



Developing a new approach to persistent pain management in osteopathic practice. Stage 1: A feasibility study for a group course

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ABSTRACT

Background: Persistent pain is a complex biopsychosocial problem which can be challenging to manage in clinical practice. This paper reports the first in a series of studies exploring ways to enhance care for patients with persistent pain using Acceptance and Commitment Therapy (ACT). In this study, six week 'Living Well with Persistent Pain' groups were co-facilitated by a clinical psychologist and an osteopath. **Method:** A mixed methods, repeated measures, observational design. Patients receiving osteopathic treatment were invited to 'opt-in' and attended screening interviews. Course content and structure were adapted from NHS pain services and open source ACT material. Data was collected from questionnaires at baseline, six weeks (end of course) and after three months, and semi-structured telephone interviews at three months.

Results: Fifteen patients completed a group course. Thematic Analysis of transcripts indicated that participants considered the course was helpful. Questionnaire data at three month follow-up showed small but sustained improvements in mean scores for activity and pain acceptance: CPAQ Activity change -1.02 (SD 0.90), 95%CI -1.78 to -0.27 ; CPAQ Total change -0.78 (SD 0.87), 95%CI -1.51 to -0.05 . **Conclusions:** Findings from this small feasibility study indicated that patient satisfaction with an ACT-based pain management group was high and questionnaires indicated improvements in activity and pain acceptance. However, individual responses varied widely and full data was obtained from only eight participants. Results were interpreted cautiously and used to inform the design of further studies exploring the process and effects of integrating ACT interventions directly with osteopathic care for individual patients.

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Introduction

Persistent musculoskeletal pain and pain-related disability involve increasing costs for healthcare services [1,2] and 45% of the estimated 7.8 million people with persistent pain in the UK are thought to have inadequate pain management [3]. These patients often have co-morbid health conditions and multiple pain sites [4,5], and better outcomes are reported from multidisciplinary care than from psychological or physical care alone [6,7]. Although many patients initially consult General Practitioners, first contact can also be with physical therapists, including osteopaths; a pattern that is likely to increase as the burden of musculoskeletal care increases in the aging population [8]. Pain disability results from

complex biopsychosocial interactions including central nervous system sensitisation, past experiences and reactions to pain [9]. Advances in understanding the psychological factors that influence the transition from acute pain to chronic disability [10] have informed best practice guidelines for pain management [11–13]. These programmes typically include group work in tertiary healthcare settings, with physical and psychological interventions delivered separately [6,14].

The widespread consensus that persistent pain is best understood as a biopsychosocial problem is not currently matched by agreement about how psychosocial aspects of musculoskeletal problems should be managed by physical therapists [15]. Current models of biopsychosocial care have been criticised as remaining grounded in a biomedical model [16,17], in which 'one-size-fits-all' guidelines fail to target patient sub-groups effectively [18]. Physical treatment is often prioritised [19,20], especially if practitioners lack the skills or confidence to work with psychosocial issues [21].

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Biopsychosocial models of osteopathy involve both risks and benefits. On one hand, osteopaths view the body as an integrated system [4] and focus on restoring physical function and agency in extended consultations that provide sufficient time to develop effective therapeutic relationships [22]. Non-specific treatment factors can promote well-being [23] and trusting relationships may increase patients' willingness to experience repeated exposure to discomfort, which can promote behaviour change [24,25]. Patients may welcome physical treatment but satisfaction ratings are frequently independent of changes in pain level or disability [26]. Conversely, physical therapy has been criticised for promoting passive coping strategies [27], as well-intentioned reassurance or over-protective messages about pain increase fear-avoidance behaviour [28,29], especially if ineffective physical treatment continues [30].

The search for more effective models of practice for patients with persistent pain prompted a systematic exploration of ways to integrate pain science, psychological pain management and clinical education at the University College of Osteopathy (UCO). This study explored the feasibility of creating an optional pain management course, based on the principles of Acceptance and Commitment Therapy (ACT), for patients already receiving osteopathic care. It formed a preliminary research stage in the Medical Research Council's guidelines for developing a complex behavioural intervention [31,32].

Background to the ACT approach

Psychosocial aspects of the biopsychosocial model of healthcare have been conceptualised using a range of psychological models. The most widely used and researched are Cognitive Behaviour Therapy (CBT) [23] and the more recent functional psychological approaches of '3rd wave' CBT, which include Acceptance and Commitment Therapy (ACT) [33]. ACT is a principles-based model of human functioning, with a coherent philosophical basis and an international values-based community committed to alleviating suffering and promoting well-being [34]. ACT is based on a form of philosophical holism called Function Contextualism, in which actions are interpreted as being inseparable from their context [33], which is consistent with osteopathic concepts of function and agency. It is also underpinned by a theory of cognition called Relational Frame Theory (RFT), which provides a way of understanding the limits of language-based problem solving processes [35].

The ACT model of normal psychological functioning and response to distress can be applied to all human situations [36]. The core processes are relevant to patients and practitioners, who need to be willing to explore challenges in their own lives using ACT principles and personal mindfulness practice before introducing this approach to patients. The ACT community is open source, with resources freely available to members at <https://contextualscience.org>, and principles-based interventions can be used effectively by practitioners with limited training in the theories underpinning this approach [37]. There are no formal accreditation processes and practitioners evaluate the success of their actions pragmatically in terms of 'workability' in achieving the intended aims.

Psychological flexibility is proposed as being central to well-being, and the core theoretical mechanism that mediates outcomes [33]. It is described as the capacity to act on values and what is possible in the present moment situation, rather than being constrained by habitual thoughts, feelings and impulses related to past experiences. Psychological flexibility is mediated by six, core

interconnected processes illustrated in the Hexaflex diagram (Fig. 1).

The six core processes are:

- *Acceptance* of uncomfortable experiences without trying to avoid or control them (e.g. willingness to move despite anticipated discomfort)
- *Defusion*, or the capacity to observe thoughts without reacting automatically (e.g. noticing the thought that 'hurt means harm' without reacting to it)
- *Present moment awareness* of what is going on inside and around you (e.g. of whole body sensations)
- A stable sense of *self as the context* of all experiences
- Clarity of personal *values* (e.g. What kind of person do I want to be? Who and what matters?)
- *Committed action* based on those values

ACT theories propose that habitual avoidance of unwanted experiences tends to be ineffective and risks creating a restricted life which is dominated by pain. Interventions aim to help patients recognise the effects of avoidant responses to pain and explore the impact of alternative choices, based on valued activities and roles that are personally fulfilling [37]. Randomised controlled trials have demonstrated effectiveness in managing persistent pain [38], with medium to large effect sizes for pain-related anxiety, distress, disability, physical performance, medical visits and work status [39–44], and smaller effects on pain intensity [43]. Improvements in physical and psychosocial disability, depression and anxiety may occur when mindfulness increases capacity for non-judgemental awareness and more flexible responses to pain [45,46], but further research into the underlying change processes and mechanisms is needed [23,47].

Study context and setting

The UCO clinic offers approximately 800 consultations a week, provided by student osteopaths under tutor supervision. Approximately 45% of these patients report chronic illnesses or disabilities [48], 44% have persistent pain, and the majority have multiple pain sites [49]. The clinic is located in an area of mixed inner city development and deprivation where patients often report socio-

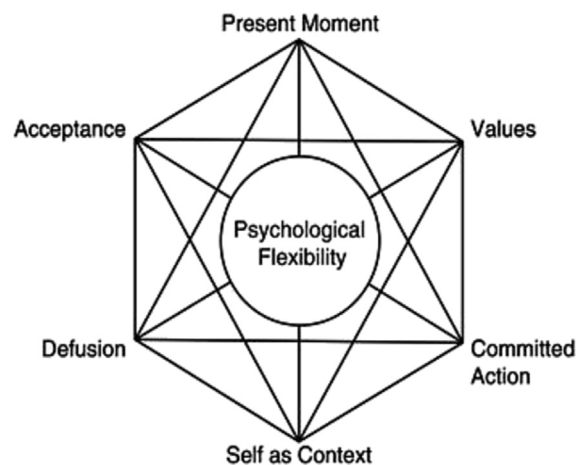


Fig. 1. The Hexaflex diagram [34].

environmental problems and psychological stress. Subsidised fees make treatment accessible for older, unemployed and disabled patients, and those with complex, long-term conditions that can be challenging to manage.

Students at the UCO have been taught theoretical ACT principles as a basis for biopsychosocial pain management since 2005, but have had no opportunities to observe ACT interventions in clinical practice. This study aimed to explore the feasibility of creating an optional 'Living Well with Persistent Pain' (LWPP) course for patients with persistent pain to supplement existing their osteopathic care. A new group course was developed and delivered collaboratively by L.N. (a psychology lecturer, NHS clinical health psychologist, ACT practitioner, trainer and Mindfulness teacher) and H.A. (an osteopath, clinic tutor and counsellor). This strategy was cost effective and required minimal staff development or resources to introduce a new ACT-based intervention into the clinic but tutors and students were not involved in course delivery or observation at this stage.

Design

The study was funded internally and approved by the UCO Research Ethics Committee in September 2010 [50], and two, six week groups were run by the course facilitators (L.N. and H.A.) in November 2010 and February 2011. The course was adapted collaboratively from an existing NHS pain management programme developed by L.N. and A.B. using open-source materials [51] and self-help resources [52,53], delivered in weekly, 2 h sessions (Table 1). Each session included a guided discovery review to explore what could be learned from the previous week's experiences, experiential activities introducing one or more ACT principles [54,55], discussions, and home practices to apply learning in daily life (Table 1). Flipcharts were used instead of Power point presentations to create a discursive learning environment, supported by printed handouts.

Intervention

Table 1
Structure of the six week group course.

Week	Topics
1	Understanding acute and chronic pain; differentiating sensations from reactions, identifying vicious circles and the 'workability' of attempts to control discomfort in terms of pain relief and quality of life; acknowledgement of losses; invitations to focus attention and energy on moving towards values.
2	Understanding the stress response, triggers, including pain, and the consequences of prolonged stress. Exploring present moment awareness and acceptance as alternative responses; exploring ways of responding to triggers; finding rest and relaxation; and introducing mindfulness practices.
3	Understanding the importance of movement and activity; using feedback from bodily sensations to regulate movement; acceptance and defusion for tackling barriers. Exploring scope for mindful movement and pacing activity in daily life.
4	Connecting with personal values in health, relationships, work and leisure; planning values-based activities and goals; working with barriers to action.
5	Developing connection, compassion and clear communication with others. Active listening skills; , working with difficulty; establishing supportive networks.
6	Review of key personal learning. Making action plans to move towards a more active meaningful and fulfilling life despite pain. Tackling barriers to action, using support, and practising self-compassion and self-care.

Participants

Participants were eligible opt-in to a course if they had experienced pain for more than six months, had no further medical diagnostic or treatment procedures currently planned, and were interested in a self-care approach to improve their quality of life. Exclusion criteria included conditions which would restrict the capacity to engage in an experiential group programme, including active psychosis, substance abuse, or lack of sufficient spoken English. The definition of persistent pain was extended beyond three months [56] to increase the chance that patients had developed avoidant coping strategies which might benefit from an experiential approach. Participants who could access the course were not excluded on the basis of medical diagnosis or appropriately managed psychological problems, such as depression or anxiety, as mindfulness interventions are considered to be low risk [57,58]. No criteria were set for continuous or episodic symptoms, pain cause or severity, as ACT interventions focus on participants' relationship to discomfort, rather than their symptoms [33].

Posters and information sheets were displayed in the UCO clinic inviting patients to apply. Clinic tutors and students were invited to provide information to patients who might be interested but direct referrals were not accepted. Some concerns were expressed about difficulties in opening up conversations with patients, including the risk that this might be heard as implying "*the pain is in your mind*" or "*not real*", or that osteopathic treatment was unsuitable. L.N. and H.A. ran seminars to address tutor and student concerns, answer questions, and demonstrate ways of introducing course information which respected patient choice and avoided coercion.

The initial consultation

Applicants were invited to a 1-h pre-course interview with both course facilitators L.N. and H.A. to explain course aims and screen for eligibility. This process was adapted from routine psychology practice in an NHS pain clinic and aimed to explore patients' experiences of living with pain and expectations of the course. Collaborative decisions were made about whether to participate or not, and patients joining a course were given preparatory handouts and the baseline questionnaires. Interviews were initially conducted by the psychologist (L.N.) with the osteopath (H.A.) as participant observer; then by the osteopath with psychologist as participant observer, and finally by the osteopath independently. Patients provided consent to audio-record the sessions and transcripts were used by for reflective practice and supervision.

Data collection

A mixed methods, repeated measures, observational design was used to evaluate data from a set of four self-report questionnaires distributed at baseline, six weeks, and three months after courses ended, including:

- Demographic data for age and sex
- WHO Quality of Life questionnaire [59].
- Chronic Pain Acceptance Questionnaire (CPAQ), measuring psychological flexibility in two subscales of Activity Engagement and Pain Willingness [60].
- Chronic Pain Values Inventory (CPVI) [61] measures 'importance' and perceived 'success' in living in accordance with values in six life domains (0 not important/successful; 5 very important/successful). Lower CPVI Difference scores indicate the perception of living a more valued life.
- Bournemouth Questionnaire (BQ) [62], a composite measure of pain, mood and avoidant coping behaviour.

Qualitative data was collected in semi-structured telephone interviews after each course ended and after three months. Open ended questions and reflective prompts were used to explore course experiences and behaviour change (Table 2). Interviews were conducted by a member of the UCO research team who was not involved in course delivery. Audio-recordings were transcribed verbatim and participants were invited to review their transcript for accuracy, to confirm their anonymity had been preserved, and make amendments if they wished. Transcripts from Group 1 were initially screened for clinically relevant themes and reported to the course facilitators (L.N. and H.A.) to inform course delivery for Group 2. Thematic Analysis was later conducted on all the transcripts by each facilitator independently, and key themes were identified through reflective discussions.

Results

Seventeen patients joined group courses in November 2010 ($n = 9$) or February 2011 ($n = 8$). Two participants withdrew from at the start of the first course due to illness but all completed the second course. Nine participants attended all six sessions (60%), five attended five sessions (33%) and one attended four sessions (7%). The majority of participants were female and the mean age of the sample was 54 (SD 10.82), ranging from 35 to 74 years (Table 3).

Qualitative findings

Interviews were conducted with the nine participants who agreed to take part. They reported variable responses to the course, but all interviewees reported some changes in the ACT processes associated with psychological flexibility (Fig. 1). The four key themes identified were: increased awareness and acceptance; engagement with valued activities; peer group experiences; and unhelpful aspects of the course. A range of experiences are illustrated in below.

Theme 1. Awareness and acceptance.

All the interviewees referred in some way to changes in acceptance of present moment pain and discomfort, and the benefits of becoming more aware, although one person rejected the idea of having to 'accept' pain.

"The pain is going to be with me all the time. but I have to understand that the pain won't kill me." (8)

Table 2
Follow-up interview schedule.

1	What was taking part in the LWWP course like for you?
2	Do you feel that anything has changed because of the course? Can you give me some examples?
3	Has there been any change in your understanding of pain since the course?
4	Were there any parts of the course that were unhelpful for you?
5	How could the course have been more helpful for you?
6	Is there anything else you would like to add?

Table 3
Demographic characteristics.

	Total ($n = 15$)	Group 1 ($n = 7$)	Group 2 ($n = 9$)
Male % (n)	27% (4)	29% (2)	25% (2)
Female % (n)	73% (11)	71% (5)	75% (6)
Mean age (SD)	54.00 (10.82)	55.57 (11.57)	52.63 (10.70)

"It deepened my awareness of how I experience pain or any kind of suffering, helped to strengthen my tools of being able to take stock." (5)

"One mindfulness exercise made me more aware of the pain. I just want to get rid of it. I don't want to accept the pain, I want it to go" (1)

The intention of mindfulness practice is to become compassionately aware of present moment experience as it is, without having to react on autopilot. Some participants described using a 'mindful pause' to pace activities or choose how to respond to stress or difficulties with potentially demanding tasks.

"I pay attention to where I sit and how I move. I've got to think a second longer about how I'm going to carry those things or use those tools. I have to pay attention to the consequences of what I will do. Before I didn't." (4)

"I feel a bit more confident since I've done the course, a bit more mature in the way I can help myself to deal with the sort of mental operations and emotional stuff that goes on. Just to be able to watch things and pull myself back in order to know that OK, this moment is tricky but you can move through it." (5)

"The main thing I remember is that in every moment, there is something else you could do. You have more choices than you think ... and the idea that you're going to have the pain anyway so you might as well do something that you enjoy." (2)

Several participants described mindfulness practice as useful for reducing pain, expanding their capacity to function, and improving relationships. Others felt that it could be helpful but said that establishing a regular practice was difficult.

"The longer you look at something without trying to analyse, and going into blaming yourself ... if you can purely look at it and observe it, then a very bizarre thing happens. Its almost like the stillness of your looking at it almost stills it ... It still feels severe but you're not so wound up in it." (5)

"I'm more tolerant with my partner when I'm in pain, not so snappy." (1)

"I'm rather impatient and while I know that were I to do say the mindfulness exercises more regularly ... I do it now and again ... it would certainly do me a lot of good." (3)

Theme 2. Valued activities.

ACT approaches aim to help people identify their personal values and engage in activities based on these values, despite pain. In contrast to practitioner-led advice, this can promote internal motivation and creativity and flexibility in making new, sustainable choices if previous activities are no longer possible.

"I love dancing. What do I like about it? What do I miss not doing it? Music, doing something in a group, moving my body, doing something so absorbing I can forget I am a cripple for a little while. How else can I fulfil these things? Do different dancing, do less dancing and accept the pain, sing in a choir, do yoga or something else in a group." (2)

Most interviewees described behaviour changes relating to physical fitness, including increased awareness of when to rest, and in social activities that gave them satisfaction and pleasure.

"I changed a lot of my daily life. Now even with pain, I'm doing things. If I combine exercise with life, that is helping me go forwards. If I don't reach [my goals] yet, thinking of ways that I can become successful." (8)

"I've kind of taken things a lot easier so it doesn't inflame the back so much." (6)

"Having more time for my partner and family ... going out for a walk together was really joyful." (6)

Theme 3. Peer group experiences.

Most interviewees reported that mutual support, sharing experiences and learning with other people was helpful. Several participants asked for more meetings and four wanted to repeat the course, although one person felt that observing other people's experiences had undermined his hope of recovery.

"Meeting with other people, seeing what their problems are, how they manage to cope, I think that's always very useful and humbling." (4)

"It reinforces your own fragility as well as your humanness, and the need to have kindness and understanding and compassion for others, but also for yourself." (5)

"I always share with people my techniques, my knowledge about the course. I say look, this exercise is good, look you can do this, you can do that, to help somebody who is willing to do it." (8)

"It seemed people going to a pain clinic are quite often at the far end of the spectrum where their lives are quite bad. Up to that point, I had thought I was going to get better and thought that I was going to get my life back, and a lot of the time that I spent there made me think 'Oh gosh, maybe I'm not'. I'm still coming to terms with that." (7)

Theme 4. Unhelpful aspects of the course.

From a functional perspective, the course aimed to help participants notice the consequences of their actions and change patterns of behaviour which were no longer working. Some participants described uncomfortable experiences but also appeared to have learned from these potentially 'unhelpful' events:

"Part of the way through, I had my worst flare up that I'd ever had ... I misunderstood some of the talking about mindfulness, which is just about accepting the pain as it is, but I pushed myself further and further ... way beyond my limits, ended up in a terrible state. We'd all talked about how we'd try harder that week to do something more. I thought I'm going to make my friend a birthday cake but repetitive whisking the double cream with a fork brought on a terrible spasm. I understand since talking to them ... that isn't what is meant by mindfulness. Its kind of recognising your limitations and working with them, rather than against them, so rather than me making this meal or this cake, perhaps just spend time with the person I was making the meal or cake for" (7)

Reflecting on the losses associated with persistent pain could be difficult, but also helped reconnect people with personal values and possibilities for change:

"Talking sometimes about being ill, and not dealing with it, does make me upset sometimes." (5)

"When I first started attending the course ... I think my brain was like a blocked up drain, full of old negative rubbish left over from all

my previous pain. Pain had made me forget who I was. The course reminded me of who I used to be and things I used to do." (1)

There were contrasting opinions about group discussions and written material.

"People talked too much." (1)

"I was taking notes because all the sessions were very important. It was like self study, trying to understand emotions, feelings, pain, thoughts." (8)

"I enjoyed reading and thinking about the handouts, practising them by myself and sharing." (5)

"You get all this information ... I don't want to sit down in the evening and read all that stuff." (6)

"Kind of more practical things, little exercises we could have done. Applying a bit of yoga or gentle things to help relax muscles." (4)

Quantitative results

Four questionnaires were distributed at baseline, six weeks and three months. The response rate was 73% (132 completed from 180 distributed) but a full data set was obtained from only eight participants. Data were tested for normality using Shapiro Wilk tests, and descriptive statistics were calculated for changes at the end of each course and three months later.

Baseline scores in Table 4 indicate relatively low levels of Chronic Pain Acceptance (mean 2.43 on a 1 to 5 scale, where higher scores indicate greater psychological flexibility). Activity engagement subscale scores were slightly better than Willingness to experience pain. CPVI Difference scores were 12.72 (range 0–30, where lower scores indicate living more successfully in accordance with important life values). Mean BQ scores were 5.98 on a 0 to 10 scale, where high scores represent poorer coping, and Quality of Life scores were 3.00 on a 1 to 5 scale, where higher scores indicate better quality of life.

At the end of the course participants recorded improvements in both CPAQ subscales for Activity engagement and Willingness to experience pain and the CPAQ Total (Table 4). CPVI Difference scores were reduced, suggesting that participants were living more successfully in valued life domains. BQ scores were also slightly lower, indicating a reduction in the negative impact of pain, and Quality of Life scores were slightly improved. However, wide variations in individual responses and lack of consistent changes in CPVI, BQ and QoL were demonstrated by the large standard deviations and 95% confidence intervals.

After three months, improvements in CPAQ Activity engagement and CPAQ Total scores were sustained (Table 5), but changes in CPAQ Willingness, BQ, CPVI Difference and QoL scores were smaller and more variable.

Implications of the findings

Participants' reports that a group format was acceptable and that they valued the social interactions and peer support were similar to findings from the COPERS trial [63]. Qualitative data provided examples of self-reported changes in psychological flexibility. Common themes included the value of mindfulness practice in helping to manage distress and develop 'body mindfulness' [64,65], release tension, and regulate activities [45,51]. Some

Table 4

Descriptive statistics for changes at end of course (n = 9).

Questionnaire Mean (SD)	Baseline	6 weeks	Difference	Lower 95% CI	Upper 95% CI
CPAQ Total	2.43 (0.90)	3.04 (0.68)	−0.63 (0.58)	−1.08	−0.18
CPAQ Activity	2.86 (1.07)	3.53 (0.96)	−0.67 (0.46)	−1.03	−0.31
CPAQ Willingness	2.00 (1.05)	2.56 (0.68)	−0.76 (0.90)	−1.45	−0.07
CPVI Difference	12.72 (5.40)	8.77 (0.42)	4.69 (7.29)	−1.41	10.79
Bournemouth Q	5.98 (2.23)	5.50 (1.51)	0.87 (1.17)	−0.03	1.77
WHO Quality of Life	3.00 (0.44)	3.21 (0.38)	−0.19 (0.31)	−0.43	0.05

Table 5

Descriptive statistics for changes after three months (n = 8).

Questionnaire Mean (SD)	Baseline	3 months	Difference	Lower 95% CI	Upper 95% CI
CPAQ Total	2.43 (0.90)	3.32 (0.53)	−0.78 (0.87)	−1.51	−0.05
CPAQ Activity	2.86 (1.07)	3.95 (0.82)	−1.02 (0.90)	−1.78	−0.27
CPAQ Willingness	2.00 (1.05)	2.69 (0.59)	−0.71 (1.02)	−1.57	0.15
CPVI Difference	12.72 (5.40)	7.30 (5.72)	6.71 (8.69)	−1.33	14.75
Bournemouth Q	5.98 (2.23)	4.91 (2.36)	1.31 (1.70)	−0.10	2.73
WHO Quality of Life	3.00 (0.44)	3.14 (0.50)	−0.19 (0.31)	−0.43	0.05

participants appeared to misunderstand that mindfulness aimed to increase awareness [66] and were disappointed that it did not reduce their pain. Limited engagement with home practice may have affected some participants' outcomes, as present moment awareness is a core aspect of developing psychological flexibility [33]. Other participants reported that 'explaining pain' improved their understanding of ways to manage stress [9,52,55], but had difficulties in sustaining self-care and values-based activities or managing flare ups after their group had ended.

Questionnaire data indicated improvement in engagement with valued activities and pain acceptance but individual responses varied widely in other outcomes, as shown in previous studies [23]. Satisfaction with the course and descriptions of change were, however, not associated with consistent quantitative outcomes, which was similar to findings by Pincus et al. [26]. Participant feedback about difficulties in responding flexibly to pain flare-ups prompted the creation of six, 2-h support groups, held between April 2011 to May 2012. Ten patients attended at least one meeting and reported behaviour changes in new activities (e.g. voluntary work, creative hobbies). They also described how the course had created opportunities for new conversations about living with pain with osteopaths providing their ongoing treatment.

Collaboration between a psychologist and an osteopath in developing a new ACT course was a fruitful learning experience, and enabled the osteopath to develop a psychologically-informed pain management approach. The groups were an 'add-on' option, however, and were separated from treatment [50]. The challenge of trying to accommodate diverse patient needs in group sessions highlighted missed opportunities to link ACT directly with physical experiences and activities. A decision was made to end the groups and create a course for individual patients that would integrate ACT principles directly into osteopathic practice. This strategy aimed to develop psychological flexibility by creating ways for osteopaths to work with patients' physical sensations as they arose during treatment, to promote more embodied learning.

Limitations and strengths

This study was conducted with patients in a specific clinical setting, which limits the transferability of the findings. Conclusions are also limited, as a full set of questionnaire data was obtained from only eight participants and there was no control group. Course facilitators analysed the data with limited external feedback and

were not fully blinded to participants' identities in transcripts or questionnaires. This may have influenced data interpretations, and it is unlikely that data saturation was achieved in the nine interviews. The groups were resource efficient but provided limited opportunities to include physical activities or integrate ACT with manual treatment to promote more embodied learning.

The study created an innovative persistent pain management intervention for patients attending the UCO clinic, and generated empirical data from the collaboration between a psychologist and osteopath. Participants reported that they were satisfied with the group format and process, and there was evidence of improvement in ACT processes associated with psychological flexibility. This is aligned with findings from a recent systematic review indicating the positive effects of ACT interventions for chronic pain [67]. Learning from this study was used to inform the design of qualitative research exploring process and effects of integrating ACT with osteopathic care for individual patients, and a longer-term cohort study [68] which has shown promising preliminary outcomes [69].

Conclusion

Data from eight patients who completed self-report questionnaires about the effects of participating in a six week 'Living Well with Persistent Pain' group demonstrated small but sustained improvements in psychological flexibility, measured as increased activity engagement and pain acceptance. There were more limited changes in quality of life, valued living and pain coping behaviour. Individual responses to the course varied widely and it was separated from osteopathic treatment, which limited learning opportunities for patients and student osteopaths in the UCO clinic. The facilitators' experiences of course delivery generated innovative ideas for integrating ACT principles directly with manual therapy and informed the development of further research. An auto-ethnographic case study exploring the process of integrating ACT with osteopathic care for individual patients, and the three year OsteoMAP study evaluating outcomes from a larger sample will be reported in other papers.

Contributors

L.N. and H.A. conceived the original idea for the study and were responsible for content and structure. Both authors contributed to

writing the paper and approved the final version.

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Competing interests

None.

Ethical statement

This study was approved as an internal clinical service development project by the UCO Research Ethics Committee (formerly the British School of Osteopathy Research Ethics Committee) in September 2010.

Provenance and peer review

Not commissioned, internally peer reviewed.

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