

Communication skills in the context of psychological flexibility: training is associated with changes in responses to chronic pain in physiotherapy students in Spain

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Abstract

Introduction: The aim of this study is to explore the effectiveness of a training programme aimed at managing patients' chronic pain in physiotherapy students in Spain. The programme addressed providing them with efficient skills to manage patients' chronic pain from psychological flexibility (PF) perspective.

Methods: The programme integrates communication skills training into PF-based training. It sought to contribute to better recognise the role of psychosocial factors in chronic pain and to better promote adherence to treatment. This is an observational study with a pre- and post-training programme design and a 2-month follow-up. A total of 35 physiotherapy students, divided into three groups, participated in a 10-hour training course. Training focused on three areas: (1) communication skills, (2) therapeutic adherence and (3) managing distress and pain. The three areas were addressed from the PF point of view. Impact of training was measured through standardised questionnaires that assessed attitudes towards chronic pain, an ad hoc questionnaire that assessed responses to difficult communicative situations and a training satisfaction scale.

Results: Final analyses showed that attitudes changed significantly after training, biomedical attitude scores decreased and biopsychosocial attitude increased, while pain was considered less disabling, and informed empathic responses in communication situations increased. These changes were maintained at 2-month follow-up. Satisfaction with the training was high.

Conclusion: We conclude that a brief training programme based on the PF model may help students develop a more comprehensive approach and improve their skills for managing chronic pain.

Keywords

Chronic pain, psychological flexibility, physiotherapy, health psychology, training, Acceptance and Commitment Therapy

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Introduction

Living with chronic pain has profound effects on the people who experience it. These effects include restricted activity, impaired quality of life and significant emotional distress.¹ The biopsychosocial model is now widely accepted as an approach to chronic pain incorporating the dynamic interaction among physiological, psychological and social variables.² Translating this model into skilful professional practice remains an important challenge.

Implementation of cognitive behavioural therapy (CBT) has allowed many treatment centres to particularly address the psychosocial components of chronic pain and has been remarkably successful. At the same time, there is a need to keep improving treatment outcomes, to make them more widely available and to produce better integrated interdisciplinary approaches.^{3,4} It is argued that a newer generation of treatments within CBT may lead to these improvements. These treatments focus on evidence-based processes rather than protocols for syndromes and aim to enhance human psychological prosperity and help the whole person thrive, not merely to reduce psychopathology.⁵ An example of this type of approach is Acceptance and Commitment Therapy (ACT),⁶ which is based on the psychological flexibility (PF) model. ACT has consistently been shown as effective in improving health outcomes,⁷⁻⁹ and PF has consistently demonstrated that it is a key process of change during treatment, particularly in people with chronic pain.¹⁰

PF can be defined as the capacity to persist or to change behaviour in a way that includes conscious and open contact with thoughts and feelings, is consistent with what the situation affords and is guided by goals and values.^{3,8} PF model includes six processes (acceptance, cognitive defusion, flexible present-moment attention, self-as context, values and committed action) which have been summarised as behaviour that is open, centred or aware, and engaged.⁶ PF approach to chronic pain is not aimed at eradicating pain (which can often prove to be an impractical goal, similar to eradicating sadness or anxiety) but at reducing the dominance of pain over daily functioning.⁴ The PF model is helping researchers to increase our understanding of the psychology of chronic pain and is offering innovative therapeutic methods.⁴

Many different health professionals have important roles in helping patients to successfully respond to chronic pain, including physicians, nurses, physiotherapists and psychologists. Focusing on physiotherapy, some studies have found that some physiotherapists only partially recognised cognitive, psychological and social factors in chronic pain and can feel unprepared to treat people with low back pain.¹¹ Research also shows that although many physiotherapists support a biopsychosocial management

approach to chronic pain in theory, their practice is sometimes inconsistent with this model.^{12,13}

Studies have found that physiotherapy-based degree programmes can bring about a complex and multidimensional perspective in individuals with low back pain.¹⁴ However, acquiring all the skills to deliver services from this perspective may be another matter. For example, there may be an educational gap in basic communication skills training in Spanish physiotherapy degrees.¹⁵ The usefulness of communication skills training for physiotherapists in the chronic pain field has been demonstrated.¹⁶ Another potential area of interest in the context of chronic pain is patient adherence.^{17,18}

So far, there have been a few examples of the PF model being applied to physiotherapy training and practice.¹⁹⁻²² The efficacy of physiotherapist-led ACT-informed intervention for chronic low back pain is currently being evaluated,¹⁵ staff experiences of change have been studied,²¹ and some potential barriers and facilitators to embedding an ACT philosophy within a physiotherapy setting have been identified.²² Previous studies of the PF model have shown that it may improve staff well-being, decrease burnout, improve adherence to treatment guidelines, enhance academic performance, reduce procrastination and so forth.²³⁻³⁵

Turning to the issue of PF in physiotherapy, the previous study by Jacobs et al.¹⁹ investigated the impact of a brief psychologically informed physiotherapy training course on physiotherapists' attitudes and beliefs regarding chronic pain. The training aimed to provide physiotherapists a set of skills consistent with the PF model which could be useful in individual and group treatment. The training also aims to help them better recognise the role of psychosocial factors in chronic pain and to better incorporate the key processes of PF into their treatment interactions. Thus, participants were introduced to mindful movement, which includes the core processes of acceptance, contact with the present moment and defusion. A single 7-hour group session was delivered to 26 professionals in a London Pain Management Unit. Results showed significant changes related to a more biopsychosocial consideration of chronic pain, although no changes in PF were found.

It seems worthwhile to explore how the previous results from a professional practice setting could be transferred to a university education context in Spain. Here, the aim was to assess the extent to which PF-based training could also be useful for training physiotherapy students to manage chronic pain patients. Specifically, the purpose of this study was to pilot a replication and extension of the study of Jacobs et al.¹⁹ in physiotherapy students. The more specific objectives were to preliminarily test whether the elements of the study can be successfully delivered together and to explore the potential effectiveness of communication, adherence and skills training, delivered from a PF

perspective and applied to the management of chronic pain. The training was intended to enable students to help patients manage psychological barriers to a fulfilling life. Although students had already received training in communication skills during their degree, it was considered that communication training from a PF perspective would enrich and increase the efficacy of students' skills. In our opinion, training in active listening, empathy and validation in the context of PF means using these skills to focus on difficult emotions and feelings, pain and discomfort, with openness, awareness and goal-directed action, rather than resistance, avoidance and pain-directed action. It was hypothesised that we would see at least some evidence of attitude change (a more biopsychosocial and less disabling view would develop) and an increase in empathic responses after training. In short, the present work was intended to show a path to integrate biopsychosocial and PF perspectives into communication skills training in physiotherapy practice, in order to improve professionals' skills by incorporating a broader and more comprehensive approach to pain.

Method

Participants

A total of 35 fourth-year physiotherapy students participated in the training. They were final-year students at one of two universities located in Madrid (Spain). Mean age was 23.7 years (standard deviation (SD) = 4.6). A total of 65.7% were female and 34.3% were male, 88.6% were Spanish and 11.4% had other nationalities. A total of 80% were studying only physiotherapy, and 20% were also taking, or had completed, another degree. Most of them (68.6%) had prior experience working with patients with chronic pain during clinical practice as students.

Procedure

Universidad Europea Research Committee authorised the study. Participants were recruited by their lecturers at University and voluntarily participated after giving their informed consent. Although the physiotherapy students had completed a psychology course during their first undergraduate year, in which a biopsychosocial perspective was presented and basic communication skills training was provided, this training was limited to only basic skills. Specific gaps in the training included managing pain, anxiety and discomfort in a more effective way, and how to avoid invalidating or overprotecting responses to patients. Therefore, physiotherapy professors actively encouraged them to enrol in the training. Three separate recruitment calls were made, giving rise to three different groups. A 10-hour training course was delivered by two psychologists experienced in ACT. A preliminary version

of the training had been pre-piloted 1 year earlier with a different group. This permitted testing of feasibility, group size, as well as content and methods relating to the specific needs of the students.

The training focused on three areas: communication skills, therapeutic adherence, and distress and pain management (see Table 1). Training content delivered by Jacobs et al.¹⁹ was modified in order to meet the students' needs. For this reason, training aimed at strengthening communication skills from PF perspective was added. Similarly, protocol included case examples and video recordings which were used to promote discrimination of effective and ineffective interactions as well as skills training through modelling, role-playing and feedback. Physiotherapy lecturers provided useful cases and examples and collaborated in performing patients' and professionals' roles in brief videos. The training was protocolised (see Table 1) and included characteristic ACT techniques⁶ (equivalent to Jacobs's study) aimed to demonstrate PF, such as metaphors (e.g. swamp metaphor) and defusion exercises (e.g. physicalising exercise). Metaphors are used in ACT to illustrate the consequences of ineffective ways of relating to pain and discomfort and to suggest more effective ways to respond to them. Thus, the swamp metaphor⁶ proposes the image of a person wading through a vast swamp as the only way to reach a destination while feeling the mud under their feet. It is used to promote understanding of the experience that 'facing adversity is a choice', 'each person can say yes or not on each occasion' and 'sometimes experiences we do not want are a part of what we do want'. Defusion exercises alter the way one relates to pain and discomfort through exposure to contexts in which their unhelpful functions are diminished. In this manner, physicalising exercise⁶ is a defusion technique which involves experiencing unwanted content as an object, by observing it and describing its physical attributes, such as size, colour or weight. The introduction of ACT techniques was always aimed at improving students' awareness and understanding of the PF perspective. It was not expected they would automatically begin to apply new methods as psychotherapists but that they incorporate the learning from them into their physiotherapist role.

Design and measures

This is an observational study of therapeutic attitudes and other responses in relation to a training programme. Participants completed self-report questionnaires before and after the training and at 2-month follow-up. Impact of training was measured through the following standardised questionnaires.

Health Care Provider Pain and Impairment Relationship Scale. This is a measure of health care providers'

Table 1. Training areas, content and techniques.

Areas	Techniques and content
Communication skills	Case (fibromyalgia female) Active listening, empathy and validation training: introduction, modelling, role-playing, feedback Discrimination training through multiple examples
Therapeutic adherence	Case (low back pain female) Information on effective strategies to promote adherence Skills training: modelling, role-playing, feedback
Distress and pain management	Defusion exercise: identification of psychological barriers with difficult patients Identification of professionals' strategies to avoid discomfort Defusion exercise: physicalising exercise with difficult emotions and regarding difficult thoughts as words written on a wall Identification of patients' strategies to avoid pain and discomfort Swamp metaphor Introducing acceptance of pain and difficult feelings and thoughts Defusion exercise: making room for difficult sensations through choosing an uncomfortable posture Information on effective strategies to promote psychological flexibility Discrimination training through multiple examples Promoting acceptance skills training: modelling, role-playing, feedback

attitudes and beliefs about the relationship between pain and impairment, specifically attitudes towards the harmfulness of physical activities and recommendations for work and physical activity.³⁶ The scale includes 15 items; three of them are reverse scored, and they are rated on a 6-point rating scale ('totally disagree' to 'totally agree'). Example of items are as follows: 'Chronic back pain patients cannot go about normal life activities when they are in pain' and 'Chronic back pain patients have to accept that they are disabled persons, due to their chronic pain'. Participants with higher scores show a stronger belief that disability is a direct effect of pain and that disability and avoidance are inevitable consequences. According to its authors, it is a reliable and valid measure.³⁶⁻³⁸ Factor analysis revealed one factor with a Cronbach's alpha of 0.84.³⁶ It has been shown to be sensitive to change in physiotherapy students.³⁹ A Spanish version of the Health Care Provider Pain and Impairment Relationship Scale (HC-PAIRS)³⁹ also appears to be a reliable, valid and sensitive instrument for assessing health care providers' attitudes and beliefs about low back pain. Its Cronbach's alpha was 0.82. It can be used in evaluating clinical practice and in undergraduate acquisition of skills and knowledge.⁴⁰ Cronbach's alphas in the present sample are between 0.77 and 0.80.

Pain Attitudes and Beliefs Scale for Physiotherapists. This questionnaire was designed to measure attitudes and beliefs regarding chronic low back pain.⁴¹ The version used in this study includes 19 items which

are rated on a 6-point rating scale ('totally disagree' to 'totally agree'). Factor analysis revealed two factors labelled 'biomedical' and 'biopsychosocial treatment orientation', which were consistent predictors of judgments of the harmfulness of physical activities and of recommendations for return to work and normal activity.⁴² An illustrative example of the items showing biomedical orientation is 'Pain is a nociceptive stimulus, indicating tissue damage'. An item showing biopsychosocial treatment orientation is 'Mental stress can cause back pain even in the absence of tissue damage'. A review of studies showed that satisfactory results were found for internal consistency, construct validity, reliability and responsiveness, with Cronbach's alpha for the biomedical factor ranging from 0.77 to 0.84 and for the biopsychosocial factor ranging from 0.62 to 0.68.⁴³ As a Spanish version of this questionnaire was not available, the authors of the current study translated the original version of the questionnaire into Spanish and tested it with a pilot sample before the study. Cronbach's alphas in the present sample are between 0.61 and 0.76 for the biomedical factor and between 0.45 and 0.61 for the biopsychosocial factor.

Identification of Spontaneous Response Test. The Identification of Spontaneous Response Test (IRE; Spanish acronym) consists of a brief presentation of several cases (challenging situations from the clinical practice, or feared situations) that are likely to cause feelings of anxiety or distress in health professionals.^{44,45} Previous studies showed this test was useful to measure the effect of

Table 2. Identification of Spontaneous Response Test (IRE): example of one case including types and example of responses.

A 50-year-old male has been immobilised for 2 months after a malleolar fracture while practising canyoning. After taking the plaster off, he started rehabilitation. Fifteen days later, he showed complex regional pain syndrome (CRPS) at foot and leg and continuous 7/10 numerical rating scale of pain, with walking incapacity. He said, 'I'm too old for canyoning, I should not have done it. Simply grazing my leg hurts, I even can't put on my pants. I hope they heal soon. I can't live like this'.

Type of response	Example of response
Problem-solving response	Don't worry about that now. You should focus on recovering
Interpretative response	I think you believe you will not recover completely
Investigation response	Have you been informed about exactly what the recovery process involves?
Support and console response	You should trust and keep fighting . . . everything is going to be alright. If you work hard you will make it
Moral judgement response	You have been very lucky. Considering your age, it could have been much worse . . . You should not complain
Empathic response	I am noticing you are feeling very worried

training in medicine students and resident doctors,^{44,45} and in the present study, it has been adapted ad hoc to physiotherapists. Students had to choose spontaneously one out of six multiple-choice responses according to their point of view. Specifically, each participant was asked to choose the response (only one) he or she thought would be more similar to the one he or she spontaneously would deliver in every situation. These responses were mutually exclusive and included the following kind of categories: (1) problem-solving response, (2) interpretative response, (3) investigation response, (4) empathetic response, (5) comforting response and (6) moral judgement response. The order of presentation of the six responses was randomised for every case. One of the cases which appears in the IRE questionnaire including a sample of all six possible response options is presented in Table 2. This measure was not used in Jacobs's study and was included in order to assess whether communication skills were stronger after training. As directly measuring changes in skills in the clinical setting was not possible, the spontaneous responses in hypothetical complex situations were considered a convenient measure of changes after training. Accordingly, the IRE questionnaire was regarded as an indirect measure of the skill in an analogue situation, not the same as direct performance but likely to be related to it.

Satisfaction scale included four questions referring to their evaluation of the training programme according to interest, usefulness, adaptation to student's needs and global satisfaction on a scale from 1 (very low level) to 5 (very high level).

Statistical analyses

Frequencies were expressed as absolute number and percentage. The scores on the rating scale were shown as mean \pm SD. Kolmogorov–Smirnov tests of normality (significance corrected by Lilliefors) were used to

check the normality of distributions in order to determine whether parametric or non-parametric tests should be conducted for the different categories of the IRE (problem-solving, interpretative, research, empathic, comforting and moral judgement), the HC-PAIRS and the Pain Attitudes and Beliefs Scale for Physiotherapists (PABS-PT). Subsequently, the appropriate techniques (repeated-measures analyses of variance (ANOVAs) for normally distributed scores and the Friedman test for non-normally distributed scores) were used to compare the pre-test, post-test and follow-up measures in the IRE (number of responses of each category before the course, after the course and in the follow-up measure), the HC-PAIRS and the PABS-PT. The size of effect was calculated for the variables that were normally distributed and Kendall's W (coefficient of concordance) for the variables not normally distributed. The statistical analyses were performed with the SPSS 24.0 programme.

Results

Results showed that the scores in the HC-PAIRS and the PABS-PT were normally distributed. None of the scores from the IRE were normally distributed. Subsequently, non-parametric tests were applied to the IRE scores (Friedman test) and parametric tests (repeated-measures ANOVAs) for the HC-PAIRS and the PABS-PT. Table 3 shows the results of the HC-PAIRS, the PABS-PT and the IRE at the three measures (pre-training, post-training and follow-up) and the difference between the three measures of the study. As shown in Table 3, scores in PABS-PT biopsychosocial subscale significantly increased, whereas scores in biomedical scale decreased after intervention, and these results were maintained at 2-month follow-up. Differences in both factors between pre-training and post-training and between pre-training and follow-up

Table 3. ANOVAs and Friedman tests to study differences between pre-test, post-test and follow-up measure scores.

Measures	p-value of the test	Pre mean (SD)	Post mean (SD)	Pre-post p-value	Follow-up mean (SD)	Pre-follow-up p-value	Effect size (η^2)
Repeated-measures ANOVAs							
PABS-PT (biomedical)	0.008	35.74 (5.65)	31.57 (6.12)	0.006	32.65 (6.72)	0.042	0.171
PABS-PT (biopsychosocial)	0.001	33.17 (4.56)	36.88 (4.36)	<0.001	36.11 (4.83)	0.031	0.199
HC-PAIRS	0.007	60.17 (10.94)	54.28 (12.21)	0.005	55.68 (12.51)	NS	0.108
Friedman tests							
IRE_problem solving	<0.001	3.17 (1.52)	0.83 (1.36)	<0.001	1.49 (1.77)	<0.001	Kendall's W 0.607
IRE_interpretative	<0.001	0.17 (0.38)	0.60 (0.55)	0.01	0.77 (0.49)	<0.001	0.337
IRE_investigation	<0.001	3.11 (1.98)	1.86 (2.09)	0.023	1.29 (1.95)	<.001	0.261
IRE_support-consolation	<0.001	2.69 (1.91)	1 (1.89)	<0.001	0.89 (1.32)	<0.001	0.470
IRE_moral judgement	NS	0.11 (0.40)	0.06 (0.24)	NS	0.06 (0.24)	NS	0.029
IRE_empathic	<0.001	0.74 (0.92)	5.66 (2.97)	<0.001	5.23 (3.48)	<0.001	0.684

PABS-PT: Pain Attitudes and Beliefs Scale for Physiotherapists; HC-PAIRS: Health Care Provider Pain and Impairment Relationship Scale; IRE: Identification of Spontaneous Response Test; SD: standard deviation; NS: not significant; ANOVA: analysis of variance.

were statistically significant. Nevertheless, as Cronbach's alphas in this scale were low, results should be interpreted with caution. Scores in HC-PAIRS before intervention significantly decreased after the training, although decrease at follow-up compared to pre-training was not statistically significant (see Table 3).

With regard to the informed spontaneous responses, as measured by the IRE questionnaire, the most significant changes occurred in the empathetic responses, which significantly increased following training, and this change was maintained in the follow-up assessment (see Tables 3 and 4). Before training, only 7.4% of the responses chosen were empathetic, whereas after training this percentage was 57.4%, and at follow-up 53.4%. With regard to the remaining response categories, problem-solving, investigation and support, and consolation responses significantly decreased after training (from 31% to 8.3%, from 31% to 18% and from 27% to 10%, respectively), and these changes were maintained in the follow-up assessment. Interpretative responses slightly increased after training (from 1.7% to 6%). No changes were observed for moral judgement responses, which were already a very infrequent category of response before training (from 1.1% to 0.6%).

Mean satisfaction with the training was very high in terms of interest (4.6 out of 5), usefulness (4.8 out of 5), adaptation to the student's needs (4.8 out of 5) and overall satisfaction (4.6 out of 5).

Discussion

The aim here was to conduct a pilot study to explore the effectiveness of an intervention which integrated a

Table 4. Percentage (frequency) of each category of response in the IRE questionnaire at pre- and post-training and follow-up measures.

Category of response	Pre (%)	Post (%)	Follow-up (%)
Problem-solving	31.7	8.29	14.86
Interpretative	1.7	6	7.71
Investigation	31.1	18.75	12.85
Support-consolation	26.9	10	8.86
Moral judgement	1.1	0.6	0.57
Empathetic	7.4	56.57	52.28

IRE: Identification of Spontaneous Response Test.

communication skills training programme into PF-based training for physiotherapy students. The training and study methods were delivered successfully. Results showed that the intervention gave rise to significant changes in students' attitudes and responses, and that these changes were maintained 2 months after the intervention. Specifically, physiotherapy students showed a more biopsychosocial and less biomedical perspective following training. Low internal consistency of the PABS-PT questionnaire may be related to lack of Spanish adaptation, and the characteristics of our study did not allow its validation. Also, after training, pain was considered to be less disabling, and students reported they would respond with greater empathy towards patients and less suggesting of solutions for the patients' problems. Training was evaluated by the students as highly satisfactory, so the feasibility of the training is supported.

The changes in biomedical or biopsychosocial perspective are relevant as they may alter approaches to

treatment, since biomedical orientation scores were found to be associated with an increased chance of advising patients to delay return to work or activity and a belief that return to work or activity is a threat to the patient.⁴⁶ The changes in attitudes are consistent with previous results.¹⁹ However, in the earlier study, the initial scores in the biopsychosocial scale were higher and the scores in the biomedical scale were lower. Also, the scores in the HC-PAIRS questionnaire at baseline were much lower,¹⁹ which shows that from the start they considered pain to be less disabling. The differences in initial scores may reflect that Jacobs's sample¹⁹ was made up of professionals with more than 10 years of experience, whereas our sample was composed of students with little professional experience (only clinical practice as students). In the sample comprising professionals, this difference in experience by itself could have contributed to a more complex and comprehensive view of chronic pain before training.

This work suggests potential for improvement in communication training and other treatment methods when approached from a PF model context.⁶ Listening and validating in the context of acceptance involves being more open to patients' and professionals' feelings. It also means giving patients permission to experience their feelings and thoughts as natural reactions which do not need to be avoided (i.e. 'I notice you feel overwhelmed. Maybe this is the natural feeling in the circumstances in which you happen to live . . . If I were you, I probably would also feel like that'), which can impact the professionals' ability to listen and validate. Furthermore, considering difficult emotions and physical sensations such as fear and pain as experiences that can be noticed instead of controlled or suppressed can promote a wider understanding of the human condition and a more compassionate and effective approach to chronic pain. Patients' psychological barriers to treatment adherence (i.e. low motivation, resistance to change, pessimistic ideas, the thought 'I can't', etc.) can be better recognised and managed if they are accepted as 'stones on the path' or 'keys which open doors', experiences that can be accepted or 'embraced' when they appear on our way towards our valued goals.

Although it is not possible to state the extent to which the changes derive from the communication skills training or from exposure to the PF model, it can be affirmed that the increase in choice of empathic responses (from 7% to 56%) and the decrease in problem-solving, investigation and support are certainly consistent with the PF model. Empathic communication is likely to be effective in interactions with people with chronic pain, because it is validating, promotes rapport and self-knowledge, and does not foster avoidance or urgency about the need to change experiences which cannot easily be modified, and it allows a person

to stop trying to be heard and to focus on change instead. Empathy can be the first step towards acceptance and self-compassion. Nevertheless, the remaining responses, as defined in our questionnaire, can be considered less helpful. Thus, problem-solving could promote action but also denial or urge fighting against pain; interpretation response may be unjustified or confusing; investigation response may be used by professionals as a way of gathering information but also to avoid focusing on the patient's current experience; support and consolation may promote resignation or denial, and moral judgement may transmit blame or value judgement. Another study⁴⁴ which used a similar tool to evaluate spontaneous response in medicine students found a similar significant increase (from 6% to 68%) in empathic responses and a drop in problem-solving and support and consolation responses. Nevertheless, training in our study took 10 hours, compared to 3 months in the aforementioned study.⁴⁴ Therefore, the effect of such a brief intervention is remarkable.

Data from the present study suggest that this intervention may have impacted the students' approach to managing chronic pain, although this will require further study to verify. As recent reviews point out, ACT is considered a useful empirically validated psychological treatment with increasing research support for the treatment of chronic pain.⁴⁷ Thus, we consider it useful to explore how a PF perspective can also benefit other professionals. This training could potentially help physiotherapy students, as well as students in other professions, to provide a more comprehensive and efficient intervention for patients suffering from chronic pain in their future work. Future research could also investigate whether additional training focused on increasing PF in professionals helps them to manage their own disturbing thoughts and distress when working with patients suffering from pain and distress and to increase their effectiveness and satisfaction with their work. These future studies could specifically evaluate the role of changes in PF processes in professional behaviour. It cannot be forgotten that using this model in physiotherapy is not simple, and considerable training and supervision should be provided to physiotherapists to be able to deliver treatment informed by ACT.²⁰

Results here support the importance of inter-professional collaboration between different health professionals. In the present study, psychologists provided physiotherapists with relevant and efficient tools related to PF. This does not mean expecting physiotherapists to behave like psychologists. Instead, it should involve coming together to build a healthier and more effective work context, which is a shared responsibility for health professionals, bearing in mind that

not every patient will ask for psychotherapy or counseling from psychology experts.¹⁹

Limitations of the study include the small size of the sample, the brevity of the follow-up, which does not allow verification of whether changes are maintained in the long term, lack of a control group and the absence of any assessment of possible changes in a clinical context. Unfortunately, practical reasons such as the small number of physiotherapy students willing to participate in extracurricular activities, and limited time and difficulties in recruiting a broader sample did not allow the sample size to be increased or the follow-up to be extended. Also, the PABS-PT did not reach adequate internal consistency indexes in the present sample. Guidelines for the process of cross-cultural adaptation of self-report measures⁴⁸ should have been considered in the PABS-PT translation. The IRE may not represent accurately the student's communicative behaviour in real communicative situations (the students may simply be recognising the most desirable response). The assessment of clinical competences through objective structured clinical examination could be considered for future studies. Some qualitative interviews to assess acceptability and impact could contribute to offset the limitations of self-report measures. Further research is needed to check whether the results observed here are robust, reflect relevant domains of interest and are likely to translate into clinical practice.

In conclusion, this study provides preliminary evidence from pilot testing of a psychosocial training intervention in physiotherapy students. It suggests that further research into the integration of PF model in health care professionals' skills training is possible and could one day lead to improvements. As in previous studies, it appears that a relatively brief training programme may be followed by an increased perception of chronic pain as less disabling and may help to promote a more comprehensive and empathic view of chronic pain. This motivates further broad applications of up-to-date psychological models to the training of all professionals involved in treating chronic pain.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Ethical approval

Comité de Investigación de Ciencias de la Salud de la Universidad Europea de Madrid approved this research. Reference number is CIPI/075/17.

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