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Power of creative arts for older people with chronic pain and depressive symptoms: co-development of the Rewire with Arts protocol and findings from a pilot study

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Background

Chronic pain and depression are common in older people, and creative activities may lower the perceived impact and distress related to the symptoms.

Aims

This study describes the co-development of a creative arts and crafts protocol for older people with chronic pain and depressive symptoms, and investigates its feasibility and potential effects.

Method

This study had two phases. In phase 1, a multidisciplinary expert panel ($n = 10$), consisting of professionals, patients and researchers, underwent iterative rounds to co-develop the protocol. In phase 2, a pilot study was conducted among 12 older adults (mean age 71.4 years). Mixed methods were used, including questionnaires at baseline, post-intervention and 3-month follow-up, assessing pain intensity and interference, depressive symptoms and quality of life; observational notes and focus groups. Descriptive and Wilcoxon signed-rank tests were applied to analyse quantitative data, and thematic analysis was used for qualitative data.

Results

Qualitative findings supported the programme's feasibility. Participants reflected that the process was engaging and empowering and brought them a sense of achievement and recognition. The quantitative findings evidenced the programme's potential effects in reducing depressive symptoms ($Z = -2.60$, $P < 0.01$) and improving mental health-related quality of life ($Z = -2.67$, $P < 0.01$) at 3-month follow-up.

Conclusions

Our results support the feasibility of a creative arts and crafts programme and provide preliminary evidence of its impact on reducing depressive symptoms and improving mental health-related quality of life. Given the promising results, a definitive trial is needed to reveal the effectiveness of creative activities in pain management.

Keywords

Mental health services; chronic pain; co-design; creative arts; mixed methods.

Chronic pain in older people

Pain processing is one of the most vital bodily functions and is biologically required for survival. However, chronic pain – typically defined as pain that persists beyond the expected period of recovery (approximately 3 months) and may or may not be related to a specific cause or tissue damage[1] – is a phenomenological experience resulting from complex interactions among biological, psychological and social factors.[2] Chronic pain is highly prevalent in older people, with the literature revealing considerable variations ranging between 27 and 86%.[3] Chronic pain is associated with significant distress, disability, lower quality of life and social isolation for older people, and also increased expenses and strain on healthcare systems.[4] Compared with younger people with chronic pain, older people are more prone to high-impact chronic pain, i.e. chronic pain accompanied by activity/life participation limitations.[5] High-impact chronic pain is associated with an increased risk of depression; therefore, there is a high comorbidity of chronic pain and depression in older people, and a 2-year longitudinal study among older adults estimated that it affects 13% of the older adult population.[6] The coexistence of chronic pain and depression also tends to aggravate the severity of both disorders further, leading to a higher disease burden.[7]

Researchers have proposed several theories for the high comorbidity of chronic pain and depression. From a biological perspective, it has been suggested that there are considerable overlaps between the neural mechanisms in processing and responding to pain and depression in the brain.[8] For example, the decreased availability of monoamine neurotransmitters, including serotonin, dopamine and norepinephrine, plays a vital role in the development of depression and is also important for the occurrence and development of pain.[9] So far, pharmacological treatment of pain has predominantly focused on suppressing physiological responses by using opioids. However, despite its effectiveness in managing acute pain when used appropriately, long-term opioid use for chronic pain may harm both individuals and society.[10] In addition, some opioids may increase the risk of serotonin toxicity when combined with antidepressants, causing complications in treating comorbid chronic pain and depression.[11] Therefore, treatment for chronic pain is often approached from multidisciplinary and biopsychosocial perspectives, particularly for

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older adults, and non-pharmacological treatments focusing on the intricate link between chronic pain and depression have been gaining increased recognition.[12]

Evidence-based non-pharmacological interventions

Exercise and psychosocial interventions are the two main non-pharmacological interventions that have shown effectiveness in managing chronic pain.[13] Various types of exercise, such as resistance training, balance and aerobics, effectively prevent falls and improve physical limitations imposed by pain.[14] Considering the biopsychosocial aspects of well-being, combining physical activity and mental health strategies to manage pain has been advised.[13,15]

The most commonly used mental health strategy for chronic pain is cognitive–behavioural therapy (CBT). The primary objective of CBT is to mitigate pain and distress by regulating and altering maladaptive thoughts, behaviours and physical sensations associated with pain.[16] A systematic review and meta-analysis reported modest advantages of CBT in reducing pain and catastrophising beliefs, as well as enhancing self-efficacy in pain management among the older adult population.[17] However, the paradox lies in the fact that the intent to control thoughts and pain may inadvertently escalate the severity of pain.[18] Moreover, CBT does not yield benefits for all individuals experiencing chronic pain; for instance, older adults are less likely to report a decrease in pain interference than their younger counterparts post-CBT.[16]

Other approaches gaining momentum are 'third-wave' interventions, such as mindfulness-based cognitive therapy, mindfulness-based stress reduction, and acceptance and commitment therapy.[19,20] Mindfulness, a multifaceted construct encompassing observation, description, acting with awareness, non-judgement and non-reaction, is strongly tied to acceptance, particularly in the latter two facets.[20] A meta-analytic review of the effects of mindfulness- and acceptance-based therapies on mental health and pain interference outcomes suggested that these approaches had small to moderate effect size at post-treatment, and from small to large effect size at follow-up, demonstrating them as a good alternative to CBT.[19]

Despite the promising effects of evidence-based non-pharmacological interventions, several obstacles exist in conducting such interventions in older Chinese, particularly tied to depression. The stigma of mental health and face-saving culture may hinder older Chinese people from seeking help related to depression and chronic pain. Preservation, maintenance and protection of the 'face' are crucial Confucian principles that many Chinese practice.[21] Face, according to Confucian philosophy, represents a person's status, including social, wealth, power and moral status.[21] Chinese people, particularly older Chinese people, would rather hide than disclose any mental illness status to save face, leading to greater stigmatisation in Chinese society as well as internalised stigma.[22] Although older people frequently seek help for their chronic pain, when the intervention targets comorbid chronic pain and depression, their rate of help-seeking is low.[22]

Creative arts-based interventions

Over the past few decades, creative arts have been increasingly used for mental and physical health and have been shown to be beneficial for mental well-being,[23] although arts specifically for chronic pain is a relatively nascent area. A review discussed how creative arts therapies might treat the biopsychosocial dimensions of chronic pain through lower pain perception, by directing the mental focus away from the pain sensation and focusing on here-and-now activities and sensory awareness interacting with art materials.[24] It is worth noting that art therapy and participatory art are not equivalent: the former is typically practised by trained art therapists and regulated by professional bodies, whereas the latter is usually community-based, facilitated by artists and other mental health professionals.[25] Nevertheless, both art therapies and participatory arts utilise various art forms, and the therapeutic effects can be embedded in the art-making process.[26] Creating artwork functions not only as a distraction, but also as an experiential way of teaching people how to regain control over their lives by selecting art materials and creating something unique, offering a potent medium for self-expression and a creative outlet.[27]

The intersection of neuroscience and the arts has opened up fascinating insights into how engaging in creative artwork can potentially 'rewire' pain experiences and narratives. This process is rooted in the brain's remarkable plasticity its ability to reorganise and form new neural connections throughout life.[28] Moreover, arts are also deemed enjoyable and stigma-free, and have already been adopted by many care services for older people, including in Chinese communities.[29] In short, there is enormous potential for applying arts to ameliorate chronic pain and depression in older adults.

Research gap

Given the increasing interest in non-pharmacological modalities and the expanding number of studies in utilising creative means in care over the past decade, we used a participatory approach to co-design an intervention using creative arts and crafts. We tested its feasibility and effects through a pilot study. The aims of this paper are to (a) describe the participatory co-design process of the cultural arts programme for older adults at risk of depression; (b) report on a pilot test of the intervention examining its feasibility and post-intervention effects on increasing empowerment, reducing self-stigma about depression and ageing, and reducing depressive symptoms among older adults in Hong Kong; and (c) describe the final intervention programme.

Method

This study used a mixed-methods design and drew on participants in a community-based holistic mental health programme for older adults at risk of or with subthreshold depressive symptoms in Hong Kong (JC JoyAge).[30] All study participants were recruited from district-based community care centres for older people, through JC JoyAge. The arts-based intervention for older adults with chronic pain and depression is part of a randomised controlled trial (ClinicalTrials.gov identifier: NCT05528536); other than arts and crafts, participants also receive physical exercise, and details of the exercise protocol are described elsewhere.[31]

Phase 1: co-development of the protocol

Sample

The protocol's co-development was led by an expert panel comprising two researchers, four professionals (one registered art therapist recognised by the Art Therapy Credentials Board, one counsellor, one social worker and one clinical psychologist, all of whom had extensive experience working with older adults), and three older adult volunteers (potential patients aged 60 years or over). They all provided written consent before participating in the co-development workshops.

Procedure

The co-development process was conducted mostly online because of public health considerations caused by the COVID-19 pandemic. First, two researchers undertook a literature review on chronic pain,

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depression, effective interventions for older adults with these two conditions and the utility of arts for chronic pain management. They summarised and shared the results with all professionals and older adult volunteers. Second, the researchers facilitated two workshops (each of 3 h duration) with participants to co-design the protocol, and conducted follow-up telephone calls and Zoom meetings for clarification. Third, the researchers consolidated the materials from the two workshops and participant feedback, drafted a protocol and shared it with all participants for review. Fourth, the researchers arranged a Zoom meeting with two professionals and three additional older adult volunteers not involved in the design process, to try out one arts-based activity (*origami*). Participant feedback on the feasibility of the activity was collected, and more details on the rundown and group contract were discussed with the professionals. Finally, the researchers and one art therapist refined the intervention protocol based on feedback from the online trial, and there were several iterations before the protocol was finalised. The co-design process lasted from October 2021 to March 2022. During this process, all participants were empowered to feel that they were the experts of their experiences and contributed to the creativity design process with their domain of expertise. The empowerment was realised through knowledge transfer and mutual learning. All participants, researchers, professionals and older adults worked collaboratively without a power hierarchy. In this process, participants were encouraged to 'power within', i.e. unlock and mobilise knowledge and resources they had access to, and 'power with', i.e. connect and gain capacity with one another in the group towards the same objective.

Phase 2: pilot study of acceptability and feasibility of the protocol

Sample

A convenience sample was recruited from two partnered community care centres for older adults in the JoyAge project.[30] The JoyAge project serves community older adults aged 60 years and above who are at risk of or with mild to moderately severe depressive symptoms, and the recruitment is done through non-governmental organisations. The inclusion criteria of this pilot study were as follows: (a) aged 60 years or above, (b) mild to moderately severe depressive symptoms (operationalised as a total score between 5 and 19 for the Patient Health Questionnaire-9 (PHQ-9)),[32] (c) chronic pain for over 3 months and (d) able to give informed consent to participate. Exclusion criteria were as follows: (a) a known history of autism, intellectual disability, schizophrenia spectrum disorder, bipolar disorders, Parkinson's disease or dementia; (b) imminent suicide risk; (c) difficulty in communication; (d) a stroke, fracture, cardiovascular disease, cardiovascular surgery, artery disease, surgery on vertebrae or knee replacement in the past 6 months, for the principle of 'do no harm', as this group may be at higher risk for adverse outcomes; and (e) prohibited from physical activity on the advice of a medical professional.

Procedure

All participants provided written consent before participating in the pilot study. They completed a questionnaire and performed a fitness test before the intervention (T0), after the intervention (T1) and 3-month follow-up (T2). The intervention includes 8 weeks of arts and crafts (2 h each week) and guided exercise (1.5 h each week). In the pilot phase, the arts and crafts component was conducted by a provisional registered art therapist with an assistant trained in psychology, and the exercise component was led by a physiotherapist. At the post-intervention assessment, participants were also invited to a 90-min focus group facilitated by two trained research assistants who were not involved in delivering the intervention. The focus groups were conducted in Cantonese, recorded and transcribed verbatim for analysis.

Measures

Primary outcomes: Pain severity and pain interference were assessed with the 11-item Brief Pain Inventory.[33] Pain experience and its impact on daily activities were measured from 0 (no interference) to 10 (interferes completely). Separate means were calculated for severity and interference items (Cronbach's alpha for severity 0.81; Cronbach's alpha for interference 0.89).

Depressive symptoms were assessed with the Chinese version of the PHQ-9.[34] The assessment combines depression diagnostic criteria with other leading major depressive symptoms, and the frequency of the symptoms is rated from 0 (not at all) to 3 (nearly every day). The total score ranges between 0 and 27, and it is divided into the following categories of increasing severity of depressive symptoms: 0–4 none, 5–9 mild, 10–14 moderate, 15–19 moderately severe and ≥20 severe (Cronbach's alpha 0.91).

Secondary outcomes: Anxiety symptoms were assessed with the validated Chinese version of the two-item Generalised Anxiety Disorder (GAD-2) questionnaire,[35] a screening tool for generalised anxiety disorder, using the two core questions from the GAD-7: feeling nervous/anxious and control worrying. Scores range from 0 (not at all) to 3 (nearly every day) for each question.

Health-related quality-of-life was assessed with the 12-item Short Form Survey (SF-12),[36] comprising 12 questions measuring eight health domains to assess physical and mental health. Item scores range from 1 (all the time) to 6 (none of the time); the higher the score, the higher the health-related quality of life. Separate means were calculated for physical health and mental health items (Cronbach's alpha 0.91).

Other secondary outcomes of exercise include *gait speed and mobility, balance, lower and upper body strength, and aerobic capacity*. Supplementary Table 1 includes details of the measures for these outcomes.

Descriptive measures: Participants' demographic characteristics were collected, including age (in years), gender, level of education, marital status (married versus single, divorced or widowed), mobility (ambulatory versus non-ambulatory), hearing status (normal versus impaired), body mass index and methods used for pain relief.

Focus group interview

The purpose of the focus group was to understand the experiences of the intervention group participants, including their perceptions of the usefulness of arts and crafts for pain and depression and the potential mechanisms. Eight open-ended questions guided the focus group on two dimensions: (a) comments on the group activities and (b) perceived influence on themselves. Details of the questions are included in Supplementary Table 2 available at https://doi.org/10.1192/bjo.2025.10062.

Observational notes

After every session, two research assistants and two facilitators recorded observational notes. A framework was used for recording the observations, and the following aspects were included: (a) subjective participants' subjective sharing about pain experience, and feelings during and after art-making; (b) objective observation of participants' behaviour and arts created during the session; and (c) personal assessment and reflection participants' personal assessment as how art making affects their pain experience/interference, and reflection of what works for them. In total, 16 notes were collected: half from the research assistants and half from the facilitators.

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Analysis

Quantitative data analysis: Participants' characteristics were analysed by using descriptive statistics. Participants who withdrew from the intervention and their reasons for withdrawal were also documented. Primary and secondary outcomes and treatment process measures were analysed by Wilcoxon signed-rank test, because it is suitable for data from a small sample that do not fulfil normal distribution assumption required for the paired *t*-test. All quantitative analyses were conducted with SPSS software (version 29.0 for Windows).

Qualitative data analysis: Two independent researchers with a significant background in mental health studies who were not involved in the pilot study transcribed the recordings from the focus groups. Then, they conducted a thematic analysis of the transcription and observational notes. This analysis involved an iterative method that included getting acquainted with the data, creating codes, identifying and outlining themes, and refining those themes. First, a sample of focus group transcription and two observational notes were analysed jointly (H.S.K., J.K.Q.L.) to create a list of initial codes, which were then merged, refined and sorted into a hierarchy of overarching themes. Second, coders independently coded another focus group transcription and two more observational notes with the codes developed in the first step, then they met to review and compare their coded passages. Deviant cases were discussed with two senior researchers (T.L., D.K.Y.L.), to arrive at a consensus, and themes were refined based on the coded data. This process of researcher corroboration is designed to maximise the trustworthiness of results and minimise bias within the analysis process.[37] Finally, researchers coded the remaining transcriptions and observational notes with the refined codebook. Microsoft Excel 2021 for Windows was utilised for the analyses.

Ethics statement

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. All procedures involving human patients were approved by the Human Research Ethics Committee of the University of Hong Kong (reference numbers: EA2003001A and EA200132).

Results

Phase 1: Rewire with Arts protocol

Objectives and guiding principles

Volunteers, art therapists, social workers and counsellors agreed on the programme's objectives, including reducing pain interference and depressive mood and increasing empowerment. Five fundamental principles were derived from these objectives to guide the design of the protocol to (a) balance between novelty and familiarity in the choice of art materials; (b) allow different levels of participation, ranging from appreciation to modelling and creation; (c) bring awareness to self-control over the perception of pain when creating artworks; (d) reinforce positive feedback within and between members in groups and (e) generate a sense of fulfilment through making and sharing art products.

Arts and crafts chosen for the programme

The importance of materials: In creating artwork, art material has a pivotal role in enabling or constraining the experience and expression of participants. Art materials can be used as an object of transference for clients, projecting their internal feelings, emotions and memories.[38] Compared with traditional psychotherapy, using art materials could enhance participants' self-exploration, encouraging them to externalise their feelings and emotions.[39] The expressive therapies continuum (ETC) is a theoretical model for assessing and applying media in art therapy.[39] Although this study focused on developing a participatory arts and crafts programme that differs from art therapy in the degree of using art as a psychotherapy element, we referenced the ETC model in choosing art materials. According to the ETC, artistic creation consists of four dimensions: (a) kinaesthetic/sensory (K/S level), expressing feelings through body movements; (b) perceptual/affective (P/A level), converting feelings into images to release suppressed emotions; (c) cognitive/symbolic (C/S level), identifying the meanings of symbols, and (d) creativity, performing creative functions using the other three dimensions.[39] Guided by the principles agreed by the expert panel and the ETC theory of art therapy, four arts and crafts modalities were chosen, and the choice was balanced between familiarity and novelty, which were *origami* (paper folding), decoupage (cut out and collage), mosaic and collective collage. The descriptions of the art materials, the rationale of choice, their relation to Hong Kong older adults and ETC levels are summarised in Supplementary Table 3.

Prototype and structure of each session

The prototype consisted of eight 2-h weekly sessions, covering the four arts activities as aforementioned; details of each session are summarised in Table 1. Art therapists suggested a higher level of structure within each session, i.e. routine, because it can lower the cognitive requirement and provide a relative sense of familiarity and a non-threatening environment for expression. In addition, warm-up activities with arts, such as pain drawing sketches and mindfulness-based interaction with art materials, may enable participants to focus on their pain in the here and now. The routine was co-developed by professionals and older people and is summarised in Supplementary Table 4.

Phase 2: pilot study findings

Quantitative data results

Twelve participants, all female, with a mean age of 71.4 years (s.d. = 7.9), were enrolled in the pilot group. Just under two-thirds (58.5%) completed their education at secondary school or higher. All participants completed the intervention with over 80% attendance. Other demographic information is summarised in Table 2. All of them self-reported to have chronic pain for over 3 months, and none of them had a diagnosis of depression or were on antidepressants. Participants used various methods for pain relief, including paracetamol ($n = 9$), pain relief patches/tapes ($n = 9$), *dit da jow* (a traditional Chinese medicine for external use only, $n = 8$), acupuncture ($n = 6$) and massage ($n = 5$).

Table 3 summarises the clinical measures at three time points. No significant change was observed between T0 and T1, presumably due to the small sample size; although there could be a delayed effect, because significant improvements were found in mental health as indicated by reduced PHQ-9 total scores ($Z = -2.60$, $P < 0.01$) and PHQ-9 cut-offs for depressive symptom severity ($Z = -2.53$, $P < 0.01$), and increased SF-12 mental health scores ($Z = -2.67$, $P < 0.01$) between T0 and T2. In terms of pain interference, there was no significant change between T0 and T1; however, on the individual items, the interference of pain on enjoyment of life decreased from T0 to T2 ($Z = -2.02$, $P < 0.05$). Similarly, in physical domains, no significant difference was found between T0 and T1. Participants showed significant improvements at T2 over T0 in the 30-s sit to stand test ($Z = -2.57$, $P < 0.05$), grip

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Table 1 Outline of the 8-week Rewire with Arts programme

Theme	Key activities	Arts and crafts materials	ETC
1. Introduction to the programme, getting to know group members	Group contract agreement, sharing of preferred leisure activities related to art; art appreciation; trial creating artwork	Coloured scratching paper (plain and with pattern), scratching pen	
2. My unique coin wallet	Follows the regular rundown (Supplementary Table 3); introduction to decoupage; design and make decoupage on cloth coin wallet	Cloth coin wallet, decoupage glue, pattern paper, scissors, pen, sponge, hair dryer, paper cup	P/A, C/S and creativity levels
3. One and only eco bag	Regular rundown; introduction to more advanced decoupage technique; make large decoupage on cloth eco bag	Cloth eco bag, others same as session 2	P/A, C/S and creativity levels
4. Refresh childhood memories through *origami*	Regular rundown; introduction to *origami*; sharing of childhood/young adulthood memories about *origami*; make simple *origami* patterns	Coloured *origami* paper, patterned *origami* paper, colour-shifting paper, scissors	K/S and C/S levels
5. Something old, something new	Regular rundown; introduction to more advanced *origami* technique; make modular *origami*	Same as session 4	K/S and C/S levels
6. Memories to cherish	Regular rundown; introduction to mosaic; prompt participants about cherishing moments, and decorate the photo frame with mosaic tiles	Wooden photo frame, fibre mosaic tile, glass mosaic tile, glass gems, bond glue, toothpick	K/S, C/S and creativity levels
7. My treasure box	Regular rundown; introduction to more advanced mosaic technique; prompt participants about things they value and decorate a personalised box for keeping them	Wooden box, others same as session 6	K/S, C/S and creativity levels
8. Summary of the 'rewiring' journey	Regular rundown; facilitate participants to reflect on the whole programme and collectively make a collage to reflect this journal for them	Coloured paper, colour pencil, marker pen, bond glue, scissors, tape, ribbons, scrap paper from session 4	P/A, C/S and creativity levels

ETC, expressive therapies continuum; P/A, perceptual/affective level; C/S, cognitive/symbolic level; K/S, kinaesthetic/sensory level.

Table 2 Pilot group participants' demographic characteristics and pain relief methods ($n = 12$)

Demographic characteristics and pain relief methods	*n*/mean	%/s.d.
Age, years (mean/s.d.)	71.42	7.90
Gender (female) (*n*/%)	12	100
Marital status (*n*/%)		
Married	7	58.33
Single/divorced/widowed	5	41.67
Education (*n*/%)		
Primary school or below	5	41.67
Secondary school or above	7	58.33
Mobility (*n*/%)		
Non-ambulatory	4	33.33
Ambulatory	8	66.67
Hearing (*n*/%)		
Normal	10	83.33
Impaired	2	16.67
Body mass index (mean/s.d.)	25.93	4.37
Methods used for pain relief (*n*/%)		
Paracetamol	9	75
Pain relief patches/tape	9	75
Dit da jow[a]	8	66.67
Acupuncture	6	50
Massage	5	41.67

a. *Dit da jow* is a common Chinese liniment used as traditional medicine for reducing pain through external use.

strength in both right ($Z = -2.94$, $P < 0.01$) and left ($Z = -2.05$, $P < 0.05$), and 2-min step test ($Z = -2.54$, $P < 0.05$).

Qualitative data results

Six of the 12 pilot study participants participated in the focus group; others did not because of time clashes. Supplementary Table 5 presents an organised summary of the themes and codes from the focus group discussion and observational notes, featuring illustrative examples from participants' statements.

Acceptability and feasibility of the programme: All participants commented on the programme's acceptability and feasibility for various reasons. Four mentioned it was a new and novel experience, and all agreed that the activities were fun and pleasing. One mentioned that the programme could be integrated into the regular activities offered in the care centres.

Perceived changes related to pain coping: Participants mentioned insights they gained from this programme and how that influenced their coping with pain. They highlighted the implication of the pain drawing sketch activity (Fig. 1, description of activity in Supplementary Table 2) for increasing their awareness of bodily sensations and acceptance of pain. All expressed how participating in creating artwork enabled them to achieve a better locus of control and made them realise that they could perform tasks without feeling pain: 'Time went so fast when we created artwork. I realised that I did not feel the pain while creating artwork'.

Effects of arts and crafts: Participants mentioned the effects of arts and crafts on their mental wellness, both the process of creating artwork and the final products. They shared that creating artwork gave them a sense of achievement; they appreciated the aesthetic values of art products; they felt empowered to learn and try new things in their free time; and the art products made them seen and appreciated by their friends and families. Two participants mentioned giving their artwork as gifts to their friends: 'I showed my friends the coin bag we made, and they appreciated it so much and praised me for my skills. The artwork made me seen by other people'. One participant video-called her grandson, who was in London, showcased her work to him and said she would tailor one for him when he next returned home.

Effects of group and peers: All participants mentioned the effects of group and peers, and they attributed the changes they experienced to the therapeutic alliance with the facilitators, the non-judgemental and safe environment in the group for them to share, the camaraderie among group members so that they felt understood and accepted, the resource sharing and the overall harmonic atmosphere. One participant shared her feelings when making the collective hand drawing (Fig. 2; description of activity in Supplementary Tables 3 and 4) and said: 'I enjoyed the collective

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Table 3 Outcome measures in pilot testing ($n = 12$)

Primary and secondary outcomes at different time-points	T0	T1	T2	Comparison, Wilcoxon signed-rank (*Z*)	
	Mean (s.d.)/*n* (%)	Mean (s.d.)/*n* (%)	Mean (s.d.)/*n* (%)	T1 *v.* T0	T2 *v.* T0
Primary outcome					
BPI individual scores (0–10)					
Pain worst	6.92 (1.08)	5.91 (3.15)	6.08 (3.4)	−0.98	−0.72
Pain least	3.25 (1.66)	3.36 (2.38)	3 (2.59)	−0.35	−0.99
Pain average	5.17 (1.34)	4 (2.28)	4.58 (2.64)	−1.37	−0.85
Pain now	3.92 (2.28)	3.91 (2.39)	3.08 (2.75)	−0.26	−1.57
General activity	2.25 (2.14)	3.73 (3.47)	3.33 (3.26)	−0.42	−0.72
Mood	5.25 (2.56)	4.64 (3.38)	4.33 (3.58)	−0.48	−1.30
Walking	4.58 (2.47)	4 (2.83)	3.92 (3.7)	−0.27	−0.56
Work	5.33 (2.71)	3.64 (3.08)	3.83 (3.64)	−1.61	−1.16
Relationship with others	5.42 (2.64)	3.82 (3.4)	3.08 (3.42)	−1.16	−1.59
Sleep	3.83 (3.90)	4.82 (4.24)	4.42 (3.61)	−0.78	−0.78
Enjoy	5.33 (2.90)	4 (3.95)	3.42 (3.18)	−1.18	−2.02*
Average scores					
BPI pain severity (0–10)	4.18 (1.38)	4.30 (2.26)	4.18 (2.60)	−0.61	−1.06
BPI pain interference (0–10)	4.57 (2.16)	4.09 (3.28)	3.76 (3.23)	−0.62	−1.26
PHQ-9 total score (0–27)	7.92 (3.09)	7.27 (6.83)	4.33 (3.06)	−0.77	−2.60**
None to mild symptoms	9 (75%)	10 (83.3%)	12 (100%)		
Moderate	2 (16.7%)	1 (16.7%)	0	−0.58	−2.53**
Moderately severe	1 (8.3%)	1 (16.7%)	0		
Secondary outcomes					
GAD-2 (0–6)	2.67 (1.30)	2.18 (2.27)	1.83 (1.99)	−0.99	−1.40
SF-12 Physical	34.29 (7.07)	37.55 (13.62)	35.72 (13.62)	−0.76	−0.47
SF-12 Mental health	35.81 (9.48)	40.58 (12.25)	44.17 (10.57)	−1.38	−2.67**
Physical domains[a]					
TUG	15.55 (7.53)	13.97 (7.54)	12.37 (6.36)	−1.33	−1.78
4-Stage Balance Test (Full Tandem)	9.23 (2.30)	7.91 (3.24)	7.72 (3.72)	−1.46	−0.94
Balance Single Leg	5.44 (4.29)	5.29 (4.78)	5.16 (4.62)	−0.31	−0.68
30 s Sit to Stand Test	7.25 (3.65)	7.58 (3.32)	10.00 (3.03)	−1.10	−2.57*
Grip strength (right)	34.43 (13.41)	35.24 (12.41)	40.65 (11.40)	−0.16	−2.94**
Grip strength (left)	33.17 (15.88)	34.36 (14.23)	37.85 (15.93)	−0.71	−2.05*
2-Min Step Test	62.33 (32.43)	67.25 (28.36)	89.91 (19.67)	−0.49	−2.54*

T0, baseline; T1, post-intervention; T2, 3-month follow-up; BPI, Brief Pain Inventory; PHQ-9, Patient Health Questionnaire-9 item; GAD-2, Generalised Anxiety Disorder-2 item; SF-12, Health-related quality-of-life Short Form; TUG, Timed Up and Go.
*$P < 0.05$, **$P < 0.01$.
a. The descriptions and details of physical domain outcomes are summarised in Supplementary Table 1.

artwork the most; we bonded, and our hand drawings formed a "blooming garden"'.

Challenges: Participants also mentioned the challenges they faced in and outside the programme, including comparison with others, high demand for dexterity in some activities and difficulty finding the same art materials outside the programme. One objective of the programme was to reinforce positive feedback within and between members of groups. To address the potential inferior feeling derived from comparison, the facilitator stressed the subjective qualities of aesthetics throughout the sessions, and that there is no absolute standard for comparison.

Discussion

Utilising an iterative and collaborative approach, participants designed the Rewire with Arts programme, which used arts and crafts for older adults with chronic pain and depressive symptoms. Our two-phase research highlighted the significance of involving key stakeholders in the creation of an innovative programme for this population, and provided early evidence of how creating artwork can contribute to the improvement of mental health and coping with chronic pain. These results can potentially encourage the development of more groundbreaking programmes to benefit the mental wellness of this population, by incorporating arts and other creative aspects in the process and inform a more comprehensive programme evaluation in the future.

Our study shows that this creative arts-informed programme was feasible and well-accepted by older adults with chronic pain and depressive symptoms. It has the potential to be integrated into the regular programmes offered in care centres for older people and, therefore, scaled up in community settings. The outline of each session and descriptions of arts-based mindfulness activities may serve as training materials for professionals or paraprofessionals in care centres for older people. The enjoyable and stigma-free nature of art appreciation and creating artwork may further attract older adults with mental health risks who are unknown to the existing services.

Moreover, the engaging nature of the creative arts process and the tangible art product, which others can see and appreciate, may offer benefits compared with other psychotherapies. During the sessions, participants recounted that they forgot or got distracted from their perception of chronic pain, which is partly because the immersive nature of creative artwork can serve as a distraction, drawing attention away from pain and toward the creative process. This may reflect them entering a mindful or flow state, characterised by being absorbed in the activity, losing a sense of time, and intense and focused concentration, which is an intrinsically rewarding experience.[40] Several neurobiological mechanisms may explain the flow state and positive outcomes. First, engaging in creating artwork activates the brain's reward pathways, releasing neurotransmitters like dopamine.[41] This creates a sense of pleasure and satisfaction and modulates pain by shifting attention away from pain signals, thereby altering the individual's experience of pain. Second, creating artwork has also been shown to lower

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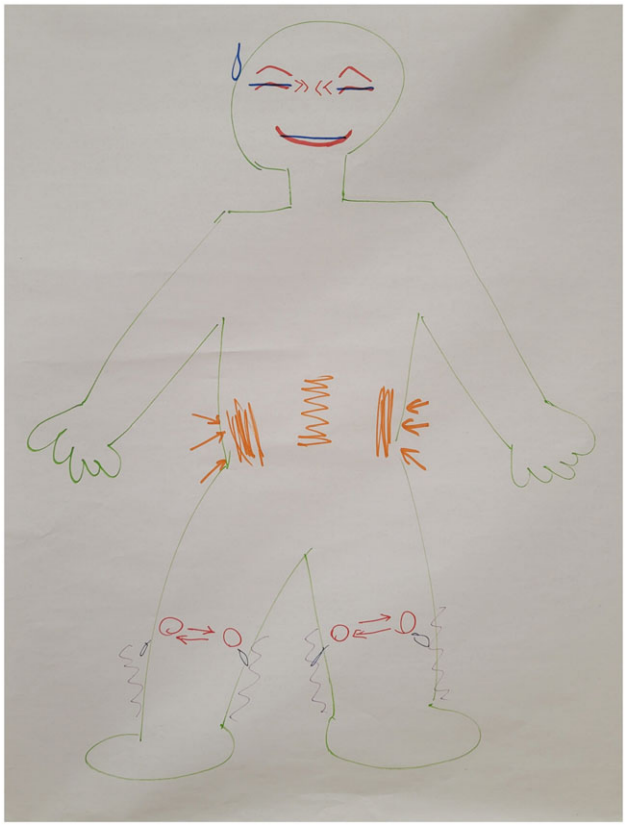

Fig. 1 Example of pain drawing sketch. Areas of pain in the body are marked with different shapes and colours; the facial expression changed from 'helpless' before the session started (blue marker) to 'happy' (red marker) at the end of the session.

Fig. 2 Example of group hand drawing.

cortisol levels, a stress hormone, in the body.[42] Since stress can exacerbate pain perception, reducing stress through art can indirectly mitigate pain experiences. Third, engaging in the arts can stimulate neuroplastic changes in the brain, enhancing its ability to reorganise and adapt.[43] This includes the potential to alter the way pain is processed and perceived. Finally, creating artwork allows for cognitive reappraisal or the reinterpretation of experiences,[43] thus enabling individuals to construct new narratives around their pain that may be more positive or empowering.

Participation in group settings can foster a sense of community and support, and creative arts activities can provide a safe environment for older adults to process life experiences and promote personal growth. Social support is known to be a crucial factor in coping with chronic pain;[44] the shared experience of chronic pain and creating artwork can strengthen feelings of connection and reduce feelings of isolation associated with pain. Empirical studies show that group intervention is more effective in reducing loneliness and improving health and cognition for older people.[45] Researchers also point out that in group-based and goal-oriented interventions, the participants themselves can influence the structure and the outcome of the group rather than just being group followers, leading to empowerment and improved well-being for participants.[46] However, it is also worth noting that some participants mentioned that the nature of the group may induce stress as a result of comparing their own and others' artwork. Facilitators of arts-based groups must be mindful of this potential side-effect, and remind the participants that there is no objective standard in arts.

Limitations

The study has several limitations. First, the pilot sample size was limited and lacking a comparison group, which made it difficult to rule out the possibility of regression toward the mean in the improvements. A more robust study design is necessary to confirm the programme's efficacy, such as a quasi-experimental study or, where feasible, a randomised controlled trial. Second, the arts and crafts programmes were administered in a group setting, making it hard to discern the effects of social activities from engaging in arts. A comparison group with participants engaged in individual art-making is needed in future research. Third, the findings may not apply to the broader population of older adults experiencing chronic pain and depression. The pilot study's participants may not represent the entire demographic because they were voluntarily recruited from community centres, all female, already engaged in community activities and showed a preference for art-related activities. Subsequent research should use more purposive sampling to include individuals from the community who are less active, experience chronic pain and are more susceptible to depression. Fourth, the quantitative assessments did not capture many of the changes reported by participants, suggesting the influence of the small sample size. In addition, the 'rewiring' of pain experience cannot be captured by behavioural measures; a trial with neurological measures, such as functional magnetic resonance imaging, is needed to elicit neurological evidence. Nevertheless, our study provides preliminary information on the benefits of the arts-based programme, particularly on depressive symptoms and mental health-related quality of life. Future studies should strive to build on our work and capture significant personal experiences and quantifiable outcomes with a more representative sample. The artwork produced by participants in the pilot study has not been thoroughly examined in conjunction with quantitative data and focus group feedback. Given that the programme is centred on art, it is imperative to incorporate art-based research and evaluation methods to uncover its impact, which the current methods of analysis may have overlooked.

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In summary, a co-designed, culturally appropriate arts and crafts programme can effectively improve mental health-related quality of life in older Chinese people with chronic pain and depressive symptoms. The engaging and enjoyable process of creating artwork, the tangible nature of art products and the collegiality among group members may contribute to the effects of this programme. These factors may alter pain perception and empower individuals to reshape their narratives around pain, leading to improved coping and well-being. Creative arts-based interventions have great potential and may act as an alternative to pharmacological and CBT-based interventions, particularly in community settings; a definitive trial is needed to reveal the effectiveness of creative arts and crafts in pain management.

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Supplementary material

The supplementary material can be found online at https://doi.org/10.1192/bjo.2025.10062

Data availability

The data supporting this study's findings are available from the corresponding author, T.L., upon reasonable request.

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Author contributions

T.L., G.H.Y.W. and T.Y.S.L. were responsible for the study's conception and supervision. T.L., H.S.K. and W.-w.K. led the co-design process in phase 1. H.S.K., J.K.Q.L. and D.K.Y.L. undertook data management. T.L., H.S.K. and J.K.Q.L. conducted the data analysis and evaluation. T.L., H.S.K. and J.K.Q.L. wrote the manuscript, with revisions made by D.K.Y.L. and S.M.Y.W. All co-authors reviewed, updated and approved the final manuscript for publication.

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Declaration of interest

None.

References

1 American Geriatrics Society Panel on the Pharmacological Management of Persistent Pain in Older Persons. Pharmacological management of persistent pain in older persons. *Pain Med* 2009; **10**: 1062–83.

2 Gatchel RJ. The biopsychosocial model of chronic pain. In *Clinical Insights: Chronic Pain* (eds AL Dougall, RJ Gatchel): 5–17. Future Medicine, 2013.

3 Larsson C, Hansson EE, Sundquist K, Jakobsson U. Chronic pain in older adults: prevalence, incidence, and risk factors. *Scand J Rheumatol* 2017; **46**: 317–25.

4 Domenichiello AF, Ramsden CE. The silent epidemic of chronic pain in older adults. *Prog Neuropsychopharmacol Biol Psychiatry* 2019; **93**: 284–90.

5 Pitcher MH, Von Korff M, Bushnell MC, Porter L. Prevalence and profile of high-impact chronic pain in the United States. *J Pain* 2019; **20**: 146–60.

6 Mossey JM, Gallagher RM. The longitudinal occurrence and impact of comorbid chronic pain and chronic depression over two years in continuing care retirement community residents. *Pain Med* 2004; **5**: 335–48.

7 Cohen SP, Vase L, Hooten WM. Chronic pain: an update on burden, best practices, and new advances. *Lancet* 2021; **397**: 2082–97.

8 Sheng J, Liu S, Wang Y, Cui R, Zhang X. The link between depression and chronic pain: neural mechanisms in the brain. *Neural Plast* 2017; **2017**: 1–10.

9 Ossipov MH, Dussor GO, Porreca F. Central modulation of pain. *J Clin Invest* 2010; **120**: 3779–87.

10 Dowell D, Haegerich TM, Chou R. CDC guideline for prescribing opioids for chronic pain – United States, 2016. *JAMA* 2016; **315**: 1624–45.

11 Perananthan V, Buckley NA. Opioids and antidepressants: which combinations to avoid. *Aust Prescr* 2021; **44**: 41–4.

12 Moisset X, Bouhassira D, Couturier JA, Alchaar H, Conradi S, Delmotte M, et al. Pharmacological and non-pharmacological treatments for neuropathic pain: systematic review and French recommendations. *Rev Neurol* 2020; **176**: 325–52.

13 Hoffman BM, Papas RK, Chatkoff DK, Kerns RD. Meta-analysis of psychological interventions for chronic low back pain. *Health Psychol* 2007; **26**: 1–9.

14 El-Khoury F, Cassou B, Charles MA, Dargent-Molina P. The effect of fall prevention exercise programmes on fall induced injuries in community dwelling older adults: systematic review and meta-analysis of randomised controlled trials. *BMJ* 2013; **347**: f6234.

15 Reid MC, Eccleston C, Pillemer K. Management of chronic pain in older adults. *BMJ* 2015; **350**: h532.

16 Vlaeyen JWS, Morley S. Cognitive-behavioral treatments for chronic pain – what works for whom? *Clin J Pain* 2005; **21**: 1–8.

17 Niknejad B, Bolier R, Henderson CR, Delgado D, Kozlov E, Löckenhoff CE, et al. Association between psychological interventions and chronic pain outcomes in older adults: a systematic review and meta-analysis. *JAMA Intern Med* 2018; **178**: 830–9.

18 Masedo AI, Esteve MR. Effects of suppression, acceptance and spontaneous coping on pain tolerance, pain intensity and distress. *Behav Res Ther* 2007; **45**: 199–209.

19 Veehof MM, Trompetter H, Bohlmeijer ET, Schreurs K. Acceptance-and mindfulness-based interventions for the treatment of chronic pain: a meta-analytic review. *Cogn Behav Therapy* 2016; **45**: 5–31.

20 Rosenzweig S, Greeson JM, Reibel DK, Green JS, Jasser SA, Beasley D. Mindfulness-based stress reduction for chronic pain conditions: variation in treatment outcomes and role of home meditation practice. *J Psychosom Res* 2010; **68**: 29–36.

21 Yang LH, Chen F-P, Sia KJ, Lam J, Lam K, Ngo H, et al. 'What matters most': a cultural mechanism moderating structural vulnerability and moral experience of mental illness stigma. *Soc Sci Med* 2014; **103**: 84–93.

22 Shi W, Shen Z, Wang S, Hall BJ. Barriers to professional mental health help-seeking among Chinese adults: a systematic review. *Front Psychiatry* 2020; **11**: 442.

23 Jensen A, Bonde LO. The use of arts interventions for mental health and wellbeing in health settings. *Perspect Public Health* 2018; **138**: 209–14.

24 Angheluta A-M, Lee BK. Art therapy for chronic pain: applications and future directions. *Can J Counsell Psychother* 2011; **45**: 112–31.

25 Stickley T, Wright N, Slade M. The art of recovery: outcomes from participatory arts activities for people using mental health services. *J Ment Health* 2018; **27**: 367–73.

26 Pamelia EM. *Therapeutic Art-Making and Art Therapy: Similarities and Differences and a Resulting Framework*. Indiana University, 2015 (https://scholarworks.iupui.edu/handle/1805/6900).

27 Shukla A, Choudhari SG, Gaidhane AM, Syed ZQ, Gaidhane A. Role of art therapy in the promotion of mental health: a critical review. *Cureus* 2022; **14**: e28026.

28 Vaisvaser S. The embodied-enactive-interactive brain: bridging neuroscience and creative arts therapies. *Front Psychol* 2021; **12**: 634079.

29 Liu T, Chan R, Yeung C, Lee LCB, Chan TNC, Welton K, et al. 'Participation is fun and empowering': a participatory approach to co-design a cultural art program for older Chinese at risk of depression in Hong Kong. *Innov Aging* 2023; **7**: igad041.

30 Liu T, Leung DKY, Lu S, Kwok W-W, Sze LCY, Tse SSK, et al. Collaborative community mental health and aged care services with peer support to

https://doi.org/10.1192/bjo.2025.10062 Published online by Cambridge University Press

prevent late-life depression: study protocol for a non-randomised controlled trial. *Trials* 2022; **23**: 1–13.

31 Leung DKY, Fong APC, Kwok WW, Shum AKY, Liu T, Chan RHM, et al. A cultural adaptation of acceptance and commitment therapy with exercise for older Chinese with chronic pain and depressive symptoms: a mixed-methods study. Psychotherapy (Chic) 2024; **61**: 269–81.

32 Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med* 2001; **16**: 606–13.

33 Ger L-P, Ho S-T, Sun W-Z, Wang M-S, Cleeland CS. Validation of the Brief Pain Inventory in a Taiwanese population. *J Pain Symptom Manag* 1999; **18**: 316–22.

34 Chen S, Chiu H, Xu B, Ma Y, Jin T, Wu M, et al. Reliability and validity of the PHQ-9 for screening late-life depression in Chinese primary care. *Int J Geriatr Psych* 2010; **25**: 1127–33.

35 Luo Z, Li Y, Hou Y, Zhang H, Liu X, Qian X, et al. Adaptation of the two-item generalized anxiety disorder scale (GAD-2) to Chinese rural population: a validation study and meta-analysis. *Gen Hosp Psychiat* 2019; **60**: 50–6.

36 Ware JE, Kosinski M, Keller SD. A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. *Med Care* 1996; **34**: 220–33.

37 Nowell LS, Norris JM, White DE, Moules NJ. Thematic analysis: striving to meet the trustworthiness criteria. *Int J Qual Meth* 2017; **16**: 1609406917733847.

38 Taylor SS, Statler M. Material matters: increasing emotional engagement in learning. *J Manag Educ* 2014; **38**: 586–607.

39 Hinz LD. Order out of chaos: the expressive therapies continuum as a framework for art therapy interventions in substance abuse treatment. In *The Use of Creative Therapies with Chemical Dependency Issues* (ed SL Brooke): 51–68. Charles C Thomas Publisher, 2009.

40 Dietrich A. Neurocognitive mechanisms underlying the experience of flow. *Conscious Cogn* 2004; **13**: 746–61.

41 Magsamen S, Ross I. *Your Brain On Art: How the Arts Transform Us*. Random House, 2023.

42 Kaimal G, Ray K, Muniz J. Reduction of cortisol levels and participants' responses following art making. *Art Therapy* 2016; **33**: 74–80.

43 Bolwerk A, Mack-Andrick J, Lang FR, Dörfler A, Maihöfner C. How art changes your brain: differential effects of visual art production and cognitive art evaluation on functional brain connectivity. *PloS One* 2014; **9**: e101035.

44 López-Martínez AE, Esteve-Zarazaga R, Ramírez-Maestre C. Perceived social support and coping responses are independent variables explaining pain adjustment among chronic pain patients. *J Pain* 2008; **9**: 373–9.

45 Pitkala KH, Routasalo P, Kautiainen H, Tilvis RS. Effects of psychosocial group rehabilitation on health, use of health care services, and mortality of older persons suffering from loneliness: a randomized, controlled trial. *J Gerontol Ser A: Biomed Sci Med Sci* 2009; **64**: 792–800.

46 Cattan M, White M, Bond J, Learmouth A. Preventing social isolation and loneliness among older people: a systematic review of health promotion interventions. *Ageing Soc* 2005; **25**: 41–67.

https://doi.org/10.1192/bjo.2025.10062 Published online by Cambridge University Press