Design of a health education program to manage chronic neck pain: a study protocol

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Abstract

Results: HEP for CCP with a biopsychosocial approach consists of five educational sessions lasting between 90 and 120 minutes, carried out every other day. Cognitive, emotional and physical dimensions were addressed in all session. The approach to CCP, requires attention to associated psychosocial factors of people who suffer from it. The proposed HEP with a biopsychosocial approach emphasizes emotions management, especially stress, without neglecting the importance of physical and recreational exercise for the return to social participation of the person. The objective of this program is to achieve a clinically relevant decrease in the intensity of perceived pain, in functional disability and an increase in quality of life in short and medium term.

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Original Paper

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Design of a health education program to manage chronic neck pain: a study protocol

Abstract: Background: Chronic Neck Pain (CNP) needs attention to the physical, affective, cognitive and social dimensions. Objective: To design a Health Education Program (HEP) with a biopsychosocial approach aimed at patients with CNP. Methods: A literature search on chronic neck pain, health education and biopsychosocial models was carried out. Seven physiotherapists with expertise in HEP and chronic pain participated in three teams who evaluated the literature and prepared a synthesis document in relation to the three target topics. Experts compiled the information obtained and prepared a proposal for HEP with a Biopsychosocial approach aimed at patients with CNP. This proposal was tested in the Physiotherapy Units of Primary Care health centers belonging to East Assistance Directorate of Madrid, and suggestions were included in the final program. Results: HEP for CNP with a biopsychosocial approach consists of five educational sessions lasting between 90 and 120 minutes, carried out every other day. Cognitive, emotional and physical dimensions were addressed in all session, paying attention to associated psychosocial factors of people who suffer from it. Conclusions: The proposed HEP with a biopsychosocial approach emphasizes emotions management, especially stress, without neglecting the importance of physical and recreational exercise for the return to social participation of the person. The objective of this program is to achieve a clinically relevant decrease in the intensity of perceived pain, in functional disability and an increase in quality of life in short and medium term.

Keywords: Neck pain, chronic pain, Physiotherapy, Health education, emotional expression, biopsychosocial model.

Introduction

Neck pain is a frequent reason for medical consultation in Primary Care [1], which is often a reason for referral to Physiotherapy units due to chronic pain [1,2]. It is associated with disability and work absenteeism, it has a prevalence in the general population of between 10.4%- 21.3%. It is more common in women than in men [2,3]. The experience of pain is a significant burden for the person, which implies a deterioration in the quality of life that affects both its physical and emotional dimension and has repercussions on the work, social and family environment. This entails a high cost for national health systems due to the increased use of health resources, in addition to the important psychological repercussions for those who suffer from it and the risk of suffering from associated pathologies such as anxiety, depression and sleep disorders. In general, these people report a negative impact on their social relationships: 22% lose their jobs, 4% change jobs and 27% feel socially isolated and little understood by their environment in relation to the disease. Despite the economic impact of the diagnosis and management of these processes, 48% of the subjects are dissatisfied with the long waiting times for treatment, 29% are dissatisfied with the type of treatment received and a high percentage of health professionals would like to receive additional training to deal with these processes [2, 4-6].

Neck pain represents the fourth cause of work incapacity. This musculoskeletal process is second only to low back pain with a prevalence of 10% of the population. Treatment techniques and modalities focus on reducing symptomatology with passive or pharmacological

interventions [7]. The criteria for approaching these processes by physiotherapists vary according to their training and professional experience. Pain, generally considered as a symptom, is approached with mechanistic methods that tend to produce poor adherence to treatment and often unsatisfactory therapeutic results [8-10]. The National Institute for Health and Care Excellence does not recommend the use of drugs for the treatment of chronic pain as they have not demonstrated medium- and long-term benefits [11]. It is necessary to seek new approaches based on scientific studies for the treatment of these processes, which guarantee their effectiveness and allow us to know the cost of treatment and the health benefits provided [10, 12-17].

Scientific evidence points to the multifactorial nature of chronic pain and the need for educational-therapeutic strategies based on the biopsychosocial model [14,17-19]. The most recent studies show that psychosocial factors influence, favor and increase the symptomatology and perpetuation of pain. Therefore, it is necessary to understand and manage these factors in order to provide comprehensive care for these people [18, 20-23]. Given the importance of physiotherapy in primary care in health promotion and prevention, it is essential to design and develop a strategy for the management of chronic pain. Advances in this field suggest an interdisciplinary intervention, although this is not always possible [24]. Therefore, a physiotherapy program is proposed, based on evidence to facilitate educational-therapeutic intervention. [25]. HEPs provide a valuable tool for the physiotherapist to address these processes [26-28]. HEP should integrate physical techniques that have been shown to be effective, such as therapeutic and recreational exercise, cognitive restructuring techniques, training in the management of attention, maintained stress and associated emotions [25-34].

The aim of this work is to design and develop a HEP program that considers, in addition to physical, cognitive and behavioral factors, other variables that are little taken into account so far, at least not concretely, such as emotional factors, values and beliefs of subjects suffering from CNP.

Materials and Methods

Study Design

First Phase: Six primay care physiotherapist with more than 15 years of experience and an expert professors from University of Alcala, divided into three groups, carried out an exhaustive bibliographic search. This search focused on three target topics: chronic neck pain, health education, biopsychosocial model and emotional expression. The search followed a protocol based on the standards of the PRISMA statement [35,36].

Inclusion criteria for articles were:

- Content focused on at least one of the three target topics.
- Published in the last 10 years.
- In English or Spanish.

Excluding all papers whose main topic did not focus on any of the target topics.

Search Strategy

The search was carried out in the Medline databases through the Pub-Med platform, Cochrane Library and Physiotherapy Evidence Database (PEDro). The following descriptors included in the Thesaurus were used: "chronic neck pain", "Biopsychosocial model", "Emotional expression", "Health education" "Physiotherapy", using AND/OR as Boolean operators. The same strategies were used with the Spanish terms: "Chronic neck pain", "Health education", "Biopsychosocial model", "Emotional expression", "Physiotherapy". Studies relevant to the elaboration of the Health Education Program were evaluated. Titles and abstracts were

reviewed and a total of eighty one articles were selected. Sixty-four of them were excluded because they did not meet the pre-established inclusion criteria and finally, twenty three articles that followed the PRISMA standards were analyzed [12,19, 22, 24, 26 , 29-31,37-51]. Based on these studies, the educational-therapeutic program was designed.

Data Analysis

Second phase: The selected papers were analyzed by a representation of three expert physiotherapists and three professors. Afterwards, three meetings were held among them to reach a consensus and select the information collected after testing its methodological quality and to propose a health education program for people with CNP.

The working procedure followed to develop this proposal was that indicated in the document "Basic methodological recommendations for developing an educational project" recommended by the Provincial Directorate of Madrid, which follows the methodology of the Commission for the Validation of Educational Projects of the Community of Madrid for the design of Health Education Programs [35,36].

Once the proposal was developed, it was tested in three physiotherapy units. The suggestions for improvement emerged from sixteen patients and two physiotherapists were incorporated into the final document, which was evaluated and validated by the COVAM and is available to all professionals in the library of the community of Madrid [37].

Once the program was developed, a research project was designed to measure its effectiveness. This project was approved by both the Clinical Research Ethics Committee of the Hospital Universitario Príncipe de Asturias and the Central Research Commission of Primary Care in Alcalá de Henares (Madrid). This project was registered in ClinicalTrials under the number NCT0270350. Beneficiary population of the program: Persons over 18 years of age, with a diagnosis of CNP by their family physician, with physical and psychic capacity to enter the study and who have signed the informed consent. The aim of the future project is to assess the effectiveness of HEP.

Results

Following the review of the literature and the consensus of the experts the program was designed with the following objectives:

General objectives of the program

-Health: To improve the health of people with CNP and contribute to the improvement of the quality of life of these individuals.

-Educational: To enable people with CNP to understand the factors that modulate the perception of pain. To teach methods and techniques to help manage CNP.

Specific objectives of the program

-Cognitive: To know the basis of the neurophysiology of pain. To reconceptualize pain and its origin. To identify the factors that exacerbate pain. To analyze the affective factors that influence pain. To express emotions and feelings identified about pain. To verbalize the characteristics of their pain.

-Emotional: To identify emotions and express them. To share perceived positive and negative experiences. To become aware of lifestyles adopted from having CNP that need to be modified.

-Skills: To perform techniques for the management of attention to the body and thoughts, feelings and emotions, allowing awareness to produce a release of feelings that improve the state of health. To develop skills and learn therapeutic exercises and relaxation and visualization techniques.

HEP consisted of 5 group educational sessions of between 90-120 minutes divided into two

weekly sessions on alternate days, to allow time for the subject to perform the tasks at home and be able to integrate them. Each session included the "observer's guide", whose purpose was to collect the areas of improvement of the session. Each session addressed the physical, cognitive and emotional dimensions of the person and included the observer's guidance. With a follow-up at three and six months after the intervention [25].

The number of participants were a maximum of ten. It encompasses, cognitive restructuring, therapeutic exercise, attention management and emotion management. This HEP approach integrated physical techniques that have been shown to be effective, such as therapeutic exercise and play activities through movement, cognitive restructuring techniques, attention management training, stress management and associated emotions with playful activities through movement [25-34]. Program structure can be seen in Table 1.

Table 1. HEP Program: Sessions, objectives, techniques and duration

Sessions (duration)	Objectives	Techniques
Session 1 (120 minutes)	Presenting the program	Talk-colloquium
	Understanding the factors involved in pain	Visualization technique
	Becoming aware of and connecting with the body	Demonstration with training
	Develop skills for cervical stretching practice	Homework journaling
	Reinforce knowledge, attitudes and skills learned through work at home	Group discussion
Session 2 (90 minutes)	Clarify doubts and reinforce learning from the first session.	Training
	To understand the importance of dialogue with the body and its physical attitude.	Relaxation
		Demonstration with training
	Identify the emotional factors that influence pain.	Pain diary
	Identify the importance of exercise and initiate gradual exposure to exercise.	Colloquium
Session 3 (100 minutes)	Express and clarify doubts	Belief restructuring
	Acquire skills to identify thoughts, beliefs and emotions associated with the perception of pain.	Demonstration with training
	Reinforce learned stretches and exercises	Mirror technique
	Train positive self-communication at home	Talk-colloquium
Session 4 (90 minutes)	Clarify doubts and express experiences	Creative resolution technique
	To develop the ability to manage thoughts and emotions involved in physical pain.	Anchors
	Reinforce the performance of exercises at home.	Homework diary
Session 5 (120 minutes)	Review and reinforce the tasks for the home and clarify doubts.	Talk-colloquium
	Develop the ability to manage the emotional burden of the process being experienced	Relaxation techniques
	Develop the ability to live in health	Visualization technique
	Reinforce exercise skills	Training
	To reinforce the performance of exercises in the home	Task diary
	Express doubts and ideas about what has been learned	Colloquium
	Evaluate the intervention	Questionnaires

Session 1

It was developed in "large group" mode: ten participants maximum. It began with a brief presentation to explain the program. It was explained what the program consisted of, and it sought the understanding by the participant of the causes that originate the pain, the awareness, the connection with his/her body and the development of skills for the practice of cervical stretching.
Learning was focused on acquiring skills to de-emotionalize the pain process (fear of movement and catastrophizing). Techniques were used to help the connection with your body and the development of skills for the practice of stretching and cervical exercises, initially with motor imagination techniques until stretching could be initiated with real movements.
Finally, the participant was asked to put into practice, wrote down and checked the tasks learned and recommended at home, and the program material was handed out.

Session 2

It began with the clarification of doubts and reinforcement of the learning of session 1, insisting on the importance of the dialogue with the own body. We worked on the ability to manage stress, thoughts and emotions, teaching them to change information in a conscious way and through the body and movement, awareness of the importance of gradual exposure to physical exercise and learning of stretching and basic cervical spine exercises. Playful aerobic activities were to promote the social participation of the subject and attention management. It was explained how to do at home the exercises collected in the homework notebook.

Session 3

We began by dedicating a few minutes at the beginning of the session to clarify doubts about what was done in the previous sessions. In this session, we worked on the identification of the emotional impact as a possible cause of the perpetuation of neck pain, with special emphasis on social pain and interpersonal relationships.
It was also recommended that the subject took note of the moment in which the pain appeared the emotional situation prior to the onset and the context in which the participant was, in order to analyze and explore the emotion-situation-pain relationship.
Review and reinforcement of stretching and cervical exercises learned in previous sessions, playful activities through the body and movement. For home, the same was indicated as in session two. An exercise learned in this session was requested in order to train positive communication with oneself.

Session 4

As in previous sessions, participants were invited to express their doubts and experiences about their neck pain.
Practices were done to acquire skills to learn to identify limiting thoughts and beliefs and included strategies to change them. The techniques learned to manage stress were reinforced and playful activities were carried out through body movement and therapeutic exercise.
At home, practice of the techniques used to manage the stress maintained as well as the exercises and cervical stretching at home were requested.

Session 5

As in the previous sessions, participants were invited to express their doubts and experiences about their neck pain.
We worked on reinforce the ability to manage the stress, thoughts and emotions, teaching them to change the information in a conscious way and through the body and movement. Also, we reviewed and reinforced of exercises to be performed daily at home, which should be done and the dates of their execution noted down until the review or follow-up to be performed at three and six months respectively from the end of the HEP.
To ensure adherence to the HEP, they were informed that a phone call would be made during the first three-month follow-up and another one would be made during the second follow-up to clarify any doubts and encourage them to continue performing the tasks.

Discussion

The role of the physiotherapist is facing important challenges due to the new strategies that have emerged in response to the health needs of people. The Eps programs are a fundamental tool in Primary Care, to be used by these professionals who play a very important role in influencing and promoting behavioral change in people with chronic pain, related to lifestyles. Their activity should not only be of assistance but also of health promotion and prevention. The areas of application are mainly musculoskeletal (69%) and therapeutic physical activity (20.6%) [28,46].
The scientific literature includes interventions on chronic pain that use pain education as a tool by explaining the neurophysiology of pain. These interventions usually have positive results in the short and medium term to reduce pain intensity, functional disability and improve the quality of life of people with chronic pain, compared to conventional physiotherapy intervention [48,55-58].
Other studies consulted have shown that this type of educational strategy can also have a positive short- and medium-term effect on catatrophizing and physical performance [31,48-50,56]. In light of the literature available today, education in neurophysiology of pain is considered a necessary, but not sufficient, pillar of an effective approach. For this reason, interventions have been developed that combine education in pain neurophysiology with therapeutic exercise and other forms of care.
Current scientific evidence points to the effectiveness of pain education combined with physiotherapy interventions based on therapeutic exercise in the short and medium term in the improvement of functional disability and fear-avoidance presented by these subjects [43,56, 58-61].
Literature considers that the subject should be considered as a biopsychosocial being in which beliefs, cognitive, emotional and behavioral factors as well as the social context are of primary importance in the manifestation, development and perpetuation of pain [20,23,62]. For this reason, psychosocial factors must be taken into account in the active approach to these processes.
There are several studies that demonstrate the importance of taking into account these factors and the awareness of the subject's own thoughts, feelings and emotions in the face of pain in order to reduce symptomatology [12,,20,23,26,28,46,48,50,56,60,62].
However, although physical therapists can often recognize the influence of these factors, few have developed the skills to successfully assess and manage them. It is essential that physical therapists acquire the knowledge, attitudes and skills necessary to be able to perform an active and structured approach from physical therapy, focused on the person with chronic pain and to be able to use scientifically based tools and techniques.

Some programs evaluate the effect of cognitive-behavioral therapy in the improvement of pain, disability and quality of life of subjects with CNP. Changes were observed without clinical relevance, in the long term. Perhaps this could be due to the fact that, although these psychosocial factors are mentioned, they are not specifically addressed in the interventions. Nor do they usually take into account the influence of social pain on the perception of physical pain, and that both types of pain activate common pathways and brain centers. Social pain, as a result of the feeling of social exclusion or rejection in interpersonal conflicts, breaks into the daily life of people in general. In the case of people with chronic pain, it increases the perception of pain [21]. If social pain is not taken into account and addressed in interventions, it is more difficult to achieve clinically relevant result. Neither is there a direct approach to sustained stress or the subject's internal emotional disturbances [38,64-68].

Patients with chronic pain are known to be subjected to a high stress load. The nervous system response to stress interferes with perceived pain [6]. Therefore, it seems important that subjects with chronic pain learn to manage stress. The lack of inclusion of tools in this regard may be another factor that partly explains the lack of clinically relevant results in the management of chronic pain. Other interdisciplinary programs show the importance of approaching patient education from a biopsychosocial point of view. Moreover, in all of them the active participation of the patient is considered essential [10,14,25,26,59]. In order to achieve the objectives, it is necessary for the subject to take control of his or her process and become involved in its resolution with the appropriate support of health professionals.

Therefore, a HEP has been proposed that presents strategies with scientific evidence to address psychosocial factors [26,38,45,63,69,70]: breathing and relaxation techniques, motor imagination, play and recreational activities through the body and movement. This program has also taken into account the physical factors and the return to normal activity and social participation of the subjects, the importance of which is shown by systematic reviews that provide evidence on the benefits of exercise for CD [39,71-73]. The fact that the program is conducted in small groups also contributes to this. It gives participants the opportunity to get to know each other, share experiences, establish bonds and social support. Interactions between subjects inside and outside the program can facilitate social participation and their reincorporation into social life.

Regarding the number of program sessions and their duration, the literature consulted includes programs with one or two sessions to some with 11 or more sessions. As for the duration of the sessions, the proposals range from 30 minutes to 4 hours [33, 74, 75].

Due to this variety and based on different guides for the elaboration of educational projects and the authors' extensive experience in the field of Primary Care, the educational proposal of this program is for 5 sessions of two hours each, a medium term among all those consulted [52,53,76]. This duration has been considered sufficient to work on the physical and psycho-social factors, without delaying the process excessively in order to achieve good adherence and minimize the participants' losses. However, as future lines of action, we are considering increasing the number of sessions and their duration with the aim of being able to act more in progression and depth both in the intervention of psychosocial factors and in the therapeutic exercise of greater intensity and strength, as indicated by current research in this field.

The review, revision and the possibility of raising doubts in each of the sessions allows to secure knowledge, reinforce new attitudes, support the changes that are taking place and minimizing the possible and unlikely adverse effects, showing itself to be an effective and safe intervention.

As future lines of action, we are working on extending the number of sessions and their duration with the aim of being able to act more deeply in the intervention of psychosocial factors and therapeutic exercise of greater intensity and strength, as indicated by current

research in this field.
In conclusion, currently, the approach to chronic pain, and in particular CNP, requires attention to the associated biological and psychosocial factors. The HEP program with a biopsychosocial approach emphasizes the understanding one's own process and questioning beliefs about pain through pain education and the management of emotions and stress through the body and movement. In addition, HEP emphasizes the use of therapeutic and recreational exercise for the recovery of function and social participation of the person, in the medium and long term in subjects with CNP.
More scientific research should be devoted to studies whose methodology is adequate to help define practical methods for the subject to learn to manage their feelings and emotions as well as to identify effective interventions that take them into account. In the meantime, all healthcare professionals should be aware that "invisible psychological factors" are present in the chronic pain processes influence in some way how they perceive and experience their pain state and how to behave and act in the face of this process that affects the person as a whole.

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Abbreviations:
CNP: Chronic Neck Pain
HEP: Health Education Program

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