instructions to the participants on the adequate use of the permanent head magnet strips used for the external application of magnetic fields. The strips contained two ceramic magnetic discs with 3950 gauss of interior strength (the gauss is the unit of magnetic field of the centimetre-gram-second system (CGS), and it is a magnetic power unit), 1.5 by 3/8 inches thick and a weight of ¼ pounds, placed in the bitemporal area, with the negative pole in contact with the head of the individual. Randomized individuals, either to the magnet or the placebo group, wore the strip during 30 minutes per day during four weeks, at a regular time. The third group continued with their usual non narcotic analgesics. Data collection was carried out every two weeks, during the 8 weeks of the study, in a total of 5 measurements: 2 before, 2 during and 1 after the intervention period. The study measured: the intensity of pain with the Visual Analogue Scale (VAS) and the empowerment using the Power as Knowing Participation in Change Tool (PKPCT II). The data showed a statistically significant decrease in pain duration (ANOVA [F(4,64) = 5.65, p=0.001]) in the three groups, with no significant differences between them (ANOVA [F(2,16) = 1.92, p=0.179]).

In addition, the amount of analgesic (non opiate) used for headaches was reduced in 6.7% for the total of the sample at the end of the study. The change in the empowerment was not statistically significant between the three groups (ANOVA [F(4,64) = 1.49, p=0.214]).

Authors' conclusions Through the unitary nature of human and environmental field patterning process, nurses can facilitate clients to mobilize their potential for well-being.

It is recommended to repeat the study with two groups (magnet and placebo) and with a bigger sample size in future research.

Reviewers' conclusions: the data obtained in the study showed that the magnetic field therapy can relieve headaches, but they did not establish effectiveness as compared to other therapies. The sample size and the time duration of the study could have influenced the ability to detect differences in the effects that that could have been produced. There was no analysis of the participants lost from the study. There is agreement with the authors in that it would be interesting to repeat the study with two groups (magnet and placebo) and with a bigger sample size in future research.

Guided Imagery

Guided Imagery is a relaxation technique based on the visualization of pleasant images and the awareness of the own body.

Mannix LK, 1999⁴²

Material and methods: quasi-Randomized Controlled Trial, where Guided Imagery (GI) was used as a nursing intervention contributory to the conventional pharmacological treatment, for relieving tension chronic headache, with or without migraine. The sample used was of 129 persons in the intervention group and of 131 in the control group. Both groups were comparable at the beginning of the study and received the conventional therapy. Conventional therapy: individualised therapy could include pharmacological treatments, physical therapy, biofeedback, and dietary instruction as determined by the attending physician and patient. Besides, participants from the intervention group were provided with an audio cassette titled: "Fitting out of Mind /Body through guided images", of 20 minutes duration and containing a soft music, aimed to lead the patient to a relaxation status through the visualization of pleasant images. The patients of the intervention group listened the cassette once a day during 29 days. The results were measured with the Headache Disability Inventory (HDI), for assessing disability; and the questionnaire Short Form (SF-36) for quality of life, which patients completed during their first visit to a headache specialist centre and, again, 1 month after the visit, just at the end of the intervention. They were also asked on the severity and frequency of the headache, specifically: "Since your last visit, your headaches are much worse, a little worse, the same, a little better, or much better?".

Results: the patients of the intervention group (IG) improved the pain frequency, severity of the headache, global patient assessment, quality of life and disability caused by the headache. The headaches reported by patients in the intervention group were significantly lower ($p=0.004$) compared to the control. The patients of the intervention group had a significant improvement compared to the control group in three domains of the SF-36: body pain ($p<0.001$), vitality ($p<0.001$) and mental health ($p<0.001$).

Authors' conclusions: guided imagery is an effective therapy for chronic tension headache management, as an addition to conventional pharmacological treatment.

Reviewers' conclusions: the sample size is the biggest of all the studies analysed in the systematic review, but it lacks randomization in the sample assignation. Concerning the measurement of the Headache Disability Inventory (HDI) the authors do not give enough information on the fact that the improvement is significant compared to the control concerning emotional, physical and total disability. Despite all this, GI showed effectiveness with significant benefits for chronic headache, and it is also a low cost (considering that the materials used are a tape and a tape-player, which are not costly) and very accessible intervention, as the patient can carry it out at home, but it is subject to some limits: on the one hand the patients' motivation, and on the other hand the required frequency for maintaining the intervention's effectiveness is unknown.

Discussion

This systematic review found 8 clinical trials of quality assessing the effectiveness of 7 non pharmacological interventions carried out by nurses for the management of chronic pain in adults.

The results of these studies indicated that nursing interventions with cognitive-behavioural programmes and sensorial stimulation programmes reduced perceived chronic pain. Interventions

based on psycho-education and music therapy programs reduced osteoarticular pain. Magnet therapy and guided imagery were interventions able to relieve chronic headache. An intervention with a physical exercise program in incontinent elderly increased mobility but did not improve pain, and it could even worsen it.

Six studies showed an improvement in the intervention group (multisensorial stimulation^{33,34} music therapy^{36,37}, cognitive-behavioural programme³⁸, psycho-education programme³⁹ and guided imagery⁴²), compared to the control group in the outcome of pain perception. Simmons SF's study⁴⁰ reported that short exercises for increasing endurance in incontinent elderly with musculoskeletal pain improved mobility but did not reduce pain and it could even worsen it, and in Kim TS's study⁴¹ there was a reduction of headache in the three groups, with no significant differences between them.

Other outcome measures in the 8 clinical trials selected showed an improvement in quality of life^{33,34,42}, depression³⁷, disability³⁷, empowerment³⁷ and physical function³⁸.

The studies suffer from small sample size that tends to underestimate the treatment effectiveness, short intervention duration and lack of long term follow up.

The inclusion criteria of the intervention not being carried out by a nurse or the not reporting of the professional carrying it out has limited the number of studies included, reducing the analysis of interventions that can be carried out by nurses and be effective. 45 studies were rejected because the intervention was not carried out by a nursing professional and 6 studies were rejected because the professional carrying out the intervention was not specified. Many of these interventions, such as exercise programs (Ettinger WH⁵⁴, Santen MB⁵⁵, Chiu TTW⁵⁶, Altan L⁵⁷, Mannerkorpi K⁵⁸, Cedraschi C⁵⁹), cognitive-behavioural programme (Cook AJ⁶⁰, Evers AWN⁶¹, Dawn M⁶²), acupuncture (Irnich D⁶³, Irnich D⁶⁴, Yeung CKN⁶⁵) and multidisciplinary intervention (Lemstra M⁶⁶), can be carried out by trained nursing professionals.

Another limitation has been to limit the search of published articles to the English and Spanish languages. Other therapies for the treatment of pain, such as acupuncture, aromatherapy, reiki, reflexology, etc, are widely used and studied in Asian countries, whilst their use in occidental countries is more recent. Including Chinese, Thai or Japanese as languages, would have probably increased the number of articles to be selected according to the inclusion criteria.

The studies analysed did not include an economic review, therefore, they did not determine if the benefits of the interventions justify its application costs.

Most of the studies analysed only report on the value of p, thus in a lot of them is difficult to appraise the clinical relevance of the effects found.

As the meta-analysis was not possible (the trials were heterogeneous in the interventions, the characteristics of the populations, intervention duration and the instruments and outcomes measures), a pooled estimate of effects could not be obtained.

The search of publications subsequent to the limit date of the review's bibliographic search resulted in 4 studies that met the inclusion criteria, and the interventions of which dealt with massage (Seers K⁶⁷), Alexander technique (Little P⁶⁸), wool fibres (Kiyak EK⁶⁹), implementation strategies of a Clinical Practice Guidelines (Becker A⁷⁰). The results of these studies are favourable to the intervention. They include, as well as the studies selected for our review, heterogeneity in the samples, intervention duration and instruments and outcome measures.

The systematic review found on the selected interventions in our review, we would like to highlight that Cepeda systematic review⁷¹ (2008) on the use of music for the reduction of pain, both chronic

and acute, states that the intervention was effective, although the magnitude of these effects is small. Hayden J's SR⁷² (2005) on exercise coincides in the fact that there is variability of the outcome measures used and he reports also the possibility of publication bias, although the mentioned SR proves that the individualised exercise programme can improve pain and functional capacity. In Ostelo RWJ's systematic review⁷³ on behavioural therapy no evidence was found about the effectiveness of this therapy compared to other treatments and Eccleston systematic review⁷⁴ states that cognitive-behavioural therapy has some little positive effects on pain, disability and mood. Harlow's systematic review⁷⁵ (2004) on magnetic bracelets (magnetic therapy) concludes that, although pain improved with the use of these bracelets, it was not clear if the effect was due to the magnetism or to a placebo effect.

The Clinical Practice Guidelines (CPG) for management of lower back pain, developed by Osakidetza⁷⁶ and the CPG for patients with knee arthrosis, by the Unidad de Evaluación de Tecnologías Sanitarias de la Comunidad de Madrid⁷⁷, recommend physical exercise with a Grade of Recommendation B (Scottish Intercollegiate Guidelines Network Evidence Grading System). The CPG for the assessment and management of chronic pain, by the Institute For Clinical Systems Improvement²⁰, recommends cognitive-behavioural therapy with a Grade of Recommendation A. (Institute for Clinical Systems Improvement Evidence Grading System).

Conclusions

This review shows that nursing interventions with cognitive-behavioural and sensorial stimulation programs reduce perceived chronic pain. The interventions based on psycho-education programs and music therapy reduce osteoarticular pain. Magnetic therapy and guided imagery are interventions that may relieve chronic headache. In general, the magnitude of the benefits showed by these clinical trials is small and therefore clinical relevance seems uncertain, and more studies with rigorous methods are needed. An intervention with physical exercise program in incontinent elderly increased mobility but did not improve pain, and could even worsen it.

The studies included in this review used small sample size, with a trend to underestimate the effectiveness of the treatment, short duration of the intervention and lack of long term follow up. Despite the methodological limitations of the studies selected for this review, they have been included considering the scarcity of evidence on nurse mediated non-pharmacological management of chronic pain. This will be of help to focus future research and will inform the practice with the best available evidence.

The predominance of studies with results favourable to the intervention may suggest the possibility of a publication bias.

This systematic review aimed to analyse currently available nursing interventions for the management of chronic pain in adults. There were several limitations: to use as exclusion criteria the absence of information about the professional who carried out the intervention or the fact that the intervention was not carried out by a nurse; to limit the language to English and Spanish.

There are also limitations related to the Search, as the deadline was December 2007. The same research strategy was performed from January 2008 to October 2009 to create the discussion and to verify conclusions of this review, but the date of release may pose a limitation.

A meta-analysis could not be conducted because the trials were heterogeneous concerning the interventions analysed, the samples, the duration of the intervention and the instruments and outcomes measures.

As Cleland J⁷⁸ states in his systematic review on the role of exercise in the treatment of lumbar pain, we conclude that, although most of the studies reviewed have shown the effectiveness of the interventions on the improvement of pain, the variations in the studies' methodology makes difficult to speculate which intervention is the most beneficial.

We recommend further primary research due to: the relevance of the problem; the demand of more and better services for pain relief; and the existence of a wide range of non-pharmacological interventions for which there is not yet an established cost-effectiveness, patient safety and an appropriate way of providing them in a healthcare organization environment.

Implications for practice

The studies included in this review indicate that the interventions considered, (with the exception of the short physical exercise programs in incontinent elderly), are effective and may be used in addition to standard pharmacological treatment for the management of chronic pain in adults.

- Listening to music is an effective short term nursing intervention for reducing chronic pain caused by osteoarthritis³⁶ in persons aged 65 or more. (Level of Evidence 2 and suggested Best Practice Information Sheets (BPIS) Grade of Recommendation B).
- Listening to music is a nursing intervention³⁷ that helps in a short term to reduce pain, depression and disability, and to increase capacity (empowerment). This improvement is bigger if the patient chooses the type of music preferred by him compared to standard music. (Level of Evidence 2 and suggested Best Practice Information Sheets (BPIS) Grade of Recommendation B).
- A cognitive-behavioural treatment program³⁸ is a nursing intervention that helps to reduce pain. (Level of Evidence 2 and suggested Best Practice Information Sheets (BPIS) Grade of Recommendation B).
- A psycho-education program³⁹ shows improvements at a short term in the quality and severity of pain, depression, disability, dependence, self-efficacy, participation in activities, role behaviour and satisfaction with life. (Level of Evidence 2 and suggested Best Practice Information Sheets (BPIS) Grade of Recommendation B).
- Sensorial stimulation^{33,34} as nursing intervention reduces pain intensity. (Level of Evidence 2 and suggested Best Practice Information Sheets (BPIS) Grade of Recommendation B).
- Magnetic therapy⁴¹ is useful as nursing intervention for reducing chronic headache. (Level of Evidence 2 and suggested Best Practice Information Sheets (BPIS) Grade of Recommendation B).
- Short exercises for increasing endurance⁴⁰ in incontinent elderly patients with musculoskeletal pain is a nursing intervention that improves mobility but does not reduce pain, and it could even worsen it. (Level of Evidence 2 and suggested Best Practice Information Sheets (BPIS) Grade of Recommendation C).
- Guided imagery⁴² is an effective therapy for the management of tension chronic headache, as contributory to the conventional pharmacological treatment. (Level of Evidence 2 and suggested Best Practice Information Sheets (BPIS) Grade of Recommendation B).

Implications for research

Future systematic reviews should focus on establishing the effectiveness of individual non-pharmacological interventions regarding the management of chronic pain in adults, that can be performed or led by nurses.

For future reviews we do not recommend the inclusion of different interventions for the reduction of chronic pain, due to the great number and variability of intervention, but the development of a review on specific interventions.

The aims of this review did not include economical aspects of these interventions. It would be interesting to have these aspects included in other reviews.

Primary research of quality is needed with medium-long term follow ups, in order to know the required frequency for maintaining the intervention's effectiveness. Bigger sample sizes are needed and watch the possible cost savings both for the individual and for the health system.

The studies would be strengthened with research measuring more exclusively nursing interventions within the multidisciplinary team and in population with a lower rate of withdrawal.

It is expected that new trials will enrich the knowledge on the Snoezelen technique and will provide more conclusive evidence on the benefits of the program.

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Appendix I: Search strategy

Electronic data bases

1. MEDLINE

- # 1 (pain)
- # 2 (Somatosensory Disorders)
- # 3 (Arthralgia)
- # 4 (Fibromyalgia)
- # 5 (Somatoform Disorders)
- # 6 (1 or 2 or 3 or 4 or 5)
- # 7 (Nursing Care)
- # 8 (Primary Nursing Care)
- # 9 (Nursing Process)
- # 10 (Rehabilitation Nursing)
- # 11 (Family Nursing)
- # 12 (Community Health Nursing)
- # 13 (7 or 8 or 9 or 10 or 11 or 12)
- # 14 (6 and 13)
- # 15 (limit 14 to yr="1997 - 2008")
- # 16 (chronic adj2 pain).tw.
- # 17 (arthralgia.tw.)
- # 18 (fibromyalgia.tw.)
- # 19 (6 or 16 or 17 or 18)
- # 20 (nursing.fs.)
- # 21 (nursing.ti.)
- # 22 (13 or 20 or 21)
- # 23 (19 and 22)
- # 24 (limit 23 to yr="1997 - 2008")
- # 25 (Randomized controlled trials as Topic)
- # 26 (Randomized controlled trial)
- # 27 (Random allocation)
- # 28 (Double blind method)
- # 29 (Single blind method)
- # 30 (Clinical trial)

- # 31 (Clinical Trials as Topic)
- # 32 (25 or 26 or 27 or 28 or 29 or 30 or 31)
- # 33 ((clinic\$ adj trial\$1).tw.)
- # 34 ((singl\$ or doubl\$ or treb\$ or tripl\$) adj (blind\$3 or mask\$3).tw.)
- # 35 (Placebos)
- # 36 (Placebo\$.tw.)
- # 37 (Randomly allocated.tw.)
- # 38 ((allocated adj2 random).tw.)
- # 39 (33 or 34 or 35 or 36 or 37 or 38)
- # 40 (32 or 39)
- # 41 (Case report.tw.)
- # 42 (Letter)
- # 43 (Historical article)
- # 44 (Review of reported cases.pt.)
- # 45 (Review, multicase.pt.)
- # 46 (41 or 42 or 43 or 44 or 45)
- # 47 (40 not 46)
- # 48 (24 and 47)

2. CENTRAL COCHRANE

- # 1 (Chronic pain AND nurs*)
- # 2 ((Chronic pain OR headache OR fibromyalgia OR arthralgia) AND (nursing OR nurse)).

3. Cochrane pain

http://www.cochrane.org/reviews/en/topics/85_reviews.html

4. CINAHL

- # 1 (Chronic Pain)
- # 2 (fibromyalgia/ or muscle pain/ or myofascial pain syndromes/ or polymyalgia rheumatica)
- # 3 (Somatosensory Disorders)
- # 4 (Arthralgia)
- # 5 (Somatoform Disorders)
- # 6 (Pain)
- # 7 (Nursing Care)
- # 8 (Primary Nursing)
- # 9 (Nursing Process)
- # 10 (Rehabilitation Nursing)
- # 11 (Family Nursing)
- # 12 (Community Health Nursing)
- # 13 (1 or 2 or 3 or 4 or 5 or 6)
- # 14 (7 or 8 or 9 or 10 or 11 or 12)
- # 15 (13 and 14)
- # 16 (limit 15 to yr="1997 - 2008")
- # 17 ((chronic adj2 pain).tw.)

- # 18 (arthralgia.tw.)
- # 19 (fibromyalgia.tw.)
- # 20 (13 or 17 or 18 or 19)
- # 21 (nursing.ti.)
- # 22 (14 or 21)
- # 23 (20 and 22)
- # 24 (limit 23 to yr="1997 - 2008")
- # 25 (exp clinical trials)
- # 26 (Clinical trial.pt.)
- # 27 ((clinic\$ adj trial\$1).tw.)
- # 28 (((singl\$ or doubl\$ or trebl\$ or tripl\$) adj (blind\$3 or mask\$3)).tw.)
- # 29 (Randomi?ed control\$ trial\$.tw.)
- # 30 (Random assignment)
- # 31 (Random\$ allocat\$.tw.)
- # 32 (Placebo\$.tw.)
- # 33 (Placebos)
- # 34 (Quantitative studies)
- # 35 (Allocat\$ random\$.tw.)
- # 36 (25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35)
- # 37 (24 and 36)

5. CUIDENplus (Nursing of the Index Foundation database)

- #1 (Dolor and enfermera)
- #2 (Dolor and intervenció)

6. EMBASE

- # 1 chronic pain/ or labor pain/ or neck pain/
- # 2 flank pain/ or musculoskeletal chest pain/ or shoulder pain/
- # 3 neuralgia/ or cervicobrachial neuralgia/ or metatarsalgia/ or neuropathic pain/
- # 4 backache/ or low back pain/
- # 5 face pain/ or headache/
- # 6 Postherpetic Neuralgia/
- # 7 Ischialgia/
- # 8 Intractable Pain/
- # 9 Hyperalgesia/
- # 10 Hyperesthesia/
- # 11 Hypesthesia/
- # 12 Paresthesia/
- # 13 Arthralgia/
- # 14 fibromyalgia/
- # 15 Somatoform Disorder/
- # 16 Conversion Disorder/
- # 17 Hypochondriasis/

- # 18 Neurasthenia/
- # 19 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or # 17 or 18
- # 20 nursing care/ or nursing care plan/ or nursing protocol/ or "quality of nursing care"/ or differentiated nursing practice/ or primary nursing/ or progressive patient care/ or team nursing/ or total patient care nursing/
- # 21 (home adj2 nurs*).tw.
- # 22 respite care/
- # 23 nursing process/
- # 24 Rehabilitation Nursing/
- # 25 Family Nursing/
- # 26 Community Health Nursing/
- # 27 Nursing Care.tw.
- # 28 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27
- # 29 19 and 28
- # 30 Nursing.tw.
- # 31 19 and 30
- # 32 29 or 31
- # 33 limit 32 to yr="1997 - 2008"
- # 34 Clinical trial/
- # 35 Randomized controlled trial/
- # 36 Randomization/
- # 37 Single blind procedure/
- # 38 Double blind procedure/
- # 39 Crossover procedure/
- # 40 Placebo/
- # 41 Randomi?ed controlled trial\$.tw.
- # 42 Rct.tw.
- # 43 Random allocation.tw.
- # 44 Randomly allocated.tw.
- # 45 Allocated randomly.tw.
- # 46 (allocated adj2 random).tw.
- # 47 Single blind\$.tw.
- # 48 Double blind\$.tw.
- # 49 ((treble or triple) adj blind\$.tw.
- # 50 Placebo\$.tw.
- # 51 Prospective study/
- # 52 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51
- # 53 Case study/
- # 54 Case report.tw.
- # 55 Abstract report/ or letter/
- # 56 53 or 54 or 55

57 52 not 56

58 33 and 57

7. PsycINFO

#1 ("Pain" OR DE "Aphagia" OR DE "Back Pain" OR DE "Chronic Pain" OR DE "Headache" OR DE "Myofascial Pain" OR DE "Neuralgia" OR DE "Somatoform Pain Disorder" or DE "Headache" OR DE "Migraine Headache" OR DE "Muscle Contraction Headache" or DE "Neuralgia" OR DE "Trigeminal Neuralgia" or DE "Pain Perception" OR DE "Analgesia" OR DE "Pain Thresholds" or DE "Musculoskeletal Disorders" OR DE "Bone Disorders" OR DE "Joint Disorders" OR DE "Muscular Disorders")

2 (Somatosensory Disorders)

3 (arthralgia)

4 (Fibromyalgia)

5 (S4 or S3 or S2 or S1)

6 ("Nursing")

7 (S6 and S5)

8 (nursing)

9 (pain)

10 (S9 or S8)

8. LILACS

"DOLOR" or "DOLOR articular" or "DOLOR cervical" or "DOLOR de costado" or "DOLOR de cuello" or "DOLOR de espalda" or "DOLOR de hombro" or "DOLOR de la region lumbar" or "DOLOR en el miembro fantasma" or "DOLOR intratable" or "trastorno DOLORoso" or "CEFALEA" or "NEURALGIA" or "NEURALGIA ciatica" or "trastornos SOMATOSENSORIALES" or "HIPERALGESIA" or "HIPERESTESIA" or "PARESTESIA" or "ARTRALGIA" or "FIBROMIALGIA" or "trastornos SOMATOFORMES" or "trastornos de CONVERSION" or "HIPOCONDRIAsis" or "NEURASTENIA"[Descriptor de asunto]

enfermer\$ or nurs\$ [Palabras]

9. PSICODOC

1 (Pain and nurs*)

2 (Pain chronic and nurs*)

3 (Dolor and enfermera)

4 (Dolor and intervención)

10. REHABDATA

1 (nurs* care ("chronic pain"))

11. IME

(Dolor OR cefalea OR metatarsalgia OR neuralgia OR ciática OR somatosensorial OR hiperalgesia OR hiperestesia OR parestesia OR artralgia OR firomialgia OR somatoforme OR hipocondria OR neurastenia) AND Enfermer*

12. ACADEMIA SEARCH PREMIER

1 (AB Chronic pain and TX Adult and TX Nursing care)

2 ((AB chronic pain and AB adult) and DE "TREATMENT")

3 ((AB chronic pain and AB adult not AB Pharmacist treatment) and DE "THERAPEUTIC use")

4 ((AB chronic pain and AB adult not TX Pharmacist treatment) and DE "PSYCHOLOGICAL aspects")

5 ((AB chronic pain not children not adolescent) and DE "TREATMENT" and DE "RANDOMIZED controlled trials")

6 ((TI chronic pain and adult not children) and DE "TREATMENT")

13. SCIELO

1 (Chronic AND pain AND intervention)

2 (Chronic AND pain AND nursing)

3 (Chronic AND pain AND care)

14. THE OXFORD PAIN

#1 (chronic and (pain or pained or paining or pains) and (nursing or nurse or nursed or nurser or nurses) and (intervention or interventions))

15. CURRENT CONTENTS

1 (chronic SAME pain)

2 (back SAME pain)

3 (Myofascial SAME pain)

4 (somatoform SAME pain)

5 (muscle SAME pain)

6 (bone SAME pain)

7 (joint SAME pain)

8 (somatosensory SAME pain)

9 (arthralgia)

10 (#10 OR #9 OR #8 OR #7 OR #6 OR #5 OR #4 OR #3 OR #2 OR #1)

11 (nursing)

12 (#12 AND #11)

13 (nurs*)

14 (#14 OR #12)

15 (#15 AND #11)

16. CURRENT CONTROLLED TRIALS

1 (chronic pain and disability)

17. ACP Journal Club: Evidence-Based Medicine for Better Patient Care

1 pain

2 chronic pain

3 "chronic pain"

4 (chronic SAME pain)

BIOMED CENTRAL

1 (pain in all fields)

2 (chronic AND pain)

3 (back AND pain)

- # 4 (myofascial AND pain)
- # 5 (somatoform AND pain)
- # 6 (muscle AND pain)
- # 7 (bone AND pain)
- # 8 (joint AND pain)
- # 9 (somatosensory AND pain)
- # 10 (arthralgia in all fields)
- # 11 (fibromyalgia in all fields)
- # 12 ((pain) OR (chronic AND pain) OR (myofascial AND pain) OR (somatoform AND pain) OR (bone AND pain) OR (joint AND pain) OR (somatosensory AND pain) OR (arthralgia) OR (fibromyalgia))
- # 13 (nursing in all fields)
- # 14 (nurs* in title)
- # 15 (nursing OR nurs*)
- # 16 ((nursing OR nurs*) AND ((pain) OR (chronic AND pain) OR OR (myofascial AND pain) OR (somatoform AND pain) OR (muscle AND pain) OR (bone AND pain) OR (joint AND pain) OR (somatosensory AND pain) OR (arthralgia) OR (fibromyalgia))
- # 17 ((nursing OR nurs*) AND ((pain) OR (chronic AND pain) OR (myofascial AND pain) OR (somatoform AND pain) OR (muscle AND pain) OR (bone AND pain) OR (joint AND pain) OR (somatosensory AND pain) OR (arthralgia) OR (fibromyalgia))
- # 18 (((pain) OR (chronic AND pain) OR OR (myofascial AND pain) OR (somatoform AND pain) OR (muscle AND pain) OR (bone AND pain) OR (joint AND pain) OR (somatosensory AND pain) OR (arthralgia) OR (fibromyalgia)) NOT (pain) (all words) in *all fields*)
- # 19 nurs* in citation+abstract)
- # 20 nurs* in *citation+abstract*, and nursing in *all fields*
- # 21 nurs* in *citation+abstract*, OR nursing in *all fields*
- # 22 (OR (nurs* [TIAB]))
- # 23 (nursing [TW] OR (nurs* [TIAB]))
- # 24 (nursing [TW]) OR (nurs* [TIAB]) OR (nursing [REF]))
- # 25 (chronic AND pain) OR OR (myofascial AND pain) OR (somatoform AND pain) OR (muscle AND pain) OR (bone AND pain) OR (joint AND pain) OR (somatosensory AND pain) OR (arthralgia) OR (fibromyalgia)
- # 26 ((chronic AND pain) OR OR (myofascial AND pain) OR (somatoform AND pain) OR (muscle AND pain) OR (bone AND pain) OR (joint AND pain) OR (somatosensory AND pain) OR (arthralgia) OR (fibromyalgia)) AND ((nursing [TW]) OR (nurs* [TIAB]) OR (nursing [REF]))
- # 27 ((chronic AND pain) OR OR (myofascial AND pain) OR (somatoform AND pain) OR (muscle AND pain) OR (bone AND pain) OR (joint AND pain) OR (somatosensory AND pain) OR (arthralgia) OR (fibromyalgia)) AND ((nursing [TW]) OR (nurs* [TIAB]) OR (nursing [REF]))
- # 28 chronic pain (all words) in *all fields*
- # 29 ("chronic pain")
- # 30 (back pain (exact phrase) in *all fields*)
- # 31 (chronic pain (exact phrase) in *all fields*)
- # 32 (myofascial pain (exact phrase) in *all fields*)
- # 33 (somatoform pain (exact phrase) in *all fields*)

- # 34 (muscle pain (exact phrase) in *all fields*)
- # 35 (bone pain (exact phrase) in *all fields*)
- # 36 (joint pain (exact phrase) in *all fields*)
- # 37 (somatosensory pain (exact phrase) in *all fields*)
- # 38 (somatosensory disorders (exact phrase) in *all fields*)
- # 39 (somatoform disorders (exact phrase) in *all fields*)
- # 40 (("back pain") OR ("chronic pain") OR ("myofascial pain") OR ("somatoform pain") OR ("muscle pain") OR ("bone pain") OR ("joint pain") OR ("somatoform disorders"))
- # 41 (("back pain") OR ("chronic pain") OR ("myofascial pain") OR ("somatoform pain") OR ("muscle pain") OR ("bone pain") OR ("joint pain") OR ("somatoform disorders") OR (arthralgia) OR (fibromyalgia))
- # 42 (("back pain") OR ("chronic pain") OR ("myofascial pain") OR ("somatoform pain") OR ("muscle pain") OR ("bone pain") OR ("joint pain") OR ("somatoform disorders") OR (arthralgia) OR (fibromyalgia)) AND ((nursing [TW]) OR (nurs* [TIAB]) OR (nursing [REF]))
- # 43 (("back pain") OR ("chronic pain") OR ("myofascial pain") OR ("somatoform pain") OR ("muscle pain") OR ("bone pain") OR ("joint pain") OR ("somatoform disorders") OR (arthralgia) OR (fibromyalgia)) AND ((nursing in *all fields*, OR (nurs* in *all fields*, OR (nursing in *all fields*, (all words) in *all fields*, from 1997 to 2008)

18. TRIP DATABASE

- #1 (Chronic pain and nursing intervention)

19. DARE

- # 1 pain.
- # 2 pain and nursing.

20. SUMSearch

- # 1(PAIN AND NURS*)

21. BIOLOGICAL & MEDICAL SCIENCES

- # 1 (pain)
- # 2 (pain chronic)
- # 3 (pain (community))
- # 4 ((pain chronic) (evidence))
- # 5 ((pain chronic) (community))
- # 6 (pain chronic intervention)
- # 7 ((pain chronic intervention)(community))
- # 8 (pain chronic nursing intervention)
- # 9 (pain chronic nursing intervention" (Evidence))
- # 10 (pain chronic nursing intervention" (Community))
- # 11 (pain chronic nursing)
- # 12 ("pain chronic nursing" (Evidence))
- # 13 "pain chronic nursing" (Community)
- # 14 "pain chronic rehabilitation" (Evidence)
- # 15 "pain chronic rehabilitation" (Community))

22. NATIONAL RESEARCH REGISTER (NRR)

1 ((chronic pain) "nursing care")

23. GOOGLE SCHOLAR (ACADEMICS)

1 ("chronic pain" management care nurs* "adult patient" home "Nonpharmacologic treatment", Arthralgia , Fibromyalgia, "Somatosensory Disorders" "Neck Pain" "Low Back Pain" "Back Pain" "Myofascial Pain Syndromes" "Pain Intractable" "Facial Neuralgia" "Temporomandibular Joint Dysfunction Syndrome"

2 (CHRONIC PAIN AND NURS*)

3 (CHRONIC PAIN AND NURS* INTERVENTION)

SEARCH SOURCES FOR UNPUBLISHED OR GREY LITERATURE**1. TESEO**

1 (dolor crónico)

2 (dolor enfermería)

3 (dolor intervención enfermería)

4 (dolor enfermería rehabilitación)

5 (dolor rehabilitación)

2. GATEWAY

1 ((Chronic pain OR headache OR fibromyalgia OR arthralgia) AND (nursing OR nurse) NOT oncology NOT children)

3. SCIRUS

1 (chronic AND pain (disability))

2 (chronic AND pain (disabilities))

3 (chronic AND pain (nurse intervention))

4 (chronic AND pain (nursing interventions))

5 (chronic AND pain (nursing care))

6 (chronic AND pain (psychosocial intervention))

4. WORLD HEALTH ORGANIZATION CURRENT

1 (Pain)

2 (chronic pain)

3 ((chronic pain) AND (nursing))

4 ((chronic pain) AND (nursing care))

5 ((chronic pain and "Community health nursing

6 ((chronic pain management) AND (nursing))

5. PROQUEST DISSERTATIONS AND THESES

1 (("chronic pain" nurs* care) AND PDN(>1/1/1997) AND NOT AT(book review) desde el 11-1997)

6. TROPHI

1 Freetext: PAIN

2 Freetext: NURS*

3 1 AND 2

Appendix II: Characteristics of the excluded studies (Grouped by exclusion reason)

Altan L, Bingol U, Aykae M. Investigation of the effects of pool-based exercise on fibromyalgia syndrome. *Rheumatology International* 2003;24:272–277.

Reason for exclusion: Intervention not carried out by nurses.

Armstrong D, Lavery L, Fleischli J, Gilham K. Is electrical stimulation effective in reducing neuropathic pain in patients with diabetes?. *J Foot Ankle Surg.* 1997;36(4):260-3.

Reason for exclusion: Intervention not carried out by nurses.

Blumenfeld A, Tischio M. Center of excellence for headache care: Group model at Kaiser Permanente. *Headache.* 2003;43:431-440.

Reason for exclusion: It is not a clinical trial.

Bowman K. Commentary on "Loving-kindness meditation for chronic low back pain". *Journal of Holistic Nursing.* 2005;23(3):305-9.

Reason for exclusion: Intervention not carried out by nurses.

Brattberg G. Connective tissue massage in the treatment of fibromyalgia. *European Journal of Pain.*1999;3:235–245.

Reason for exclusion: Intervention not carried out by nurses.

Bronfort G, Assendelft WJJ, Evans R, Haas M, Bouter L. Efficacy of spinal manipulation for chronic headache: A systematic review. *Journal of Manipulative and Physiological Therapeutics.* 2001;24(7):457-466.

Reason for exclusion: It is a Systematic Review.

Bronfort G, Haas M, Moher D, Bouter L, van Tulder M, Triano J, et al. Review conclusions by Ernst and Canter regarding spinal manipulation refuted. *Chiropractic & Osteopathy.*2006;14(1):14.

Reason for exclusion: It is a Systematic Review.

Bruijn CD, de Bie R, Geraets J, Goossens M, Köke A, van den Heuvel W, et al. Evaluation of an education and activation programme to prevent chronic shoulder complaints: design of an RCT. *BMC Family practice.* 2000;6(1):7.

Reason for exclusion: Intervention not carried out by nurses.

Carroll D, Seers K. Relaxation for the relief of chronic pain: a systematic review. *Journal of Advanced Nursing.*1998;27(3):476-487.

Reason for exclusion: It is a Systematic Review.

Carson JW, Keefe FJ, Lynch TR, Carson KM, Goli V, Fras AM, et al. Loving-kindness meditation for chronic low back pain: results from a pilot trial. *Journal of Holistic Nursing.* [Randomized Controlled Trial]. 2005;23(3):287-304.

Reason for exclusion: It is duplicated.

Cleland J, Schulte C, Durall C. The role of therapeutic exercise in treating instability-related lumbar spine pain: A systematic review. *Journal of Back and Musculoskeletal Rehabilitation.*2002;16(2-3):105-115.

Reason for exclusion: It is a Systematic Review.

Collacott EA. Bipolar permanent magnets for the treatment of chronic low back pain: a pilot study. JAMA .2000;283:1322-1325.

Reason for exclusion: Intervention not carried out by nurses.

Cook AJ. Cognitive-behavioral pain management for elderly nursing home residents. The journals of gerontology. Series B, Psychological sciences and social sciences [serial on the Internet]. 1998;(1).

Reason for exclusion: Intervention not carried out by nurses.

Creamer P, Singh BB, Hochberg MC, Berman BM. Sustained improvement produced by nonpharmacologic intervention in fibromyalgia: results of a pilot study. Arthritis Care Res. 2000;13(1):42-50.

Reason for exclusion: The professional carrying out the intervention is not reported.

Creamer P, Singh BB, Hochberg MC, Berman BM. Sustained improvement produced by non-Pharmacologic intervention in fibromyalgia: Results of a Pilot study. Arthritis Care & Research. 2001;13(4):198-204.

Reason for exclusion: Intervention not carried out by nurses.

Critchley DJ, Ratcliffe J, Noonan S, Jones RH, Hurley MV. Effectiveness and cost-effectiveness of three types of physiotherapy used to reduce chronic low back pain disability - A pragmatic randomized trial with economic evaluation. Spine.2007;32(14):1474-81.

Reason for exclusion: Intervention not carried out by nurses.

Cheing GLY, Hui-Chan CWY. Transcutaneous electrical nerve stimulation: non-parallel nociceptive effects on chronic clinical pain and acute experimental pain. Archives of Physical Medicine and Rehabilitation.1998;80(3):305-312.

Reason for exclusion: The professional carrying out the intervention is not reported.

Chiu TTW, Lam T-H, Hedley AJ. A randomized controlled trial on the efficacy of exercise for patients with chronic neck pain. Spine. 2004;30: E1-E7.

Reason for exclusion: Intervention not carried out by nurses.

Dawn M. Ehde, Mark P. Jensen. Feasibility of a Cognitive Restructuring Intervention for Treatment of Chronic Pain in Persons With Disabilities. Rehabilitation Psychology. 2004;49:254-258.

Reason for exclusion: Intervention not carried out by nurses.

Denison B. Touch the pain away: new research on therapeutic touch and persons with fibromyalgia syndrome. Holist Nurs Pract 2004;18(3):142-151.

Reason for exclusion: Intervention not carried out by nurses.

Edwards H, Courtney M, Finlayson K, Lindsay E, Lewis C, Shuter P, et al. Chronic venous leg ulcers: effect of a community nursing intervention on pain and healing. Nursing Standard 2005;19(52):47-54.

Reason for exclusion: It does not measure the effectiveness of a chronic pain intervention.

Ersek M, Turner JA, McCurry SM, Gibbons L, Kraybill BM. Efficacy of a self-management group intervention for elderly persons with chronic pain. Clin J Pain. 2003;19:156-167.

Reason for exclusion: Intervention not carried out by nurses.

Estrada A, Cook C. The value of outcomes measurement in determining a better treatment for fibromyalgia syndrome. Journal of Rehabilitation Outcomes Measurement. 2000;4(3):17-22.

Reason for exclusion: Intervention not carried out by nurses.

- Ettinger WH, Burns R, Messier SP, et al. A randomized trial comparing aerobic exercise and resistance exercise with a health education program in older adults with knee osteoarthritis: the Fitness Arthritis and Seniors Trial (FAST). *JAMA* 1997;227:25-3134.
Reason for exclusion: The intervention is carried out by nurses in the control group, but not in the experimental group.
- Evans R, Bronfort G, Nelson B, Goldsmith CH. Two-year follow-up of a randomized clinical trial of spinal manipulation and two types of exercise for patients with chronic neck pain. *Spine Online*. 2002;27(21):2383-9.
Reason for exclusion: Intervention not carried out by nurses.
- Evers WM, Kraaijmaat FW, vanRiel PLCM, de Jong AJL. Tailored cognitive-behavioral Therapy in early rheumatoid arthritis for patients at risk: A Randomized controlled trial. *Pain*. 2002;100:141-153.
Reason for exclusion: Intervention not carried out by nurses.
- Faucett J. Chronic low back pain: early interventions. *Annual Review of Nursing Research*. [Review]. 1999;17:155-182.
Reason for exclusion: It does not measure the effectiveness of a chronic pain intervention.
- Ghonomie EA, Craig WF, White PF, Ahmed HE, Hamza MA, Gajraj NM, et al. Effect of stimulus frequency on the analgesic response to electrical stimulation in patients with chronic low back pain. *Journal of the American Medical Association*. 1999;281:818-823.
Reason for exclusion: The professional carrying out the intervention is not reported.
- Gordon A. The effects of therapeutic touch on patients with osteoarthritis of the knee. *J Fam Pract*. 1998;47(4):271-277.
Reason for exclusion: Intervention not carried out by nurses.
- Gowans SE, deHueck A, Voss S, Richardson M. A randomized, controlled trial of exercise and education for individuals with fibromyalgia. *Arthritis Care Res*. 1999;12(2):120-128.
Reason for exclusion: The professional carrying out the intervention is not reported.
- Harpole LH, Samsa GP, Jurgelski AE, Shipley JL, Bernstein A, Matchar DB. Headache management program improves outcome for chronic headache. *Headache*. 2003 Jul-Aug;43(7):715-24.
Reason for exclusion: It is not a clinical trial.
- He D, Veiersted KB, Hostmark AT, Medbo JI. Effect of acupuncture treatment on chronic neck and shoulder pain in sedentary female workers: a 6-month and 3-year follow-up study. *Pain*. 2004;109:299-307.
Reason for exclusion: Intervention not carried out by nurses.
- Heinen MM, van Achterberg T, op Reimer WS, van de Kerkhof PC, de Laat E. Venous leg ulcer patients: a review of the literature on lifestyle and pain related interventions. *Journal of Clinical Nursing*. 2004;13(3):355-366.
Reason for exclusion: Intervention not carried out by nurses.
- Hernandez-Reif M, Field T, Krasnegor J, Theakston H. Lower back pain is reduced and range of motion increased after massage therapy. *International Journal of Neuroscience*. 2001;106(3):131-145.
Reason for exclusion: Intervention not carried out by nurses.
- Hsieh RL, Lee WC. One shot percutaneous electrical stimulation vs. one shot transcutaneous electrical nerve stimulation for low back pain: comparison of therapeutic effects. *American*

- Journal of Physical Medicine & Rehabilitation 2002;81(11):838-43.
Reason for exclusion: Intervention not carried out by nurses.
- Kane FMA, Brodie EE, Coull A, Coyne L, Howd A, Milne A, et al. The analgesic effect of odour and music upon dressing change. British Journal of Nursing. [Clinical Trial]. 1999;17:155-82.
Reason for exclusion: Intervention not carried out by nurses.
- Keel PJ, Bodoky C, Gerhard U, Müller W. Comparison of integrated group therapy and group relaxation training for fibromyalgia. Clin J Pain. 1998 Sep;14(3):232-238.
Reason for exclusion: Intervention not carried out by nurses.
- Lee MS, Jang JW, Hang HS, Moon SR. Effects of Qi-therapy on blood pressure, pain and psychological symptoms in the elderly: A randomized controlled pilot trial. International Journal of Neuroscience. 2005;115(7):949-963.
Reason for exclusion: Intervention not carried out by nurses.
- Lee MS, Yang KH, Huh HJ, Kim HW, Ryu H, Lee, HS. & Chung, HT. Qi therapy as an intervention to reduce chronic pain and to enhance mood in elderly subjects: A pilot study. The American journal of Chinese medicine. 2001;29 (2):237-45.
Reason for exclusion: Intervention not carried out by nurses.
- Lemstra M, Olszynski WP. The effectiveness of multidisciplinary rehabilitation in the treatment of fibromyalgia: a randomized controlled trial. Clin J Pain. 2005;21:166-74.
Reason for exclusion: Intervention not carried out by nurses.
- Lemstra M, Stewart B, Olszynski W. Effectiveness of multidisciplinary intervention in the treatment of migraine: A randomized clinical trial. Headache. 2002;42:845-854.
Reason for exclusion: Intervention not carried out by nurses.
- Lewandowski W A. Patterning of pain and power with guided imagery. Nursing Science Quarterly.2004;17(3):233-241.
Reason for exclusion: The intervention is pharmacological.
- Lin EHB et al. Effect of improving depression care on pain and functional outcomes among older adults with arthritis: a randomized controlled trial. Journal of the American Medical Association (JAMA)2003;290(18),2428-2434.
Reason for exclusion: The intervention is pharmacological.
- Linton SJ. Acognitive-behavioral group intervention as prevention for persistent neck a back pain in a non-patient population: a randomized controlled trial. Pain. 2001;90(1-2):83-90.
Reason for exclusion: Intervention not carried out by nurses.
- Mannerkorpi K. Exercise in fibromyalgia. Curr Opin Rheumatol. 2005;17:190-4.
Reason for exclusion: Intervention not carried out by nurses.
- Mannerkorpi K. Pool exercise combined with an education program for patients with fibromyalgia syndrome: A prospective, randomized study. J Rheumatol. 2000;27:2473-81.
Reason for exclusion: Intervention not carried out by nurses.
- McCaffrey R, Freeman E. Effect of music on chronic osteoarthritis pain in older adults. Journal of Advanced Nursing. 2003;44(5):517-524.
Reason for exclusion: It is duplicated.

- Melancon B, Miller LH. Massage Therapy Versus Traditional Therapy for Low Back Pain Relief: implications for holistic nursing practice. *Holist Nurs Pract*. 2005;19(3):116-121.
Reason for exclusion: The intervention is pharmacological.
- Menzies V, Taylor AG, Bourguignon C. Effects of Guided Imagery on Outcomes of Pain, Functional Status, and Self-Efficacy in Persons Diagnosed with Fibromyalgia. *The Journal of Alternative and Complementary Medicine*. 2006;12(1):23-30.
Reason for exclusion: The professional carrying out the intervention is not reported.
- Moore JE. A randomized trial of a cognitive-behavioral program for or enhancing back pain self care in a primary care setting. *Pain*. 2000;88(2):145-53.
Reason for exclusion: Intervention not carried out by nurses.
- Ownby KK. "Effects of Ice Massage on Neuropathic Pain in Persons With AIDS". *JANAC*. 2006;17(5):15-22.
Reason for exclusion: It is not a clinical trial.
- Peck SDE. The effectiveness of Touch for decreasing pain in elders with degenerative arthritis. *J Holistic Nurs*. 1997;15:176-198.
Reason for exclusion: It is not a clinical trial.
- Richards SCM. Prescribed exercise in people with fibromyalgia: parallel group randomized controlled trial. *BMJ*. 2002;325(7357):185-97
Reason for exclusion: Intervention not carried out by nurses.
- Rothrock JF, Parada VA, Sims C, Key K, Walters NS, Zweifler RM. The impact of intensive patient education on clinical outcome in a clinic-based migraine population. *Headache*. 2006 May;46(5):726-731.
Reason for exclusion: The professional carrying out the intervention is not reported.
- Rutledge DN. Effects of Topical Essential Oil on Exercise Volume After a 12-Week Exercise Program for Women with Fibromyalgia: A Pilot Study. *J Altern Complement Med*. 2007;13(10):243
Reason for exclusion: Intervention not carried out by nurses.
- Rydeard R, Leger A, Smith D. Pilates-based therapeutic exercise: Effect on subjects with nonspecific chronic low back pain and functional disability: A randomized controlled trial. *Journal of Orthopaedic & Sports Physical Therapy*. 2006;36(7):472-84.
Reason for exclusion: Intervention not carried out by nurses.
- Schofield P, Davis B. Sensory stimulation (Snoezelen) versus relaxation: a potential strategy for the management of chronic pain. *Disability and rehabilitation* 2000;22(5):675-82.
Reason for exclusion: It is duplicated.
- Schofield P. Evaluating Snoezelen for relaxation within chronic pain management. *British journal of nursing* (Mark Allen Publishing) 2002 Jun 27-Jul 10(11,12):812-21.
Reason for exclusion: It is duplicated.
- Schofield P. The effects of Snoezelen on chronic pain. *Nursing standard* (Royal College of Nursing. Great Britain). 2000;15(1):33-4.
Reason for exclusion: It is duplicated.
- Singh BB, Berman BM, Hadhazy VA, Creamer P. A pilot study of cognitive behavioral therapy in fibromyalgia. *Altern Ther*. 1998;4:67-70.
Reason for exclusion: The complete text of the study was not available.

Solomon DH, et al. Does self-management education benefit all populations with arthritis? A randomized controlled trial in a primary care physician network. *J Rheumatol.* 2002;29:362-368.

Reason for exclusion: The complete text of the study was not available.

Taggart HM, Arslanian CL, Bae S, Singh K. Effects of T'ai Chi exercise on fibromyalgia symptoms and health-related quality of life. *Orthop Nurs.* 2003 Sep-Oct;22(5):353-60.

Reason for exclusion: It is not a clinical trial.

Thielke S.M. Pain limits the effectiveness of collaborative care for depression. *Am J Geriatr Psychiatry.* 2007;15(8):699-707

Reason for exclusion: It does not measure the effectiveness of a chronic pain intervention.

Thomas V. Cognitive behavioural therapy in pain management for sickle cell disease. *Int J Palliat Nurs.* 2000;6(9):434-42.

Reason for exclusion: The complete text of the study was not available.

Usichenko TI, Herget HF. Treatment of chronic pain with millimetre wave therapy (MWT) in patients with diffuse connective tissue diseases: a pilot case series study. *Eur J Pain.* 2003;7(3):289-94.

Reason for exclusion: Intervention not carried out by nurses.

Valbona C, Hazlewood CF, Jurida G. Response of pain to static magnetic fields in postpolio patients: A double-blind pilot study. *Arch Phys Med Rehabil.* 1997;8(11):1200-3.

Reason for exclusion: Intervention not carried out by nurses.

Van Santen M, Bolwijn P, Landewe R et al. High or low intensity aerobic fitness training in fibromyalgia: does it matter? *The Journal of Rheumatology.* 2002;29:582-587.

Reason for exclusion: Intervention not carried out by nurses.

Verstappen FTJ, Van Santen-Hoeufft HHS, Van der Linden S. Effects of a Group Activity Program for Fibromyalgia Patients on Physical Fitness and Well Being. *Journal of Musculoskeletal Pain.* 1997;5(4):17-28.

Reason for exclusion: Intervention not carried out by nurses.

Vickers AJ, et al. Acupuncture of chronic headache disorders in primary care: randomized controlled trial and economic analysis". *Health Technol Assess.* 2004;8(48):1-35.

Reason for exclusion: Intervention not carried out by nurses.

Viljanen M, Malmivaara A, Uitti J, Rinne M, Palmroos P, Laippala P. Effectiveness of dynamic muscle training, relaxation training or ordinary activity for chronic neck pain: a randomized controlled trial. *Br Med J.* 2003;327:475-479.

Reason for exclusion: Intervention not carried out by nurses.

Vitale A. An integrative review of Reiki touch therapy research. *Holistic Nursing Practice* 2007 Jul-Aug;21(4):167-79.

Reason for exclusion: It is a Systematic Review.

Wassem R, Beckham N, Dudley W. Test of a nursing intervention to promote adjustment to fibromyalgia. *Orthop Nurs.* 2001 May-Jun;20(3):33-45.

Reason for exclusion: It is not a clinical trial.

Weintraub MJ, Magnetic bio-stimulation in painful diabetic peripheral neuropathy: A novel intervention. A randomized double- placebo crossover study. *Am J Pain Manag* .1999;9:8 -17.

Reason for exclusion: Intervention not carried out by nurses.

Wells-Federman C, Arnstein P, Caudill M. Nurse-Led Pain Management Program: Effect on Self-Efficacy, Pain Intensity, Pain-Related Disability, and Depressive Symptoms in Chronic Pain Patients. *Pain Management Nursing*. 2002;3(4):131-140.

Reason for exclusion: It is not a clinical trial.

Wind Wardell D, Rintala DH, Zhigang D, Tan G. A Pilot Study of Healing Touch and Progressive Relaxation for Chronic Neuropathic Pain in Persons With Spinal Cord Injury. *J Holist Nurs* 2006;24:231.

Reason for exclusion: It is not a clinical trial.

Yeung CKN, Leung MCP, Chow DHK. The use of electro-acupuncture in conjunction with exercise for the treatment of chronic low-back pain. *The journal of alternative and complementary medicine*. 2003;9(4):479-490.

Reason for exclusion: Intervention not carried out by nurses.

Yip YB, Tse SHM. A randomized controlled trial on the effectiveness of acupressure with aromatic lavender essential oil for sub-acute, non-specific neck pain in Hong Kong. *Complementary Therapies in Clinical Practice*. 2004;13:4-14.

Reason for exclusion: Intervention not carried out by nurses.

Yurtkuran M, Kocagil T. TENS, electro-acupuncture, and ice massage: Comparison of treatment for osteoarthritis of the knee. *American Journal of Acupuncture*. 1999;27(3/4):133-40.

Reason for exclusion: Intervention not carried out by nurses.

Zaslowski CK, Cobbin D, Lidums E, Petocz P. The impact of site specificity and needle manipulation on changes to pain pressure threshold following manual acupuncture: a controlled study. *Complementary Therapies In Medicine*.2003;11(1):11-21.

Reason for exclusion: Intervention not carried out by nurses.

Appendix III: JBI-MAStARI Critical Appraisal Form for Experimental Studies

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 IV: Critical appraisal of excluded studies by low quality (Under seven “YES” out of 10)

Critical appraisal (RCT)

YES / Unclear / NO

Alexandre NMC, De Moraes MAA, Correa Filho HR, Jorge SA. Evaluation of a program to reduce back pain in nursing personnel. <i>Revista de Saude Publica</i> . 2001;35(4):356-61.			
1. Was the assignment to treatment groups truly random?	YES		
2. Were participants blinded to treatment allocation?		Un	
3. Was allocation to treatment groups concealed from the allocator?		Un	
4. Were the outcomes of people who withdrew described and included in the analysis?			NO
5. Were those assessing outcomes blind to the treatment allocation?		Un	
6. Were the control and treatment groups comparable at entry?	YES		
7. Were groups treated identically other than for the named interventions?	YES		
8. Were outcomes measured in the same way for all groups?	YES		
9. Were outcomes measured in a reliable way?		Un	
10. Was appropriate statistical analysis used?	YES		

Critical appraisal (RCT)

YES / Unclear / NO

Ferrell BA, Josephson KD, Pollen AM, et al. A randomized trial of walking versus physical methods for chronic pain management. <i>Aging</i> 1997;9:99-105.			
1. Was the assignment to treatment groups truly random?	YES		
2. Were participants blinded to treatment allocation?			NO
3. Was allocation to treatment groups concealed from the allocator?			NO
4. Were the outcomes of people who withdrew described and included in the analysis?			NO
5. Were those assessing outcomes blind to the treatment allocation?			NO
6. Were the control and treatment groups comparable at entry?	YES		
7. Were groups treated identically other than for the named interventions?		Un	
8. Were outcomes measured in the same way for all groups?	YES		
9. Were outcomes measured in a reliable way?	YES		
10. Was appropriate statistical analysis used?	YES		

Critical appraisal (RCT)

YES / Unclear / NO

Y.B. Yip, Hing-Min Sonny Tse, Ka Kalina Wu. "An experimental study comparing the effects of combined transcutaneous acupoint electrical stimulation and electromagnetic millimeter waves for spinal pain in Hong Kong". <i>Complementary Therapies in Clinical Practice</i> ;2007(13):4-14.			
1. Was the assignment to treatment groups truly random?	YES		
2. Were participants blinded to treatment allocation?			NO
3. Was allocation to treatment groups concealed from the allocator?			NO
4. Were the outcomes of people who withdrew described and included in the analysis?			NO
5. Were those assessing outcomes blind to the treatment allocation?			NO
6. Were the control and treatment groups comparable at entry?		Un	
7. Were groups treated identically other than for the named interventions?	YES		
8. Were outcomes measured in the same way for all groups?	YES		
9. Were outcomes measured in a reliable way?	YES		
10. Was appropriate statistical analysis used?	YES		

Critical appraisal (RCT)

YES / Unclear / NO

Kyung Hee Yang a; Young Hee Kim a; Myeong Soo Lee. "Efficacy Of Qi-Therapy (External Qigong) For Elderly People With Chronic Pain". <i>Intern. J. Neuroscience</i> . 2005;115:949-963.			
1. Was the assignment to treatment groups truly random?	YES		
2. Were participants blinded to treatment allocation?			NO
3. Was allocation to treatment groups concealed from the allocator?			NO
4. Were the outcomes of people who withdrew described and included in the analysis?			NO
5. Were those assessing outcomes blind to the treatment allocation?			NO
6. Were the control and treatment groups comparable at entry?		Un	
7. Were groups treated identically other than for the named interventions?		Un	
8. Were outcomes measured in the same way for all groups?		Un	
9. Were outcomes measured in a reliable way?		Un	
10. Was appropriate statistical analysis used?	YES		

APPENDIX V: Characteristics of the included studies

Abbreviations:

IG: Intervention Group

CG: Control Group

M/F: Male/Female

(*) Level of Evidence and Grade of Recommendation according to the Joanna Briggs Institute classification.

(**) Blind assignment

A	The study had an adequate blind assignment.
B	There were doubts on the adequacy of the assignment.
C	The assignment was not adequately blinded in the study.
D	There was no randomized assignment.

Intervention: Sensorial stimulation

Study	Methods	Participants	Interventions	Results	Notes (*)
Schofield PA, 1998 A ³³ y Schofield PA, 1998 B ³⁴	<u>Design:</u> RCT <u>Blinding method</u> Not reported <u>Blind assignment(**)</u> : B <u>Blind intervention:</u> No <u>Follow up:</u> Not reported <u>Duration of the studies:</u> 3 months.	<u>Pathology:</u> Adult patient with chronic pain <u>Place</u> Sheffield UK <u>Average age:</u> IG: 48 CG: 48.2 <u>Gender</u> IG: M/F: 17/ 26 CG: M/F: 13/17	<u>Intervention Group</u> n=43 Two sensorial stimulation sessions (Snoezelen), of 3 hours each. <u>Control Group:</u> n=30 Two sessions of relaxation training programme based on the Berntein & Borkovec, of 3 hours each.	Measurements were done pre-intervention, at one month and at 3 months after the end of the study (nr* =non reported) <u>Experimental Group:</u> <u>36-28-26 (Pain Rating Index-MPQ) (P<0.002)</u> <u>19-17-17 (Sensory- MPQ) (P=0.002)</u> <u>9.6-nr(*)-8.8 (Physical-SIP) (P=0.009)</u> <u>9.6-nr(*)-8.8 (Psychosocial-SIP) (P=0.009)</u> <u>10.0-nr(*)-7.9 (Recreation-SIP) (P=0.001)</u> <u>8.0-nr(*)-4.0 (Sleep-SIP) (P=0.000)</u> <u>11.9-nr(*)-9.4 (Total SIP) (P=0.000)</u> <u>Control Group:</u> <u>11.9-nr(*)-10.1 (Psychosocial-SIP) (P=0.05)</u> <u>7.8-nr(*)-6.8 (Sleep-SIP) (P=0.01)</u> <u>11.6-nr(*)-10.6 (Total SIP) (P=0.004)</u>	<u>Level of Evidence:</u> 2 suggested Best Practice Information Sheets (BPIS) <u>Grade of Recommendation:</u> B

Intervention: Music therapy

Study	Methods	Participants	Interventions	Results	Notes (*)
McCaffrey R 2003 ³⁶	<p><u>Design:</u> RCT</p> <p><u>Blinding method</u> Envelops with marked cards chosen at random.</p> <p><u>Blind assignment</u> (**): A</p> <p><u>Blind intervention:</u> No</p> <p><u>Follow up</u> Adequate more than 80%</p> <p><u>Duration of the studies</u> 14 days</p>	<p><u>Pathology:</u> Chronic pain caused by osteoporosis</p> <p><u>Place</u> Southwest Florida, USA</p> <p><u>Average age</u> IG: 76.58 (SD 6.00) CG: 75.61 (SD 5.85)</p> <p><u>Gender</u> IG: M/F: 22/11 CG: M/F: 22/11</p>	<p><u>Intervention Group</u> n= 33 Listening to relaxation music during 14 days, 20 minutes per day</p> <p><u>Control Group</u> n= 33 Remain sat and relaxed during 14 days, 20 minutes per day</p>	<p><u>Pain</u> the mean difference (md).between control group and experimental group on days 1, 7 and 14</p> <p>Short Form of McGill's Questionnaire (SF-MPQ) 55,29 - 49,65 -45,68 (p=0.001)</p> <p>Visual Analogue Scale (VAS) 36,42-40,44 -40,53 (p=0.001)</p> <p>All the surveys show significant differences in favour of the intervention group.</p>	<p><u>Level of Evidence:</u> 2</p> <p>suggested Best Practice Information Sheets (BPIS) <u>Grade of Recommendation:</u> B</p>

Study	Methods	Participants	Interventions	Results	Notes (*)
Siedliecki SL 2006 ³⁷	<p><u>Design</u> RCT</p> <p><u>Blinding method</u> Computer Programme Min-8</p> <p><u>Blind assignment</u> (**): A</p> <p><u>Blind intervention:</u> No</p> <p><u>Follow up</u> Adequate, more than 80%</p> <p><u>Duration of the studies</u></p>	<p><u>Pathology</u> Chronic back, neck and joints pain</p> <p><u>Place</u> Northwest Ohio, USA</p> <p><u>Average age</u> IG PM: 50.9 (10.8) IG SM: 47.9 (7.1) CG:50.6 (9.3)</p> <p><u>Gender</u> IG PM: M/F: 4/14 IG SM: M/F: 3/19</p>	<p><u>Intervention Group</u> PM_n=18 Listening to music chosen by the patient, one hour per day, during seven consecutive days, plus standard attention</p> <p><u>Intervention Group</u> SM_n=22 Listening to standard music one hour per day, during seven consecutive days, plus standard attention</p> <p><u>Control Group</u> n=20</p>	<p>Measurements were done pre and post intervention</p> <p><u>Pain</u> Short Form of McGill's Pain Questionnaire (SF-MPQ) Intervention 24.44 - 19.61 Control 22.10 - 22.50 (p=0.002) VAS Intervention 6.43 - 5.45 Control 6.99 - 7.07 (p=0.001)</p> <p><u>Depression</u> Depression Scale CES-D Intervention 24.67 - 19.11 Control 27.05 - 27.85 (p<0.0001)</p> <p><u>Disability</u> Pain Disability Index. PDI</p>	<p><u>Level of Evidence:</u> 2</p> <p>suggested Best Practice Information Sheets (BPIS) <u>Grade of Recommendation:</u> B</p>

	7 days	CG: M/F: 7/13	Standard attention	Intervention 38.56 - 37.00 Control 37.95 - 40.85 (p<0.024) <u>Capacity</u> Power as Knowing Participation in Change Tool (PKPCT II) Intervention 273.50 - 285.89 Control 243.35 - 236.60 (p<0.025)
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Intervention: Cognitive-Behavioural Program

Study	Methods	Participants	Interventions	Results	Notes (*)
Becker N, 2000 ³⁸	<p><u>Design:</u> RCT</p> <p><u>Blinding method:</u> Randomization into sets of 9. Random assignment within each set is done using the closed envelop method.</p> <p><u>Blind assignment (**):</u> A</p> <p><u>Blind intervention:</u> No</p> <p><u>Follow up:</u> Adequate. More than 88%</p> <p><u>Duration of the studies:</u> 6 months</p>	<p><u>Pathology</u> Non malignant chronic pain</p> <p><u>Place:</u> MPT (Multidisciplinary Pain Centre) Copenhagen (Dinamarca)</p> <p><u>Sample</u> Patients beginning: 189 Patients ending:136</p> <p><u>Average age</u> IG: 57.7 years old (SD 15.8). GPG (general practitioner): 55.1 (SD 14.6). CG (waiting list): 57.2 (SD 15.5)</p> <p><u>Gender</u> IG: M/F: 22/34. GPG: M/F: 24/34 CG: M/F: 30/34</p>	<p><u>Intervention Group</u> n=49 Cognitive-behavioural treatment, with one or several of the following components: (1) education on pain physiology and psychology (2) teaching of strategies for pain management (relaxation) (3) analgesic treatment (4) socio-economic and advise (5) physiotherapy. All patients were visited regularly by pain specialists and received phone attention with nursing advise.</p> <p><u>GP Group:</u> n=42 Follow up by the general practitioner.</p> <p><u>Control Group:</u> n= 43 Did not receive any intervention while in the waiting list.</p>	<p>Measurements were done at the beginning, at 3 and 6 months. Intervention group <u>Pain intensity</u> Visual Analogue Scale (VAS). 67-52-52 (p<0.05) Likert Scale to 5 points. p <0.001</p> <p><u>Quality of Life</u> Medical Outcome Study-Short Form (SF-36) p<0.05 in 5 of the 8 subscales: SF-36-PF (Physical Functioning) 48-51-52 (p <0.05) SF-36-RP(Role-Physical) P<0.05 SF-36-BP (Bodily Pain) p<0.005 SF-36-VIT (Vitality)p<0.005 SF-36-MH(Mental Health) p<0.005 Hospital Anxiety and Depression Scale (HAD) (two subscales): HAD-ANX (anxiety) and HAD-DEP(depression), p no significant results are obtained Psychological General Well-being Scale (PGWB). 51-56-62 (p<0.001)</p> <p><u>Sleep:</u> Quality of sleep assessed as "good", "fair" or "poor". 2.1 -1.9 -1.9 (p<0.05)</p> <p><u>Analgesia use:</u> Quantity (n°) of opiates, with a short or long term effect and antidepressants and anticonvulsants and NAIDs. p < 0.001 Control group statistically significant worsening in PGWB (58-54-51) (p< 0.05) HAD-ANX (8.3 -9.1 -10) , (p< 0.05) HAD-DEP (4.5 -5.8 -6.4), (p< 0.05)</p>	<p><u>Level of Evidence:</u> 2</p> <p>suggested Best Practice Information Sheets (BPIS) <u>Grade of Recommendation:</u> B</p>

Intervention: Psycho-education program

Study	Methods	Participants	Interventions	Results	Notes (*)
Le Fort SM, 1998 ³⁹	<p><u>Design:</u> RCT</p> <p><u>Blinding method:</u> Not reported</p> <p><u>Blind assignment (**):</u> B</p> <p><u>Blind intervention:</u> Yes</p> <p><u>Follow up:</u> Not reported</p> <p><u>Duration of the studies:</u> 18 months</p>	<p><u>Pathology:</u> Osteoarticular chronic pain</p> <p><u>Place:</u> St. John's, Terranova, Canada</p> <p><u>Average age:</u> Intervention Group (IG): 39 (24–57). Control Group (CG): 40 (26–60)</p> <p><u>Gender:</u> IG: Male/Female (M/F): 11/42. CG: M/F: 13/40</p>	<p><u>Intervention Group:</u> n= 52 Chronic Pain Self Management Programme (CPSMP)</p> <p><u>Control Group:</u> n= 50 No intervention</p>	<p>Measurements were done pre and post intervention</p> <p><u>Pain:</u> Pain quality: SF-MPQ Treatment 18.94 - 17.27 Control 18.32 - 20.14 (p<0.039)</p> <p><u>Pain severity:</u> VAS Treatment 72.67 - 60.98 Control 73.02 - 71.22 (p<0.002)</p> <p><u>Depression:</u> Beck's Depression Inventory (BDI-SF) Treatment 7.67 - 6.83 Control 7.48 - 7.68 (p<0.096)</p> <p><u>Disability:</u> Survey of Pain Attitudes D-SOPA Treatment 2.51 - 2.29 Control 2.79 - 2.81 (p<0.008)</p> <p><u>Dependence:</u> VAS Treatment 52.44 - 45.67 Control 54.52 - 59.77 (p<0.001)</p> <p><u>Uncertainty:</u> Mischel Uncertainty in Illness Scale (MUIS-C) Treatment 68.25 - 66.12 Control 64.54 - 64.60 (p<0.96)</p> <p><u>Skills :</u> Self Efficacy Scale (SES) Treatment 49.52 - 59.66 Control 49.00 - 46.94 (p<0.0001)</p> <p><u>Resources:</u> VAS version of the Self Control Schedule (SCS) Treatment 64.48 - 67.77 Control 64.81 - 62.52 (p<0.0001)</p> <p><u>Self-Help:</u> Inventory of Adult Role Behaviour (IARB) Treatment 55.32 - 60.41 Control 52.76 - 51.22 (p<0.0001)</p> <p><u>Satisfaction with life :</u> Satisfaction for Life Domains Scale (SLDS) Treatment 68.85 - 76.19 Control 67.16 - 64.28 (p<0.0001)</p> <p><u>Quality of life related to General Health:</u> SF-36 Treatment 45.35 48.69 Control 48.93 48.86 (p=0.323)</p>	<p><u>Level of Evidence:</u> 2</p> <p>suggested Best Practice Information Sheets (BPIS)</p> <p><u>Grade of Recommendation:</u> B</p>

Intervention: Physical Exercise Program

Study	Methods	Participants	Interventions	Results	Notes (*)
Simmons SF, 2002 ⁴⁰	<p><u>Design</u> RCT</p> <p><u>Blinding method</u>: Not reported</p> <p><u>Blind assignment</u> (**): D</p> <p><u>Blind intervention</u>: NO</p> <p><u>Duration of the studies</u>: 32 weeks</p>	<p><u>Pathology</u>: Musculo-skeletal chronic pain with urinary incontinence</p> <p><u>Place</u>: California, USA</p> <p><u>Average age</u> IG: 89.9 years old (SD 6.3) CG: 90.3 (SD 7.15)</p> <p><u>Gender</u> IG: M/F: 2/25 CG: M/F: 2/22</p>	<p><u>Intervention Group</u>: n= 27 Incontinence care (encourage to go to the toilet or change their diaper if wet) and exercises for increasing endurance (stand up and sit during 30 seconds)</p> <p><u>Control Group</u>: n= 24 No intervention</p>	<p><u>Pain</u> (13 items-GPM-M). Geriatric Pain Measure- modified". P< 0.001</p> <p>Nº of pain expressions and behaviours p<0.001</p> <p>Max. number of times able to stand up and sit down within 30 sec., pretest- posttest IG 6.2 – 7; CG 6.3 – 5.4 p<0.05.</p>	<p><u>Level of Evidence</u>: 2</p> <p>suggested Best Practice Information Sheets (BPIS) <u>Grade of Recommendation</u>: C</p>

Intervention: Magnetic Field Therapy

Study	Methods	Participants	Interventions	Results	Notes (*)
Kim TS, 2001 ⁴¹	<p><u>Design</u>: Pilot study- RCT</p> <p><u>Blinding method</u>: Not reported</p> <p><u>Blind assignment</u> (**): C</p> <p><u>Blind intervention</u>: Yes</p> <p><u>Follow up</u>: Adequate. 100%</p> <p><u>Duration of the studies</u>: 8 weeks</p>	<p><u>Pathology</u>: Primary chronic headache</p> <p><u>Place</u>: New York USA</p> <p><u>Average age</u>: 44 years old (SD 12.5)</p> <p><u>Gender</u>: M/F: 3/16</p>	<p><u>Intervention Group</u>: Group 1 (magnet) n=6 Wear a strip with magnetic discs in the bitemporary area, with the negative pole in contact with the individual's head, 30 minutes per day, during 4 weeks</p> <p><u>Control Groups</u>: Group 2 (placebo) n=8 Wear a strip on the head, 30 minutes per day, during 4 weeks</p> <p>Group 3 (usual non narcotic analgesics) n=5</p>	<p>Measurements were done 2 weeks before the beginning, every 2 weeks during the study and 2 weeks after the end of the study.</p> <p><u>Pain</u>: VAS [F(4,64) = 5.65, p=0.001]</p> <p>Reduction of headaches in the three groups [F(2,16) = 1.92, p=0.179].</p> <p><u>Power</u>: Power as Knowing Participation in Change Tool (PKPCT). Version II p=0.214 [F(4,64) = 1.49, p=0.214].</p>	<p><u>Level of Evidence</u>: 2</p> <p>suggested Best Practice Information Sheets (BPIS) <u>Grade of Recommendation</u>: B</p>

Intervention: Guided Imagery

Study	Methods	Participants	Interventions	Results	Notes (*)
Mannix LK, 1999 ⁴²	<p><u>Design:</u> Non randomized controlled trial</p> <p><u>Blinding method:</u> No blinding</p> <p><u>Blind assignment (**):</u> D</p> <p><u>Blind intervention:</u> Not clear</p> <p><u>Follow up:</u> Adequate, more than 80%</p> <p><u>Duration of the studies:</u> 1 month</p>	<p><u>Pathology:</u> Tension chronic headache, with or without migraine</p> <p><u>Place:</u> Cleveland, USA</p> <p><u>Average age:</u> IG: 40 (±13) CG: 41 (±15)</p> <p><u>Gender:</u> IG: M/F: 20/109. IG: M/F: 34/97</p>	<p><u>Intervention Group:</u> n= 129. individualised therapy could include pharmacological treatments, physical therapy, biofeedback, and dietary instruction as determined by the attending physician and patient and Guided imagery (listened the cassette once a day during 29 day)</p> <p><u>Control Group:</u> n= 131. individualised therapy could include pharmacological treatments, physical therapy, biofeedback, and dietary instruction as determined by the attending physician and patient</p>	<p><u>Pain:</u> Direct question: "Since your last visit, your headaches are: much worse CG IG p 95%IC* 3 (2.3) 4 (3.1) 0.004 .4.7-3.1 Somewhat worse CG IG 95%IC* 10(7.6) 12(9.3) -8.5 to 5.1 About the same CG IG 95%IC* 58(44.3) 34(26.4) 6.5 to 29.3 Somewhat better CG IG 95%IC* 50(38.2) 51(39.5) -13.1 to 10.5 much better CG IG 95%IC* 10(7.6) 28(21.7) -22.5 to -5.7</p> <p>* Control patients vs guided imagery patients. Significantly different (p<05, chi-square test).</p> <p><u>Disability:</u> Headache Disability Inventory HDI (0-100) No data.</p> <p><u>Quality of life: Quality of life related to health SF-36</u> Physical Functioning CG IG p IC 2.4 6.6 0.08 -0.3 to 8.7 Role-Physical CG IG p IC 9.5 19.0 0.06 -0.1 to 19.1 Bodily Pain CG IG p IC 7.9 13.5 0.049 0.2 to 11 General Health CG IG p IC -0.3 0.9 0.52 -2.3 to 4.7 Vitality CG IG p IC 2.6 8.9 0.009 1.7 to 10.9 Social Functioning CG IG p IC 9.1 10.6 0.60 -4.1 to 7.1 Role-Emotional CG IG p IC 4.5 11.6 0.20 -3.4 to 17.6 Mental Health CG IG p IC 3.4 7.5 0.034 0.4 to 7.8</p>	<p><u>Level of Evidence</u> 2</p> <p>suggested Best Practice Information Sheets (BPIS)</p> <p><u>Grade of Recommendation:</u> B</p>

Appendix VI: The JBI Levels of Evidence

Levels of Evidence	Feasibility F (1-4)	Appropriateness A(1-4)	Meaningfulness M(1-4)	Effectiveness E (1-4)	Economic Evidence
1	Metasynthesis of research with unequivocal synthesised findings	Metasynthesis of research with unequivocal synthesised findings	Metasynthesis of research with unequivocal synthesised findings	Meta-analysis(with homogeneity) of experimental studies (eg RCT with concealed randomization) OR One or more large experimental studies with narrow confidence intervals	Metasynthesis (with homogeneity) of evaluations of important alternative interventions comparing all clinically relevant outcomes against appropriate cost measurement, and including a clinically sensible sensitivity analysis
2	Metasynthesis of research with credible synthesised findings	Metasynthesis of research with credible synthesised findings	Metasynthesis of research with credible synthesised findings	One or more smaller RCTs with wider confidence intervals OR Quasi-experimental studies(without randomization)	Evaluations of important alternative interventions comparing all clinically relevant outcomes against appropriate cost measurement, and including a clinically sensible sensitivity analysis
3	a. Metasynthesis of text/opinion with credible synthesised findings b. One or more single research studies of high quality	a. Metasynthesis of text/opinion with credible synthesised findings b. One or more single research studies of high quality	a. Metasynthesis of text/opinion with credible synthesised findings b. One or more single research studies of high quality	a. Cohort studies (with control group) b. Case-controlled c. Observational studies(without control group)	Evaluations of important alternative interventions comparing a limited number of appropriate cost measurement, without a clinically sensible sensitivity analysis
4	Expert opinion	Expert opinion	Expert opinion	Expert opinion, or physiology bench research, or consensus	Expert opinion, or based on economic theory

JBI Grading of Recommendations

Grade of Recommendations	Feasibility	Appropriateness	Meaningfulness	Effectiveness
A.	Strong support that merits application	Strong support that merits application	Strong support that merits application	Strong support that merits application
B.	Moderate support that warrants consideration of application	Moderate support that warrants consideration of application	Moderate support that warrants consideration of application	Moderate support that warrants consideration of application
C.	Not supported	Not supported	Not supported	Not supported

Appendix VII: JBI-MAStARI Data Extraction form for Experimental Studies

Author/s _____ Year _____

Journal _____ Title _____

Record Number/Article Reference No _____

Reviewer _____ Method _____ Setting _____

Participants

Group A (treatment) Group B (control)

Number of Participants

Group A Group B

Interventions

Intervention A Intervention B

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)

Authors conclusion

Reviewer's conclusion
