NIHR | National Institute for Health and Care Research

Health and Social Care Delivery Research

Check for updates

Synopsis

# Developing the evidence and associated service models to improve pain management in older people living with frailty: a synopsis of the POPPY mixed method, co-design study

Lesley Brown[1*] Deborah Antcliff[2,3] Andrew Clegg[1,4] Anne Grice,[1] Pat Schofield[5] Asim Suleman[6] Amanda Williams[7] Nikki Harrison[1] Nicky Kime[1] Alan Wright[1] Natalie Lam[8] Dan Howdon[9] Davide Tebaldi[9] Rahena Mossabir[1] Sarah Hallas[1] Thomas F Crocker[1,4] and Anne Forster[1,4]

[1]Academic Unit for Ageing & Stroke Research, Bradford Institute for Health Research, Bradford Teaching Hospitals NHS Foundation Trust, Bradford, UK
[2]Bury Integrated Pain Service, Northern Care Alliance NHS Foundation Trust, Flower Suite, Radcliffe Primary Care Centre, Manchester, UK
[3]School of Medicine, Keele University, Staffordshire, UK
[4]Academic Unit for Ageing and Stroke Research, University of Leeds, Bradford Institute for Health Research, Bradford Royal Infirmary, Bradford, UK
[5]School of Nursing & Midwifery, Faculty of Health: Medicine, Dentistry and Human Sciences, University of Plymouth, Plymouth, UK
[6]Hollyns Health & Wellbeing (General Practice Surgery), Clayton, Bradford, UK
[7]Research Department of Clinical, Educational & Health Psychology, University College London, London, UK
[8]Mental Health and Addiction Research Group, Department of Health Sciences, Faculty of Science, University of York, York, UK
[9]Academic Unit for Health Economics, Leeds Institute of Health Science, University of Leeds, Leeds, UK

[*]**Corresponding author** lesley.brown@bthft.nhs.uk

Published May 2026
DOI: 10.3310/GJLB4820
Volume 14 • Issue 18

## Abstract

**Background:** Frailty increases vulnerability to adverse events (falls, illness) resulting in poorer health outcomes in later life. Persistent pain is common and impactful in older adults with frailty. Pain impact is potentially modifiable, and addressing it is important for supporting this population.

The Pain in Older People with Frailty study aimed to generate evidence and develop service models to improve pain management for older adults with frailty and inform service provision for this underserved population.

**Objective(s):**

- Phase 1: Map research evidence and synthesise findings from randomised controlled trials of multi-component pain management programmes and psychological therapies for community-dwelling older adults.
- Phase 2: In-depth qualitative interviews with community-dwelling older adults living with frailty and persistent pain, to explore pain experience and engagement with healthcare staff regarding pain.
- Phase 3: Service identification (four regions) including qualitative interviews with staff from pain service types (community, secondary care and specialist/tertiary) and generic community services to identify barriers and facilitators for older adults with pain and frailty to engage with pain management services.
- Phase 4: Co-design workshops with older adults, staff and commissioners to develop service guidance (supported by costing information) tailored to the needs of older adults with frailty and pain.

This synopsis should be referenced as follows:
Brown L, Antcliff D, Clegg A, Grice A, Schofield P, Suleman A, *et al*. Developing the evidence and associated service models to improve pain management in older people living with frailty: a synopsis of the POPPY mixed method, co-design study. *Health Soc Care Deliv Res* 2026;**14**(18). https://doi.org/10.3310/GJLB4820

**Design and methods:** Mixed-method, co-design study.
**Setting and participants:**
- Phase 2: Community-dwelling adults (≥ 75 years) with frailty and persistent pain.
- Phase 3: Staff from pain services and community services, and service commissioners.
- Phase 4: Older adults, staff and third sector representatives.

**Data sources:** Phase 1: Systematic review data; Phase 2: qualitative interview data (grounded theory); Phase 3: qualitative interview data (thematic analysis); Phase 4: workshop data.
**Results:** Phase 1: Across 31 randomised controlled trials, intervention mechanisms included enhancing self-efficacy, promoting positive psychological strategies, refocusing attention to manage pain and engaging in physical activity to improve well-being and reduce pain impact. Most interventions showed potential benefits for older adults.
Phase 2: Interviews with 26 older adults living with pain and frailty highlighted key themes: pain experience, pain acceptance, support seeking decisions and accessing support.
Phase 3: Forty-two staff shared their perspectives on supporting older adults with frailty and pain.
Phase 4: Findings were shared during workshops involving 47 stakeholders (older adults, general practices, staff and third sector representatives). Stakeholders proposed service recommendations.
A health economist calculated per-patient cost estimates for different service models.
**Limitations:** Limited representation from adults with severe frailty.
**Conclusions:** There is no need for a dedicated pain and frailty service. Integrating pain management into existing frailty and community services should better meet the needs of frail older adults. This should include training community staff about persistent pain, referral options and establishing pathways for reporting pain and routine enquiry. Service directories, including voluntary and community organisations, could provide resources for staff and older adults. Adapting content and delivery of existing pain services will better support older adults with frailty and unmanaged pain requiring additional support.
**Future work:**
- How should general practices identify older adults with frailty and pain who would most benefit from referral to pain services?
- How can information and awareness of pain management services be improved for this population?

**Funding:** This synopsis presents independent research funded by the National Institute for Health and Care Research (NIHR) Health and Social Care Delivery Research programme as award number NIHR131319.
A plain language summary of this synopsis is available on the NIHR Journals Library Website https://doi.org/10.3310/GJLB4820.

## Introduction



Findings from Phase 2 (interviews with older adults) has been published in *BMJ Open*.[3] Findings from Phase 3 [interviews with healthcare professionals (HCPs)] has been published in *BMC Geriatrics*.[4]

### *Rationale for research and background*

Chronic pain – persistent pain of at least 3-month duration – is common among older adults as a consequence of arthritic and other diseases.[5] Pain is more common in older adults with other chronic diseases.[6] Prevalence ranges from 25% to 76%, depending on population sampled and methodology.[5,7] Pain contributes to disability and emotional distress[5,7] and the cumulative and varied effects of pain can worsen pain and increase its impact on everyday life and mood.[8] Pain is associated with disability from reduced mobility, restricted activity, falls, depression and anxiety, sleep impairment and isolation.[5,9] Pain is often under-recognised and undertreated in older adults.[10]

Addressing pain in older adults often requires a different approach compared to younger adults due to concomitant multimorbidity (the presence of two or more long-term conditions), polypharmacy and frailty.[10] Barriers to pain management, relevant to older adults, draw on a limited evidence base to guide treatment decisions, concerns about treatment-related harms and older adults' beliefs about pain and how it should be managed.[9]

Frailty is characterised by age-related decline across multiple physiological systems and vulnerability to disproportionate changes in health after relatively minor health events, such as a minor infection or a minor operation.[11] The reported prevalence of frailty varies

depending on the frailty models used,[12] with prevalence of between 12% and 24% among those of ≥ 50 years in a SR with data from 62 countries (1,755,497 participants).[12] In the last 20 years, frailty has been conceptualised as an abnormal health state in relation to the ageing process. This has resulted in the development of robust models to identify and grade severity.[13,14]

Frailty is considered a long-term condition requiring long-term strategies and interventions.[15,16] This has been facilitated by the ability of UK general practices (GPs) to readily identify older adults living with frailty for appropriate services, using the electronic Frailty Index (eFI) embedded within UK primary healthcare records.[17] Pain prevalence of between 31% and 60% was reported in a review of cohort and cross-sectional studies of community-dwelling older adults with frailty.[18] Older adults with frailty are about three times more likely to experience intrusive pain, which interferes with normal work compared with fit older people [adjusted odds ratio, 3.53 (95% CI 2.47 to 5.04)][19] and pain impacts on mobility, ability to accomplish tasks, ability to socialise and to sleep.[19] Pain increases the risk of developing frailty in older adults with osteoarthritis,[20] and robust evidence from prospective longitudinal studies found that pain was associated with an increased risk of incident frailty and worsening frailty.[21] The presence of frailty identifies older adults with multimorbidity at high risk of falls, disability, hospitalisation and care home admission. Frailty negatively impacts on quality of life,[22] caregiver burden, and health and social care use.[11]

Older adults living with frailty are an 'underserved population' with lower inclusion in research than expected from population estimates, and with particular neglect of how this population responds to or engage with healthcare services compared with other groups.[23] The healthcare burden of those living with frailty and pain is not matched by the volume of research in this group. Pain, or pain impact, is potentially modifiable and, therefore, makes an important target for services for older adults living with frailty.

## Study aims

To develop the content, mode of delivery, implementation strategies, service and professional support and guidance to enable older people with frailty to better manage their pain and reduce its negative impact on their lives, relationships, functioning and quality of life.

## Objectives

1. Map research evidence and information from randomised controlled trials (RCTs) of multicomponent pain management programmes (PMPs) and psychological therapies (PsyTs) to develop hypotheses about processes and change mechanisms to inform the content and implementation strategies to meet the needs of older adults with frailty.
2. Undertake qualitative interviews with older adults living with frailty and pain to understand how they experience pain, engage with HCPs about their pain, and what service models are required to optimise access and provide support.
3. Undertake qualitative interviews with HCPs from a variety of pain services to identify opportunities and barriers to engaging older adults with frailty and pain into pain management services.
4. Develop and operationalise theory-informed pain management guidance specific to the needs of older adults with frailty in service contexts through co-design involving relevant stakeholders (HCPs, commissioners, older adults, relatives and carers).

## Methods for data collection and analysis

A detailed description of the methods is provided in the published protocol.[1] *Figure 1* provides an outline of the study process. The study used a mixed-method, co-design approach with four phases:

- Phase 1: SR to map research evidence of PMPs and PsyTs delivered to older adults.[2]
- Phase 2: Qualitative interviews with older adults living with frailty and pain.[3]
- Phase 3: Qualitative interviews with HCPs working in a variety of pain and community service settings.[4]
- Phase 4: Co-design workshops with older adults and service personnel.

### *Method overview*

Each phase informed subsequent phases. Evidence identified in Phase 1 informed discussions with older adults in Phase 2, if participants had attended such programmes or received these treatments, and informed identification of services in Phase 3.

Case studies developed from interviews conducted during Phase 2 were used in Phase 3 interviews with staff to inform discussion and reflection on working with older adults experiencing pain and frailty.

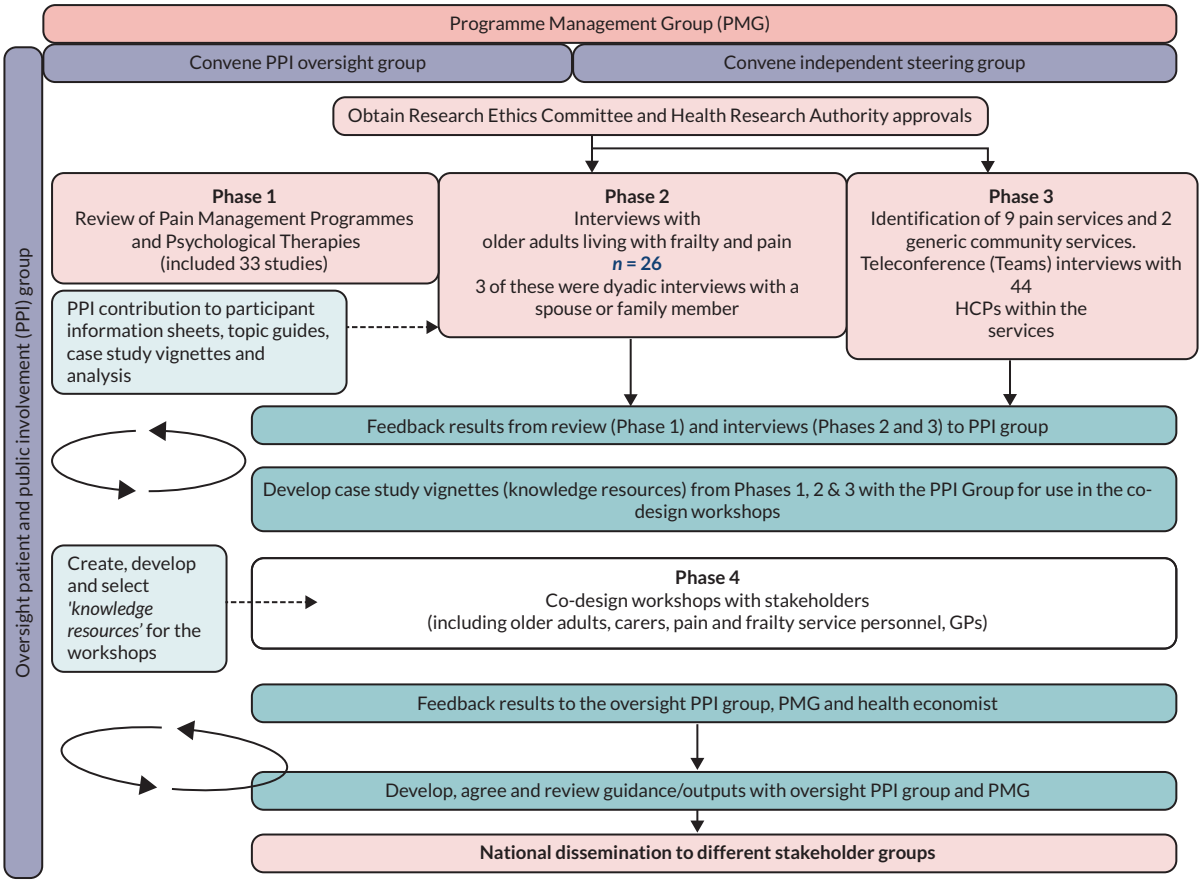



**FIGURE 1** Outline of the POPPY study programme and phases.

Outputs from empirical studies (Phases 1, 2 and 3) provided the 'knowledge resources' to facilitate co-design workshop discussion. Phases 3 and 4 summary findings were shared with a health economist to enable calculations of per patient costs associated with the recommendations. Phases findings were discussed with the study project group, the Programme Management Group (PMG) and the patient and public involvement (PPI) group to develop processes and guidance for designing, commissioning, and implementing pain management services for older adults with frailty.

To inform this report, a literature search was conducted in December 2024 by Bradford Teaching Hospitals NHS Foundation Trust Library Service, focusing on recent intervention studies related to frailty and pain. The search covered publications from 2014 to 2024 (see *Appendix 1*). Of the 1246 titles screened by two researchers, 19 were considered potentially relevant, and full-text papers were retrieved. The aim of the review was to identify recent literature to provide up-to-date context for the report discussion, where they are referenced.

## *Method phases*

### Phase 1: review to map research evidence of pain management programmes and psychological therapies

A detailed description of the methods is reported in the published review.[2] We reviewed RCTs evaluating PMPs and PsyTs for community-dwelling older adults (mean age ≥ 65) with persistent pain. The review aimed to: (1) identify relevant RCTs through SRs and recent studies; (2) describe and synthesise the content, delivery, mechanisms of change and implementation strategies of PMPs and PsyTs, assessing their potential to improve quality of life and other outcomes, including for those with frailty; and (3) identify approaches likely to meet the needs of older adults with frailty to inform future recommendations.

The aims, mechanisms of change, and delivery methods were mapped using an approach similar to systematic mapping.[24,25] The process included: (1) defining scope, questions, and criteria; (2) searching for evidence; (3) screening studies; (4) coding and collating data; (5) critical appraisal and (6) summarising and reporting findings.

### *Search strategies and selection process*

Search strategies were developed in consultation with an information specialist.[2] We searched for SR of RCTs, published from 2000, pertinent to the eligibility criteria and potentially including eligible RCTs. To account for recent research, we conducted an additional search for individual RCTs from the date of the latest search year of the most recent SR.

Databases were searched for SRs from 2000 to 16 December 2021: MEDLINE, EMBASE, APA PsycInfo® (American Psychological Association, Washington, DC, USA), Web of Science, Epistemonikos, and Cochrane Database of Systematic Review. We searched three databases and a trial register for RCTs from 2020 (the latest search year of the most recent SRs) to 30 June 2022: Ovid MEDLINE, EMBASE, APA PsycInfo, Cochrane CENTRAL[2] (see *Appendix 2*).

Reporting adhered to the Enhancing Transparency in Reporting the Synthesis of Qualitative Research statement for qualitative research synthesis. Eligible studies were RCTs assessing the efficacy or effectiveness of PMPs and PsyTs in community-dwelling older adults with persistent pain.

### *Population*

Older adults (mean age ≥ 65 years), community-dwelling (over 50% of participants were not living in a residential or nursing care home, hospice or long-term care facility), and with persistent, non-specific pain or a pain-related condition.[26]

### *Interventions*

Non-pharmacological and non-surgical interventions for persistent pain were included if they were delivered as multicomponent PMPs or stand-alone PsyTs that met the British Pain Society[27] criteria. Participants were required to engage with intervention components to bring about cognitive, emotional and behavioural changes in response to pain.

Pain management programmes: We adhered to the National Institute for Health and Care Excellence (NICE) definition, identifying a PMP as '*any intervention with two or more components, including both physical and psychological components, delivered by trained professionals, with some interaction or coordination between the components*'.[28]

Psychological component: PsyTs were identified in line with NICE guidelines[28] to assess whether a psychological intervention formed part of a PMP or a stand-alone therapy. The following interventions were excluded: biofeedback; sleep management/hygiene; and pain education that did not aim to change pain-related behaviour.

Pain management programmes or PsyTs targeting conditions associated with specific causes and for which specific treatment plans are provided/required (cancer, fibromyalgia, migraine and rheumatoid arthritis) were excluded.

We piloted a framework to categorise data and critically appraise intervention details. One reviewer extracted data and completed the Template for Intervention Description and Replication[29] and Critical Appraisal Skills Programme checklists,[30] while another checked the details. Data were extracted and organised into framework matrices, then exported to Microsoft Excel® (Microsoft Corporation, Redmond, WA, USA) for collation and synthesis. Study characteristics and intervention content were summarised using Excel and Microsoft Word (Microsoft Corporation, Redmond, WA, USA), and excluded studies were documented. Results were synthesised using frequency analysis and thematic analysis (deductive approach for intervention content).

## Phase 2: in-depth qualitative interviews with older adults living with frailty and pain

Detailed methodology is reported in the published protocol[1] and elsewhere.[3] Phase 2 explored older adults' experiences of living with frailty and pain, and with particular focus on their interactions with HCPs about their pain. Some interviews included the participant's spouse or family member (significant other) as pain's negative effects can extend to relationships.[31]

Participants participated in two interviews approximately 10 weeks apart. Between interviews, participants could note how pain impacted them and influenced their decisions, with optional materials provided for support. Participation did not require documenting experiences, as this could be perceived as burdensome and is sometimes unpopular.

### *Inclusion criteria*

Participants were ≥ 75 years and living with frailty and persistent pain.

### *Exclusion criteria*

Care home residents, those with an estimated life expectancy of 3 months or less, or in receipt of palliative care, or with a dementia diagnosis or a current cancer diagnosis were not eligible. However, cancer survivors, ≥ 5 years cancer free and not undergoing active cancer treatment, were eligible.

### *Sample identification and recruitment*

Participants were recruited from the Community Ageing Research 75+ (CARE75+) study (ISRCTN16588124).[32,33] This longitudinal cohort study of older adults (≥ 75 years) collects observational data and provides a recruitment platform for research with older adults. See *Figure 2* for the Phase 2 recruitment pathway.

The CARE75+ manager identified participants who had consented to be approached for other studies. Additionally, those undergoing routine CARE75+ assessments were informed about the POPPY study. Invitations were sent to participants reporting pain or pain impact during CARE75+ assessments, using pain-related medication (e.g. cocodamol) or reporting a pain-related condition (e.g. osteoarthritis). Eligibility for meeting persistent pain criteria[26] was confirmed during telephone screening. Researchers recorded ineligible, declining or non-participating individuals. Frailty data were drawn from participant's CARE75+ assessment using Fried criteria[14] or their eFI score.[17]

Participants were purposively sampled across diverse geographical, urban/rural and socioeconomic settings, assessed via the English Index of Multiple Deprivation (IMD). Sampling also considered living arrangements (alone/with spouse), frailty levels and ethnocultural diversity, within language constraints.

### *Informed consent*

Participants provided informed consent. Additionally, optional consent was obtained so that information already collected as part of the CARE75+ study[32,33] could be accessed if required.

### *Topic guides*

Topic guides were informed from pain management guidelines (e.g. NICE), PMG members and the PPI oversight group. Guides were piloted with PPI members to ensure the questions prompted meaningful discussions. Topic guides were revisited after initial interviews and adapted to reflect emerging topics.

### *Interviews*

Interviews took place in the person's home, or by telephone or video-conference [e.g. Microsoft Teams (Microsoft Corporation, Redmond, WA, USA)] depending on participant preference.

### *Analysis*

A constructivist grounded theory approach was used,[34] involving simultaneous data collection and analysis. This provided a flexible methodology for data collection, and the analyses followed an inductive and reflexive approach to build explanatory theories related to processes inherent in the phenomenon. The experiences of living with and seeking support for persistent

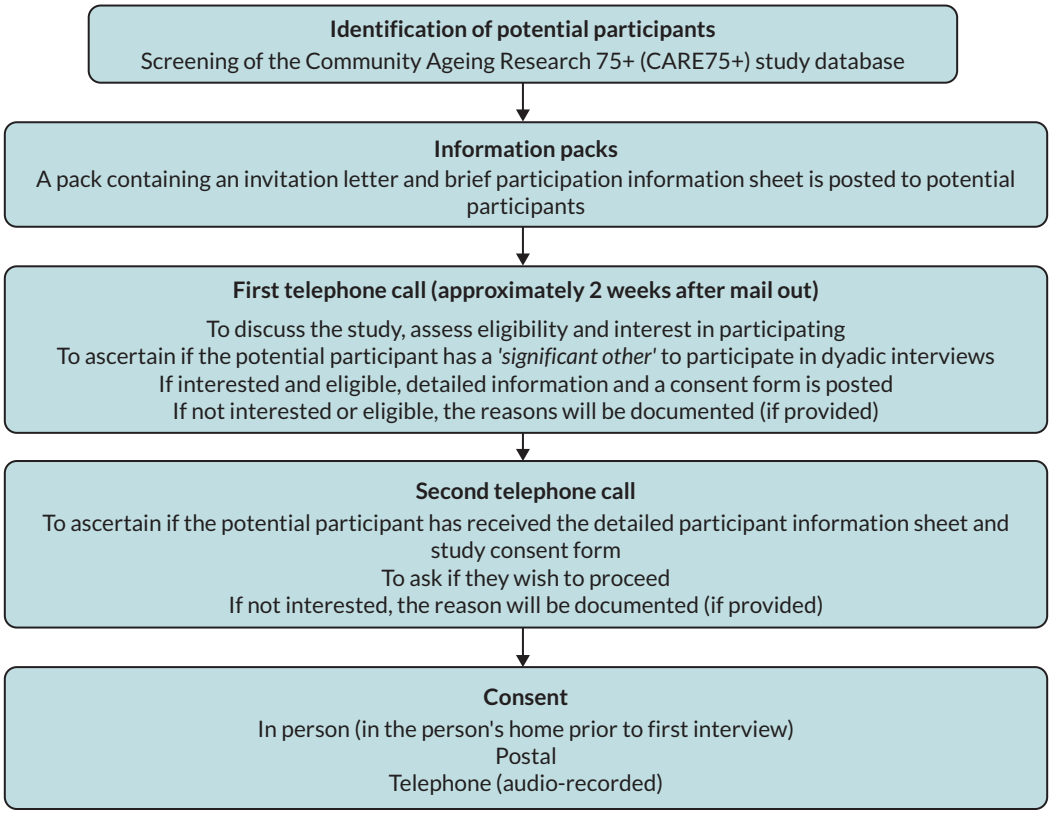



**FIGURE 2** The POPPY study Phase 2 recruitment pathway.

pain by older people with frailty have been seldom explored and required a *bottom-up* approach for understanding decisions, actions and meanings relating to their experiences.

## Phase 3: qualitative interviews with HCPs working in a variety of service settings

Phase 3 methodology is reported in the published protocol[1] and elsewhere.[4] We identified pain services and community services, and personnel within those services to participate in interviews. Reimbursement for staff time for participating personnel was provided to the employing organisation.

### *Service identification*

We intended to map all pain provision services within three Clinical Commissioning Groups (CCGs). However, the scope changed due to the study timing, which coincided with CCGs transitioning to integrated care systems (ICSs). Informed by previous workstreams we undertook a more focussed identification of services including a range of service types from geographically distinct areas. We purposively sought services across four broad regions in England: Yorkshire, the North-West, South-West Peninsula, Sussex. We contacted Research Delivery Networks (Clinical Research Networks), used PMG contacts, reviewed data from previous pain service audits and searched online NHS directories to identify pain services in these areas by organisational location (primary care/community-based) and provider type (NHS, third sector, private).

We selected a range of service types, organisational locations, and providers to obtain services that served varied populations. The service manager or service lead (or designate) was approached for an initial discussion and provided with detailed study information. If they wished to proceed, they completed a service consent form, and the capacity and capability process was completed with the host origination.

### *Service questionnaire*

Following consent and approval to proceed, the service manager or lead (or their designate) completed a questionnaire using Redcap survey tool[35] to provide information about their service. The questionnaire included questions on the service setting, referral options, waiting times, aims, eligibility criteria, exclusions, delivery mode, staff disciplines, the characteristics of typical service users (e.g. age, ethnicity), the treatments provided and service accessibility. It included both open-ended and closed-ended questions.

Upon submission, the completed questionnaire data were automatically uploaded to a secure server at Bradford Teaching Hospitals NHS Foundation Trust. These data were used to inform interview discussions with service personnel. Additionally, some data were shared with a health economist to assist with costing different service examples (see *Costing of a frailty and pain service*).

### *Identification and recruitment of HCPs for telephone interviews*

We aimed to conduct interviews with approximately five to eight staff members in each participating service to gain an in-depth understanding of service provision and professional perceptions of supporting older adults with frailty and pain within their service or within wider health systems. We aimed for representation across roles, depending on the service type. The service manager/lead (or designate) approached staff to gauge their interest and seek permission to share their work e-mail with the research team so they could be contacted about the study. Following receipt of a study information sheet, service personnel provided fully informed consent before participating. This was provided verbally and audio-recorded, or they completed a paper consent form.

### *Topic guides and interviews*

Topic guides were informed by Phase 2 findings and the PMG, modified to accommodate different service types, and adapted as new themes emerged. Case study vignettes, based on Phase 2 interview data and developed with PPI members, helped facilitate discussions on how HCPs would manage or support an older adult with frailty and pain within their service. This was deemed useful, as many services do not work extensively with older, frailer adults (see *Appendix 3*).

Interviews were conducted via video-conference. They explored perceptions, attitudes and barriers to engaging older adults, particularly those with frailty, in pain services. Data were collected on topics including the support HCPs deemed necessary to assist older adults living with frailty and pain, useful resources, key components of pain services for older adults with frailty, additional training for HCPs, services requiring involvement or linkage, and ways to improve accessibility. Case study examples from Phase 2 interviews helped inform discussions.

Two service managers identified commissioners, and this led to two interviews, with a modified topic guide designed to understand the information commissioners require when developing or funding services.

### *Analysis*

Interviews were recorded and transcribed verbatim. A thematic approach was used to analyse the data, constructing a summary of professionals' accounts of their work in pain management.[36] Coding was managed using NVivo software V.12.29 (QSR International, Warrington, UK).

### Phase 4: co-design workshops

We used a co-design approach,[37] including multiple stakeholders to consider findings from Phases 1, 2 and 3. Findings were considered within the context of different service types and contexts and addressed the specific needs of older adults living with frailty.

### *Workshop participants*

Stakeholder groups were established in three locations (Yorkshire, North-West, and South-West Peninsula). Invitees included older adults, their significant others or unpaid caregivers, PPI members, multidisciplinary HCPs involved in pain services or services for older adults and service managers, third sector representation and commissioners. Some stakeholders had participated in Phases 2 and 3. All participants received information and gave informed consent.

### *Workshops*

The initial plan was to hold multiple workshops with three stakeholder groups. However, due to the clinical commitments of personnel at different sites, agreement could only be reached for a single workshop at each site. To compensate, we increased the number of workshops and extended their duration.

Workshops were planned across participating sites and designed to minimise travel. Each lasted between 3 hours and half a day, with a refreshment break. Participants had the option to join remotely via video-conference. Information sheets outlined the workshop process.

Participants reflected on summaries and knowledge resources from Phases 1 to 3. They discussed necessary service changes and the support required to improve access and assistance for older adults with frailty and pain. This information was combined with findings from earlier phases to identify barriers to service access, facilitate change, optimise service use and enhance support in each local setting.

### Costing of a frailty and pain service

Service information from four services was provided to the health economist to enable per patient cost estimations for different service models to reflect the configuration of potential services. Costing of resource use was conducted primarily based on the Personal Social Services Research Unit (PSSRU) Unit Costs of Health and Social Care 2023 Report.[38] This included salaries, salary on-costs, overhead costs and qualification costs. This involved applying the most appropriate NHS Agenda for Change (AfC) band to each position. Where banding was not apparent from the PSSRU report, these were inferred from a text search of advertised jobs.[39] While these service-level reports incorporated resource use from a variety of non-clinical staff (e.g. clerical staff, accountants), this report will focus on the clinical staffing associated with each service type.

## Results

### *Results (publications)*

*Table 1* provides information on publications synthesised within this report synopsis.

## Principal findings (Phase 1)

Results are reported in the published review.[2] Thirty-three eligible RCT interventions were included. Baseline data from the included studies showed that most participants had long-standing persistent pain, with pain levels, comorbidities and functional impacts similar to or worse than typical in this population.

Interventions aimed to improve physical, psychological, or social functioning; adjust the psychological effects of pain; and enhance self-care through self-management skills or knowledge. A common change mechanism involved enhancing self-efficacy through self-management tasks, using positive psychological skills, or refocusing attention to improve responses to pain, and practising physical exercises to improve physiological well-being and reduce pain-related restrictions.[2] Intervention content included skills training, activity management, education, and physical exercise. Interventions were delivered in person or remotely, individually or in groups, typically in 1–2 sessions weekly over 5–12 weeks.[2] Interventions showed potential benefits on at least one outcome measure, and most featured simplified, easy-to-follow content, appropriate activities, and suitable activity levels for an older population.

Co-leads Lesley Brown and Anne Forster further scrutinised the included RCTs to identify studies that included older adults with comorbidities, and with few exclusion criteria, indicative of a frail population. Eleven RCTs were identified. From these we extracted information on delivery mode; behaviour change mechanisms; intervention content; delivery personnel and the location of the intervention (*Figure 3*).

**TABLE 1** Research papers synthesised in the POPPY study

| | Reference |
|---|---|
| Study protocol[1] (published) | Brown L, Mossabir R, Harrison N, Lam N, Grice A, Clegg A, *et al.* Developing the evidence and associated service models to support older adults living with frailty to manage their pain and to reduce its impact on their lives: protocol for a mixed-method, co-design study (The POPPY Study). *BMJ Open* 2023;**13**:e074785. https://doi.org/10.1136/bmjopen-2023-074785. |
| Phase 1[2] (published) | Lam N, Green J, Hallas S, Forster A, Crocker TF, Andre D, *et al.* Mapping review of pain management programmes and psychological therapies for community-dwelling older people living with pain. *Eur Geriatr Med* 2023;**15**:33–45. https://doi.org/10.1007/s41999-023-00871-1. |
| Phase 2[3] (published) | Harrison N, Mossabir R, Forster A, Kime N, Williams ACC, Brown L. Qualitative investigation of the experiences of older people living with persistent pain and frailty and their decision to seek support: findings from the POPPY-Q study. *BMJ Open* 2025;**15**:e104744. https://doi.org/10.1136/bmjopen-2025-104744. |
| Phase 3[4] (published) | Wright A, Antcliff D, Kime N, Harrison N, Mossabir R, Suleman A, *et al.* Maximising pain services for frail older adults, the views of healthcare professionals and commissioners: findings from the pain in older people with frailty (POPPY) study. *BMC Geriatr* 2025;**25**:836. https://doi.org/10.1186/s12877-025-06554-9. |

## Principal findings (Phase 2)

Findings are reported elsewhere[3] (see *Table 1*).

Invitations were sent to 102 older adults. Twenty-six consented and completed a first interview, with 24 completing a second interview. Three interviews were dyadic, involving both the participant and their significant other. Participants ranged in age from 77 years to 91 years (*Table 2*).

Key themes identified included pain acceptance, support-seeking decisions, self-management, concerns about overburdening the health system, access to support and treatment, reluctance to seek professional support while pain was tolerable, and the belief that further professional or medical support would not be beneficial.

## Principal findings (Phase 3)

Findings have been published[4] (see *Table 1*). Fourteen services were approached; 11 participated (*Figure 4*). Included services were in Yorkshire, Lancashire, Greater Manchester, Merseyside, Sussex and Devon. Nine were pain services. All were free for patients, including two non-NHS pain services. Two non-pain services were also included: a generic community service for older adults and an intermediate care service supporting step-up/step-down rehabilitation for patients registered with local Primary Care Networks (PCNs). Both routinely included older adults with frailty and persistent pain. Referral routes included GPs, other HCPs, social care, self-referral, mental health services and private or voluntary sector referrals.

Seventy-two invitations were sent to personnel across the 11 services to participate in Phase 3 interviews. Forty-four consented and participated in an interview (*Figure 5*).

Key themes included perceptions of the characteristics commonly associated with older adults living with frailty, including health status, social background, life experience, relationship with technology, experiences of pain, and interactions with medicalised health services. These factors were reported to influence engagement with pain services.

Additional themes included: facilitators that support access to services for older adults with frailty and pain; the value (or limitations) of a dedicated service for this population; the role of community-based pain services; components of an effective pain team; collaboration with other services; individualised assessment and goal setting; older adult-specific PMP content; the benefits of face-to-face interactions and group-based approaches; information provision; the impact of involving family members in treatment sessions and staff training.

## Principal findings (Phase 4)

Six co-design workshops took place including 47 stakeholders (see *Figure 6*). Workshop findings were grouped to be applicable to different service types. See *Report Supplementary Material 1* for additional information.

### *Workshop findings: community pain service*

Stakeholders proposed that pain services should promote a biopsychosocial, person-centred approach to reduce isolation and empower service users as experts

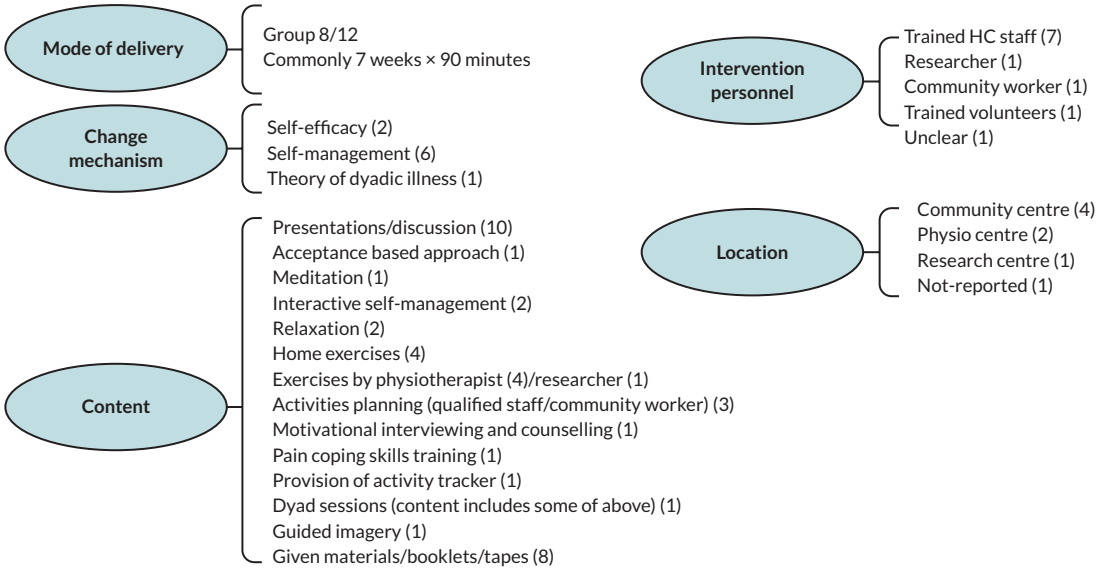



**FIGURE 3** Pain management programmes and PsyTs interventions for older adults with relevance to those living with frailty (11 RCTs).

**TABLE 2** Profile of participants in Phase 2 of the POPPY study

| Pseudonym | Age (first interview) | Self-reported ethnicity | Living circumstances | Frailty score: eFI[a] or Fried | Number of reported pain site(s) | [b]Decile rank (1st most deprived – 10th least deprived) |
|---|---|---|---|---|---|---|
| Jack | Early 80s | White | Alone | 0.28[a] | 3+ | 6 |
| Donald | Early 80s | White | Partner/spouse | 0.25[a] | 2 | 8 |
| Derek | Early 80s | White | Alone | 1 | 1 | 1 |
| Barry | Early 80s | White | Alone | 1 | 2 | 3 |
| Francis | Late 80s | White | Alone | 0.25[a] | 3 | 6 |
| Elizabeth | Early 80s | White | Partner/spouse | 1 | 3+ | 5 |
| Arthur | Late 80s | White | Alone | 0.25[a] | 3+ | 4 |
| Bernard | Late 80s | White | Partner/spouse | 3 | 1 | 6 |
| Brian | Early 80s | White | Partner/spouse | 1 | 3+ | 4 |
| Veronica | Early 80s | White | Partner/spouse | 1 | 2 | 8 |
| Susan | Late 80s | White | Family | 1 | 1 | 8 |
| Christopher | Early 80s | White | Partner/spouse | 1 | 3+ | 4 |
| Janet | Early 80s | White | Alone | 0.22[a] | 2 | 4 |
| Terence | Early 80s | White | Alone | 1 | 1 | – |
| Helen | Late 80s | White | Alone | 1 | 1 | 6 |
| Mavis[c] | Late 80s | White | Partner/spouse | 1 | 2 | 4 |
| Marjorie | Early 80s | White | Partner/spouse | 0.39[a] | 3+ | 2 |
| James[c] | Early 90s | White | With family | 1 | 1 | 8 |
| Stuart | Late 70s | White | Partner/spouse | 0.25[a] | 3+ | 9 |
| Ahmed[d] | Early 80s | South Asian | Partner/spouse | 0.33[a] | 3+ | 3 |
| Ruqayah[d] | Early 80s | South Asian | Partner/spouse | 0.31[a] | 3+ | 3 |

**TABLE 2** Profile of participants in Phase 2 of the POPPY study *(continued)*

| Pseudonym | Age (first interview) | Self-reported ethnicity | Living circumstances | Frailty score: eFI[a] or Fried | Number of reported pain site(s) | [b]Decile rank (1st most deprived – 10th least deprived) |
|---|---|---|---|---|---|---|
| Beryl[c] | Early 80s | White | Alone | 0.56[a] | 3+ | 4 |
| Vera | Early 80s | Afro-Caribbean | Alone | 0.31[a] | 3+ | 1 |
| Frank | Early 80s | White | Alone | 0.31[a] | 2 | 5 |
| Mary | Early 80s | White | Alone | 0.28[a] | 3+ | 7 |
| Yvonne | Mid 80s | White | Alone | 0.25[a] | 2 | 7 |

a eFI scores: fit (a score below 0.12); mildly frail (0.12 to 0.24); moderately frail (0.24 to 0.36); severely frail (above 0.36)[17]
b *n* = 25
c Dyadic interview included the participant with pain and their significant other
d Both participants had persistent pain interviewed together (married couple)

**Note**
Fried Frailty Scores: Not frail (0); Pre-frail (1–2); Frail (3–5).[14]

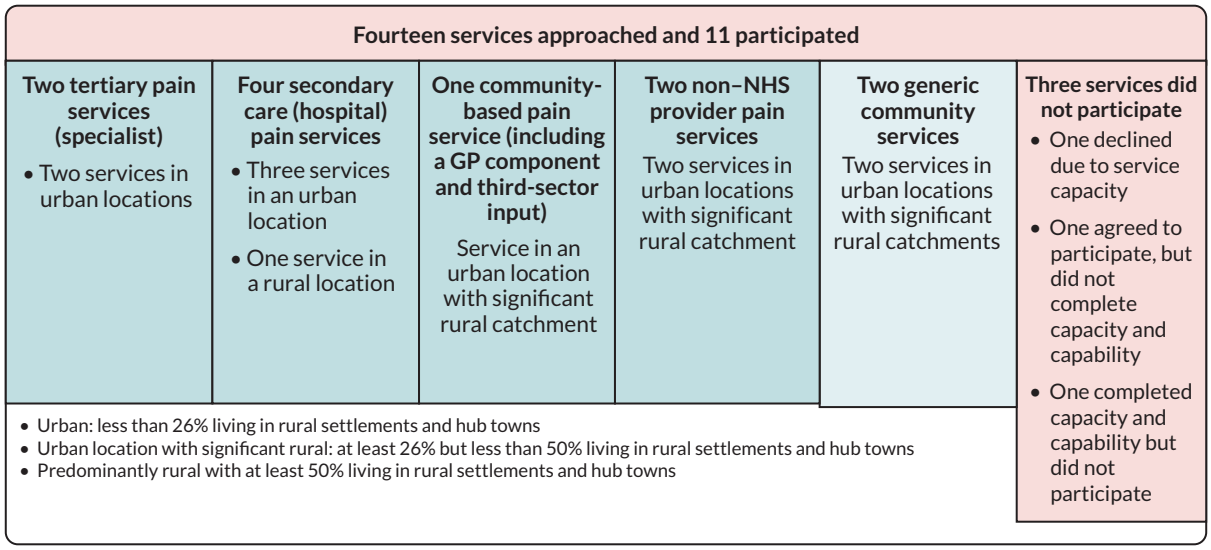



**FIGURE 4** Pain and community services included in Phase 3 of the POPPY study.

by experience. Services must be accessible and well integrated with community support. A dedicated frailty and pain team, including specialists such as a GP with pain expertise, a specialist nurse, pharmacist, physiotherapist, health coach and psychologist, should be established to improve co-ordination. Frailty and dementia training should be provided for staff. Interpreters and a multilingual workforce could improve access. Referral pathways should expand, with better frailty information and pain education for GPs and HCPs.

Stakeholders proposed that a key worker could provide personalised support. Education should be timely and relevant, with GP involvement in some sessions and careful consideration of pain-related language. Face-to-face support and improved transport options are necessary. Interventions should be frequent and sustained over time. Family and carer involvement is encouraged through informational resources. Service evaluation must prioritise quality of life outcomes and involve academic partners to drive improvement.

### *Workshop findings: secondary care pain services*

Stakeholders proposed that services should advocate for effective, integrated care. Commissioning must support collaboration across specialties and appoint a clinical champion and an outreach team. A shared data platform was proposed to reduce repetition for patients. A holistic approach was considered key, expanding non-medical prescribing capacity. Early intervention

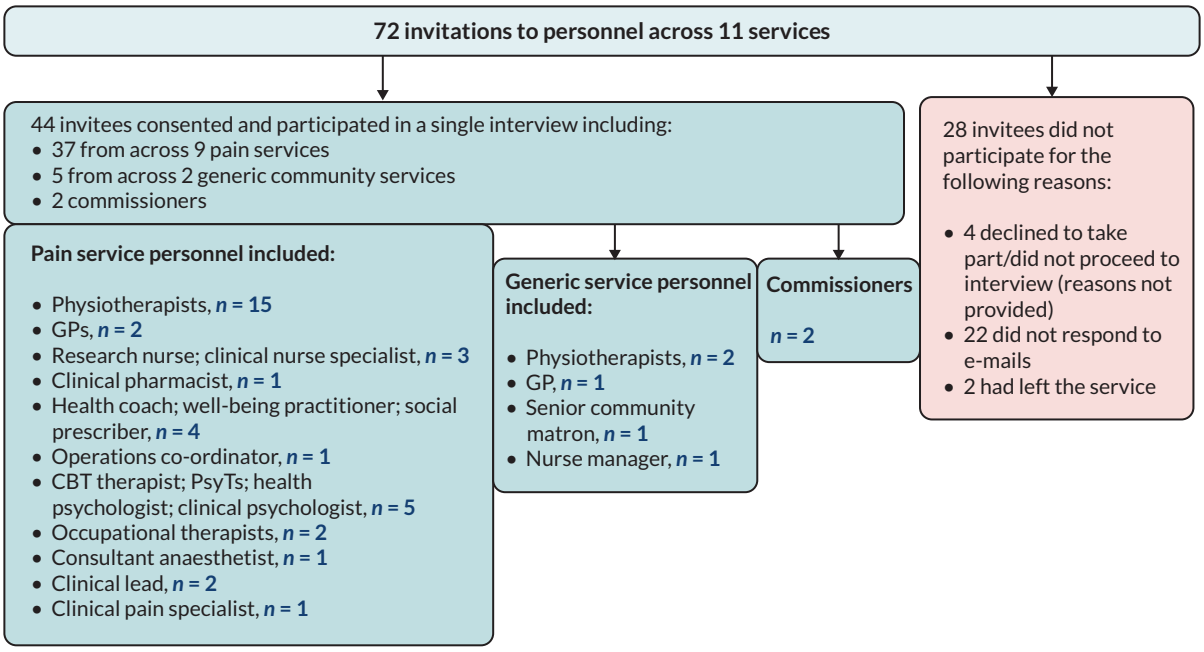



**FIGURE 5** Personnel participating in Phase interviews in the POPPY study.

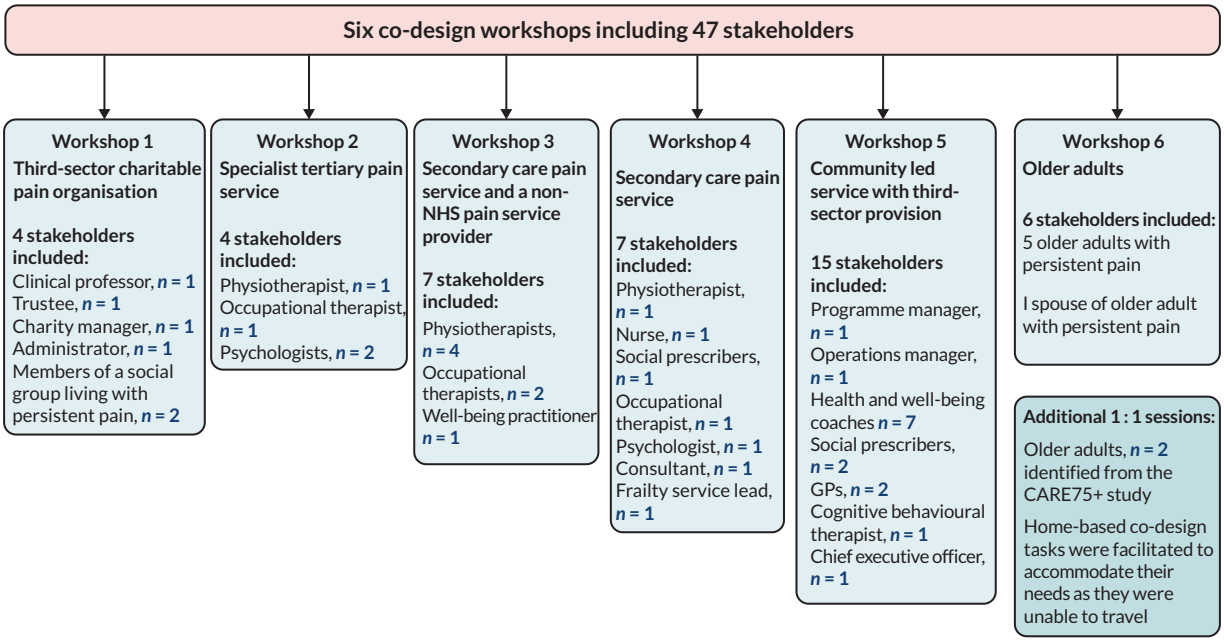



**FIGURE 6** POPPY study Phase 4 workshop participants.

protocols should be established, with better referral pathways, a direct *hotline* between secondary care and GPs, and open access to community services. Education, peer support and PsyTs were proposed. Specialist nurses or allied health professionals could provide information sessions, with one-to-one support workers assisting implementation. Public and professional awareness of pain management needs to improve. Flexible service delivery was considered essential, offering individual, group and online options. Services should focus on frailty rather than age, with families and carers included. Ongoing evaluation must be embedded to ensure continuous improvement.

### *Workshop findings: tertiary/specialist pain services*

Pain services should offer individualised care, ideally with community-based PMPs and onsite facilities. A consistent, skilled workforce is essential to meet the needs of older people with frailty. An outreach approach could encourage ethnically diverse older people to access services. HCPs must identify suitable patients early, support GPs in making appropriate referrals and apply flexible inclusion

criteria. Increasing awareness of community services is key. Social prescribers could provide 1-hour sessions to inform patients of available support. Peer support should be encouraged by linking patients with a *buddy*. PMP sessions must be flexible in duration/content to suit frail patients. Family and carer involvement should be promoted. Ongoing evaluation should use patient feedback and validated measures to assess both functional/physical outcomes, ensuring continuous service improvement.

### *Per patient costs estimates for different service models*

We have provided detailed data to inform commissioners on potential cost impacts of service amendments/configurations according to identified local need. A health economist conducted a costing analysis, providing per-patient cost estimates for four service types: community pain service, specialist (tertiary) pain service, secondary care pain service and a generic community services. Considering study findings, the analysis focused on existing pain and community service models, rather than a bespoke service for older adults with frailty, which was deemed unnecessary. This information is intended to support informed decision-making by commissioners and to enable local decision-makers to assess the suitability and costs of current service options, such as identifying gaps in community pain services, and to plan targeted investments accordingly. See *Implications for decision-makers* and *Report Supplementary Material 2*.

## Summary findings

There is no requirement for a specific frailty and pain service. Integrating pain management within existing frailty and community services is more practical than creating a separate, specialised service for frailty and pain. With some modifications to service provision, existing pain services could meet the needs of older adults with frailty for those that require additional support above that which can be provided by generic community services.

## Discussion and interpretation

In the POPPY review (Phase 1), no included study reported a frailty assessment.[2] Findings were largely based on interventions for the 'younger old' (50+), with many trials excluding those with mental health conditions, sensory or cognitive impairments, barriers likely to exclude older adults with frailty. Language and physical limitations also restricted access to group-based interventions. However, most interventions featured simplified content and appropriate activity levels, with some showing potential benefits that may be transferable or adaptable to older adults with frailty.

For older adults living with frailty and pain (Phase 2), pain acceptance emerged as a key influence on whether individuals sought help, including a desire to maintain control, viewing pain as minor, stoicism and resignation.[3] Some participants focused on preserving quality of life and managed pain by recognising limitations and being cautious. Many regarded pain as less significant than their other health conditions. Stoicism was common, reflecting other research with older adults.[40] Others were resigned, believing little could be done, and many normalised pain as an inevitable part of ageing, reducing their likelihood of seeking support.

Self-management strategies, through familiar activities (e.g. swimming or walking) were used alongside or in place of professional help. While participants did not use the term 'frailty', they described fatigue, slow walking and weakness. Adaptations included pacing, using aids and resting after exertion. Some reported self-management as their only option, due to reluctance or disengagement from health care. Most reported limited recent discussion about pain with their GP, instead accessing online resources or talking to family or peers. Few reported experience of pain services, which could have provided opportunities to develop skills and access support for those with unmanaged pain.[3]

Many participants felt their pain was not severe enough to justify using NHS resources or to 'waste' their GP's time, leading to self-rationing of healthcare contact.[41] Telephone queues to access GP surgeries were described as burdensome and off-putting. Barriers to addressing pain included long waiting times and the limitations of discussing only one issue per appointment, reinforcing the need to implement an extended consultation for complex patients.[42] Dissatisfaction was reported regarding the lack of continuity of care and the shift from face-to-face appointments since the COVID-19 pandemic. A recent SR of what patients want from UK GP found that patients want a choice of clinician and consultation mode, easy appointment booking systems and with short waiting times.[43]

Some participants were hesitant to seek help unless pain significantly affected daily life or when pain became severe.[3] Collectively, these factors contributed to self-rationing, echoing findings from previous research.[44] Several participants reported available treatments as unsatisfactory, which affected their willingness to

seek help. Concerns about side effects, addiction, and managing multiple prescriptions led some to limit or avoid medication. Others were unable to take pain medication due to contraindications; a particular challenge for frail older adults.[45] Some had lost hope of finding effective relief. Pain was reported as described by GPs as age-related 'wear and tear', lowering expectations for further investigation. While some accepted this, others felt unsupported. Overall, routine consultations appeared to offer limited opportunities for meaningful discussions about pain.

Staff (Phase 3) highlighted the challenges of working effectively with older adults with frailty as this population often have health conditions that affected pain service delivery and engagement.[4] Medication adjustments for pain were complicated by polypharmacy and impacted other conditions. Reaching housebound individuals or care home residents was reported as challenging. Multimorbidity limited participation in PMPs due to issues like mobility, incontinence and cognitive impairment. Nevertheless, a recent audit of an Australian pain clinic reported that cognitive impairment, frailty and multimorbidity should not be considered barriers to benefit.[46]

Staff proposed that group sessions could initially be daunting. However, isolation sometimes motivated participation, and staff proposed that once engaged, older adults were generally less inhibited than younger adults and consistent in attending.[4] However, many older adults had endured pain for decades, resulting in ingrained coping strategies. While some were more accepting and stoical, potentially aiding engagement, others felt there was little point seeking help. Acceptance, combined with a lack of assertiveness, often led to delayed service access, by which time their needs were significant. Long-standing pain also contributed to low expectations of treatment.

Older adults were seen as valuing the NHS and trusting clinicians, often following professional advice.[4] However, long-term exposure to the biomedical model created expectations of clinician-led solutions, conflicting with the self-management approach of pain services. Staff suggested that many struggled to shift from seeking a *cure*. Some staff reported that psychological approaches were often met with scepticism, partly due to associations with mental illness. One staff reported that some clinicians excluded older adults from psychological interventions, assuming these approaches were unfamiliar and unlikely to succeed.

Some staff, including non-pain service staff, proposed the benefits of a separate pain service for frail older adults, citing accessibility and specific needs. However, most opposed this, arguing that existing services were sufficient or demand too low. Staff warned that separate services might deter engagement and marginalise older adults. Practical concerns reported included eligibility criteria, staffing, and resource constraints. A compromise proposed was dedicating parts of existing services to frail older adults.

A few staff proposed the benefits of hospital-based services (e.g. specialists and facilities). However, most preferred community-based care, consistent with the biopsychosocial model which allows for a comprehensive explanation of pain incorporating biological, psychological and social factors.[47,48] This model underpins many therapeutic approaches to support people with long-term pain where unhelpful beliefs and responses become established.

Strong GP and social care links were valued, with surgeries considered better suited for medication support. Hospitals were considered as less accessible due to navigation difficulties, parking and travel. Local services were preferred for easier access to gyms and social groups, supporting social prescribing. Transportation, cost and accessibility should be considered when planning PMPs for older adults.[2]

Staff highlighted the need for a skilled workforce familiar with managing chronic conditions in frail older adults and knowledgeable about local support pathways. A multidisciplinary team was proposed, including social prescribers, clinical psychologists, frailty leads, and link nurses, with non-pain service staff especially advocating for greater GP involvement.

Non-pain services expressed a desire for access to pain teams to build confidence and skills in psychological pain management. Conversely, some pain service HCPs requested training in frailty and multimorbidity care. Participants proposed strong links with falls teams, social services, and other specialties, and voluntary sector representatives.

Staff recognised the need to adjust their approach when assessing older adults with a focus on function and mobility, with goals emerging from shared decision-making. PMP content should reflect multiple health conditions with focus on addressing retirement, seated exercises, and falls prevention. 'Explaining pain' should include pain expectations in ageing, with osteoarthritis discussions, avoiding terms like 'wear and tear'. Given some aversion to psychological approaches, language

should be adapted, for example, using 'relaxation' instead of 'mindfulness'. Peer support was valued, with suggestions to include an older adult in PMP groups to share their experiences. Interventions should be modified to reflect the reduced tolerance for physical activity that those with frailty experienced (e.g. shorter sessions, more breaks, and opportunities to talk about their pain).

Some staff noted that older adults preferred telephone assessments, avoiding travel and cost. However, most preferred face-to-face interactions. Staff supported offering community-based appointments for those with communication or sensory issues, and home visits for housebound individuals.

Staff across all service types recognised that groups conferred social benefits for older adults (e.g. peer support), particularly for those experiencing social isolation. Some staff recognised that frail older adults may need preparation before attending a PMP (e.g. being seen individually for reassurance or domiciliary physiotherapy to ensure they had sufficient skills and resilience). Most commented that older adults often required practical assistance with transport to attend sessions. Staff advocated posting out hard copy leaflets to older adults who were struggling with technology and could not access electronic versions.

Most staff favoured including relatives in one-to-one interactions with older adults when emotional support was needed or there was a risk of the older adult forgetting information. Some also included carers and relatives in PMP sessions; however, they acknowledged this presented confidentiality issues.

### *Synthesis of findings*

Findings from the first three phases were shared at the Phase 4 workshops and summarised (see *Report Supplementary Material 1*). Some workshop findings supported idealised services, proposing a dedicated community frailty and pain team comprising a GP, specialist nurse, pharmacist, physiotherapist, health coach, and psychologist. However, this ideal team is likely to be unrealistic for most services, which are more likely to include only some of these personnel. Study findings were subsequently discussed within the research team, the PMG, and the PPI group to develop key recommendations. Additionally, findings were shared with a frailty implementation advisory group, aligned with the Applied Research Collaboration (ARC) Older People's theme,[49] to further refine and clarify final recommendations.

The recommendations addressed local and community-level considerations, and those with more regional and national relevance. These included proactively asking older adults about pain, particularly enhancing opportunities during GP consultations through extended appointment times; providing education on persistent pain for community service personnel, including information about local pain services and referral processes; establishing a directory or register of local community services for older adults; ensuring the availability of accessible resources; delivering pain education within community settings; and facilitating referrals to pain services, with specific guidance on how pain services can improve accessibility for an older, frailer population (see *Implications for decision-makers*).

### Equity

Equity and access to health services in the UK are influenced by a range of social, economic and systemic factors.[50] Regional differences in service availability are evident, including for pain service provision. Additionally, delivering adequate health and social care for an ageing population with complex needs, such as those living with frailty, presents significant challenges. Several key equity issues emerged from the study.

Firstly, concerns were raised regarding access to primary care to discuss pain. Interviews with older adults consistently highlighted access barriers, particularly appointment availability and long waiting times, which disproportionately affect vulnerable groups, including older people.[51]

Secondly, findings indicate that older adults with frailty often deprioritise pain reporting during GP appointments due to more pressing health concerns. Given that this population frequently has multiple conditions, they would benefit from longer appointment times to address multiple issues in a single consultation. The British Medical Association (BMA) advocates 15-minute appointments to accommodate multiple concerns,[42] which could increase opportunities for discussions about pain.

Thirdly, digital exclusion was a challenge for some participants who reported difficulties booking appointments online or adapting to digital consultations, disadvantaging those without internet access.[52] Staff interviews revealed that some components of pain services had moved online, which staff acknowledged could pose challenges for older adults with frailty. However, most services offered face-to-face or telephone options to ensure inclusivity. Some services provided hard-copy materials, with follow-up telephone calls to ensure information was received and understood.

While not all frail older adults require access to a pain service, for some, these services could provide valuable skills and knowledge to help manage pain and reduce its impact. Staff across various settings expressed a willingness to support this population and demonstrated an understanding of their needs and barriers. Two services stood out in their efforts to include underserved groups.

First, a specialist pain service developed a needs-based, age-inclusive PMP for older adults, with short sessions, frequent breaks, relevant topics (e.g. sleep, cognition, and balance), large-print materials and social prescribing. Early feedback indicated positive outcomes and high patient satisfaction.

Second, a community-based pain service to meet rising demand, address social determinants, and reduce local health inequalities. It integrated medical staff, health coaches and the voluntary sector, shaped by community input. Information was delivered in mosques and community centres, with family and caregivers encouraged to participate. The team included multilingual staff reflective of the local community and its faiths.

### *Contribution to existing knowledge*

This study explored the attitudes and decision-making processes of older adults with frailty and persistent pain. We identified various perspectives on pain acceptance, shaped by contextual and experiential factors, leading to diverse support-seeking behaviours. Some participants were satisfied with their pain management strategies, having developed an awareness of their bodies, understood their physical limitations and recognised factors that worsen pain. They expressed confidence in self-managing their pain through methods including physical activity, pacing and resting. Coping strategies were often self-administered and familiar, in common with previous research.[53]

Many older individuals adopted a stoical approach, emphasised not complaining or using distraction, a behaviour aligned with previous findings and a potential barrier to voicing and reporting pain.[41] Resignation was also reported, with some viewing pain as an inevitable part of ageing, influenced by personal beliefs and sometimes resulting from comments from HCPs. This may deter individuals from seeking support, despite the availability of effective interventions.[44]

Participants often downplayed their pain in relation to other perceived more serious conditions and, in comparison, to the ill-health of their peers. Social comparison may contribute to reluctance in seeking treatment.[54] Furthermore, reluctance to seek help was influenced by concerns about awareness of NHS resource constraints, and negative experiences with accessing services.

This is the first in-depth UK study investigating the barriers and facilitators to including frail older adults in pain services. A range of service types and providers participated allowed insight across primary, secondary, specialist and community services. Most staff expressed a willingness to work with an older frailer population and recognised the challenges and opportunities within their service. Integrating pain management within existing frailty and community services is a more practical and appropriate approach for this population than establishing a separate service. However, with some adaptations, existing pain services could meet the needs of older, frailer individuals who cannot be managed within standard community settings.

### *Strengths and weakness of the study in relation to other studies*

The POPPY study captured the perspectives of frail older adults, a group often under-represented in research.[23] Phase 2 interviews highlighted several issues related to pain reporting. Many participants experienced difficulties due to limited GP appointment availability and broader challenges to access primary care.[3] The UK's primary care model is distinctive, and findings may not be applicable to other healthcare systems, potentially limiting the wider relevance of study findings.

We are not aware of other studies that have investigated the barriers and facilitators to older adults with frailty accessing pain services. However, a recent audit of a pain service in Australia[46] suggests frailty should not be a barrier to benefit from such services. In POPPY, recruitment from across diverse pain services was successful.

Within the comprehensive review (Phase 1), no included studies reported frailty and the majority of studies included the *younger old*. A recent scoping review also reported a scarcity of evidence for adults ≥ 75 years when considering home-based interventions for chronic pain.[55] A recent pilot investigation of a multidisciplinary plan and education specifically for older frail adults with chronic pain[56] showed a non-significant improvement in pain intensity. This study did not measure pain impact and acknowledged the inclusion of a disproportionate number of females compared to males in the study.

### *Take-home messages*

There is no requirement for a dedicated frailty and pain service. Integrating pain management within existing

frailty and community services is both practical and appropriate for this population. Existing pain services should be designed to accommodate the needs of older people living with frailty who require specialist input. With some modifications and careful consideration of service provision, these services should be able to meet their needs.

Older adults with frailty are not a homogenous group. Social, economic, ethnic, and religious backgrounds, along with life experiences, shape attitudes towards pain and responses to its treatment. However, some shared characteristics, such as prolonged exposure to a medicalised approach to pain management, multi-morbidity and polypharmacy, can present challenges for medicine management, exercise and group attendance.

The POPPY study found that frail older adults often deprioritise pain management for various reasons, including a desire to maintain autonomy, perceiving their pain as insignificant in comparison to other health conditions or the experiences of others, stoicism, resignation and a belief that further treatment may not be beneficial. These factors are further compounded by concerns about being a burden on NHS resources, reluctance to seek support until pain becomes intolerable, self-management strategies, or prioritising other health conditions during medical consultations.

Given these challenges, older people with frailty require opportunities to report pain and should be proactively asked about pain. Access to appropriate support, information and opportunities to develop skills for managing pain more effectively is essential. Enhancing GP consultations through extended appointment times and upskilling relevant community personnel could improve the support available to this population. Additionally, maintaining a register of available services for social prescribing could facilitate more comprehensive and accessible support.

Not all frail older adults require access to specialist pain services; however, for some, these services could provide valuable skills and knowledge to support pain management and mitigate its impact. It is essential to establish pathways to facilitate access to these services. Some modifications to pain service provision could enable better support of an older frailty population.

See *Implications for decision-makers* for proposed practical steps to implement the above.

### *Reflections on the project and what could have been done differently*

We would like to have engaged with additional generic community and frailty services, if time had permitted.

### *Challenges faced and limitations*

Most Phase 2 participants had mild or moderate frailty. Those with severe frailty often declined participation due to health concerns or caregiving responsibilities despite efforts to accommodate their needs. Moving forward, it is essential to allow sufficient recruitment time to optimise their inclusion, as prolonged illness may prevent their participation.

Pain management is a significant concern for individuals living in care homes. This population often presents with a high prevalence of dementia, dependency on others for essential activities of daily living, and limited mobility,[57] highlighting the need for future research into effective pain support strategies for this population.

Obtaining capacity and capability approval to access services (Phase 3) was prolonged and complicated by the involvement of multiple organisations across some services. For Phase 3, the transition from CCGs to ICSs during the study resulted in undertaking a pragmatic approach to service identification and invitation (service mapping). We used purposive sampling to ensure the inclusion of varied service types, which was successfully achieved. We relied on managers or leads to inform staff about the study and to seek their permission to share contact details for interview invitations. While managers were aware that we aimed to include a range of personnel, this recruitment method may have introduced bias in participant selection. Engaging staff from non-pain community services proved more challenging than from pain services. This may have been due to workload pressures and lower research engagement with these particular organisations.

The figures in the main economic analysis are intended as estimated indicative costs for commissioners to consider when planning or adapting service provision. Our confidence in them is conditional on the information provided by the services themselves. While the costs seem plausible for the specific settings studied, we would be hesitant to extrapolate them to a national level. However, we believe they represent a valuable starting point to inform the costs of different service configurations. This work should be understood as an estimate of the costs of providing these services and their budgetary impact, and we avoid explicit assessments of whether one service or another represents 'better value', as questions of value generally require an assessment of (patient) outcomes.

This synopsis should be referenced as follows:
Brown L, Antcliff D, Clegg A, Grice A, Schofield P, Suleman A, *et al*. Developing the evidence and associated service models to improve pain management in older people living with frailty: a synopsis of the POPPY mixed method, co-design study. *Health Soc Care Deliv Res* 2026;**14**(18). https://doi.org/10.3310/GJLB4820

The analysis indicates that while generic community models may have lower operational costs, specialised pain services may fulfil a valuable role for those with more complex needs and unmanaged pain and be associated with changes in resource use elsewhere in the system. The intention is to provide indicative costs for different service models and tentative findings on the impacts elsewhere in the health and social care system. Commissioners may wish to bear in mind these initial results when considering a lighter-touch option of expanding or adapting current provision rather than commissioning a new service from scratch.

## Implications for decision-makers

The study found no justification for establishing a dedicated pain and frailty service. Instead, findings support the integration of pain management within existing frailty and community services. This is a more practical and efficient approach to addressing the needs of this underserved population. With appropriate modifications, existing pain services could be adapted to better support individuals living with frailty, ensuring that service delivery aligns with their specific requirements. Community-based services are particularly well suited for this population, as they enhance accessibility and align with the bio-psychosocial model of pain management.[47,48] Practical recommendations for implementation are outlined below.

### *Local and community-level considerations*

Decision makers should consider raising awareness of pain in older adults with frailty across services. This could include reviewing care pathways to ensure that older adults have opportunities to report pain during routine health and social care interactions. Additionally, proactive pain assessment could be incorporated into these interactions to facilitate early identification and management.

### *Education on persistent pain for community service personnel*

Study findings indicate that personnel working in non-pain-specific community services often lack confidence, skills and knowledge to address the psychological aspects of pain, particularly when supporting individuals with persistent pain. Some staff expressed the need for support from pain services to enhance their education and improve their ability to apply psychological approaches to pain management. Upskilling community service personnel, particularly those working with older adults with frailty, should be a priority. Initial efforts could focus on community physiotherapists, occupational therapists and pharmacists who regularly engage with frail older adults, ensuring they are better equipped to support individuals experiencing persistent pain. Upskilling initiatives need not be resource-intensive; even a single training session covering key topics, such as an introduction to persistent pain, referral pathways to local pain services (where available), the role of pain services and pain management strategies, could be beneficial. Additionally, educational sessions could be integrated into special interest group meetings, physiotherapy conferences or targeted local events. Pain services could be approached to support these initiatives. Ensuring that community service personnel are aware of available pain services within their locality or region is essential for improving access to appropriate care.

### *Proactively asking about pain*

A key study finding highlighted the challenge of addressing pain alongside other health conditions within the constraints of a standard GP appointment. Frail older adults often present with multiple comorbidities, frequently complicated by polypharmacy, making it difficult to address pain adequately within a 10-minute consultation. Some practices have adopted 15-minute appointments, in line with recent BMA recommendations advocating for extended consultation times to better manage complex cases.[42] Longer consultations could provide an opportunity for GPs to proactively ask older adults with frailty about pain, with scope to offer reassurance, provide information or signpost to pain management resources, refer to relevant pain or community services, or schedule a follow-up appointment for a focused pain management discussion.

### *Integrating pain assessment into the comprehensive geriatric assessment*

The comprehensive geriatric assessment (CGA) is a multidimensional, multidisciplinary process designed to evaluate the medical, psychological and functional capabilities of an older person, forming the basis for a comprehensive treatment and follow-up plan.[58] Currently, pain assessment is not a formal component of the CGA. However, incorporating pain evaluation into this process could provide a valuable opportunity to identify and address pain in older adults. Given the high prevalence of pain in this population, integrating pain assessment into the CGA should be considered to ensure a more holistic approach to care. A combined CGA and pain assessment is conducted at a pain clinic for older people in Australia.[46] This assessment can last up to 3 hours or is spread over two visits.

### *Directory or registry of local community services for older adults*

A comprehensive directory of local services, including voluntary care organisations, could serve as a valuable resource for both HCPs and older adults, supporting signposting in primary care. This directory should provide a range of options, particularly those addressing social isolation and fostering community engagement (e.g. afternoon tea and social groups). There is evidence for social prescribing to improve health and well-being,[59] which may contribute to pain management by enhancing social connections. To remain effective, the directory will require updates, with a designated individual responsible for maintaining its accuracy. A social prescribing team could ensure that listed services remain current and are relevant for older adults with frailty.

As PCNs transition towards neighbourhood-based models,[60] local and community-led support will remain a priority. Ensuring that individuals are well-informed about the range of available services, beyond those directly related to pain management, is essential for promoting overall well-being in older adults. Each locality should designate a specific individual or establish a dedicated role to oversee this resource. In some regions, the third sector could contribute significantly by managing a directory of services and facilitating information-sharing with charities. This collaborative approach could further strengthen the support available within communities.

### *Accessible resources and education*

Ensure GPs and health and social care services provide evidence-based, accessible resources, such as educational materials and links to relevant guidance. Recognise the prevalence of digital exclusion in this population[52] and that links to web-based resources may not be appropriate for some older adults. However, population characteristics are not static, and we anticipate that digital exclusion will likely reduce over time.

### *Pain education in community settings*

Education on pain self-management for older adults with frailty and HCPs should be provided in community settings. Sessions could be delivered in community centres or religious institutes to reach diverse populations. With appropriate training, health coaches can deliver this education, enabling them to reach wide audiences, and improve pain education more broadly in the community. Examples of such services are available.[61] This would align with the new neighbourhood health strategy,[60] which aims to create healthier communities, helping people live healthy, active and independent lives for as long as possible while improving their experience of health and social care, and increasing autonomy in managing their health conditions. Neighbourhood health aims to promote health literacy, supporting early interventions and reducing health deterioration or avoidable exacerbations of ill health.[60] A 2021 report of Core Standards for Pain Management Services (CSPMS) UK recommended the establishment of early biopsychosocial assessment within community settings to ensure principles of self-management are available early to service users with chronic pain conditions[62] and integrating with public health services in prevention and early intervention at community level of care to reduce or prevent chronic pain-related disability.[62]

### *Referral to pain services*

Older adults with frailty and unmanaged pain should have access to pain services that equip them with the necessary skills and knowledge for effective pain management. Advanced age, cognitive impairment, frailty and multi-morbidity should not be barriers to support.[46] To facilitate this, referral pathways could be designed with multiple entry points. The POPPY study identified various referral routes including from GPs, HCPs, social care providers, mental health services, private or voluntary sector and self-referral. The CSPMS recommend that where possible, care pathways should be developed and used by multidisciplinary teams and informed by user groups to support effective pain management provision within local communities.[62]

Pain service provision is diverse and may be community-based, within secondary care, or provided by specialist centres. Some services are delivered by non-NHS providers but remain free to patients. Existing services should adapt to better support an ageing, frail population by optimising referral processes and implementing the measures outlined below.

The POPPY study identified a knowledge gap in ageing, frailty and dementia among some pain service personnel, particularly within community-based settings which included social prescribers. Addressing this gap through targeted training would enhance service delivery, particularly for pain services employing health coaches and well-being practitioners, who may enter these roles with diverse backgrounds in skills, experience and knowledge.[63]

To improve accessibility and inclusivity, pain services should offer flexible service delivery options, including group and one-to-one sessions, telephone consultations, and video-conferencing. Where possible, service components should be embedded within community settings that promote a de-medicalised approach. To

support attendance, transport options such as taxi services should be considered. Additionally, for individuals experiencing digital exclusion, printed materials should be provided, with follow-up telephone support to reinforce comprehension and retention.

Further service adaptations to enhance inclusion include:

- Mixed age groups for group work.
- Ensure adequate time for consultations.
- Adaptations to group work: more comfort breaks/ shorter sessions.
- Appropriate content. For example, balance and falls sessions, sleep and cognition modules, discussion pertinent to retirement.
- Inclusion of the older adult's *significant other* in attendance at pain service consultation and in group work, if feasible within the constraints of confidentiality. This can help reinforce messaging and information retention.
- Service personnel should be mindful of terminology when introducing psychological treatments or other non-pharmacological approaches to older, frailer populations. Service personnel reported that older adults sometimes exhibit scepticism towards such approaches, potentially due to limited familiarity with these methods and long-standing exposure to a medical-led model of pain management.

### *Regional level: combined pain and frailty role*

Consideration should be given at the ICS level for the explicit inclusion of pain management into their strategies. Operationally this will differ according to the organisation of the ICS as they adjust to the recently announced funding cuts. As an example, a pain lead role could be combined or amalgamated with leadership relating to frailty.

### *At the national level*

A pain assessment is not a standard component of the CGA; however, incorporating it could provide an important opportunity to evaluate pain as part of a holistic approach to older adults' health. As such, it may be beneficial to consider integrating a pain assessment into the existing CGA framework or for it to be undertaken at the same time.

### *Service cost implications*

Services were costed on a best-efforts basis, with follow-up communications with each service involving the research team. The service-level data incorporated resource use from a variety of non-clinical staff (e.g. clerical staff, chief executive officers contributions, accountants). However, this report focused on clinical staffing for each service (see *Report Supplementary Material 2*).

#### Service 1: community pain service

Predominantly staffed by AfC Band 5 employees, with a 1.0 full-time equivalent (FTE) senior health and well-being coach (Band 6) supported by approximately 5.2 FTE health and well-being coaches (Band 5), as well as a 1.0 FTE Band 5 therapist. This was supplemented by a 0.67 FTE social prescriber and a 0.1 FTE general practitioner. Service 1 reported the care of 967 patients, and our best estimate was that the total cost per patient per year was £960.

#### Service 2: specialist (tertiary) pain service

A service component specifically developed to meet the needs of older adults within a specialist service. However, attendance was needs-based and not age restricted. This service was generally staffed by senior clinical employees and consisted of a 1.0 FTE Band 7 physiotherapist, a 1.0 FTE Band 7 occupational therapist, 1.5 FTE Band 8c consultant clinical psychologists, and a 0.5 FTE Band 8a consultant clinical psychologist. Service 2 saw an estimated 35 patients per year. Our best estimate was that the cost per patient per year was £6388, although this would fall to £4492 if Band 8a consultants were instead employed for delivery. Service 2 reported that they estimated that 40% of patients reduced their use of medication after engaging with the service and that from a small sample of 15 patients, 3 (20%) had reduced their GP attendance after engagement.

#### Service 3: secondary care pain service

Staffed by relatively senior clinical employees. These consisted of 2.75 FTE Band 7 physiotherapists, 2.5 FTE consultant (costed at Band 8a) anaesthetists, 3.0 FTE Band 5 nurses and 4.0 FTE Band 4 nursing support staff. This service saw 1533 new patients over the year and conducted an additional 3423 patient reviews, with a plan for three reviews per patient after the initial consultation. While initial consultations were estimated to last 40 minutes, we did not have estimates for the time taken per patient review. Nevertheless, results per patient were relatively robust to this: under the assumption that all reviews also took 40 minutes, the per-patient cost was estimated to be £1167 versus £1114 if reviews took only 20 minutes.

#### Service 4: generic community service

We estimated costs associated with a generic community service. This service would typically employ 1.0 FTE Band 7 physiotherapists, 4.5 FTE Band 6 physiotherapists, 3.0 FTE Band 5 physiotherapists, 1.9 FTE Band 7 occupational therapists, 2.9 FTE Band 6 occupational therapists and 3.8 FTE rehabilitation assistants. Seeing 4200 patients per year, our best estimate of the cost of this service would be £357 per patient.

### Potential additional costs for delivering training personnel

It is important to consider the time involved in training personnel for the delivery of programmes or service components. It can be assumed that receipt of training would be incorporated into the routine training programmes within GP practices, thus requiring no additional costed staff time for participation. However, the cost of delivering the training depends on the provider. For example, an hour of a Grade 8a staff member's time costs £72, resulting in a daily cost (based on a 35-hour week) of £504. If training were provided for two days per quarter, the annual cost would be £4032. Alternatively, if a GP were to deliver the training sessions, the cost would be £185 per hour or £1295 per day, equating to an annual cost of £10,360 based on 2 days per quarter.

## Conclusions

Pain and pain impact are potentially modifiable and should be a key focus for older adults with frailty. Central to this approach is ensuring that opportunities are available for older adults with frailty to report pain and engage in discussions about pain management. Given the high prevalence of comorbidities in this population, alongside the prioritisation of other health conditions, older adults should be proactively asked about pain and provided with the necessary information and support to minimise its negative effects on their lives. The POPPY study revealed concerns about being a burden, coupled with an awareness of limited NHS resources, are particularly pronounced in this population. Consequently, proactive encouragement and reassurance to report pain is necessary, especially considering the detrimental impact poorly managed pain has on functioning, social activities and overall well-being. In the mapping review,[2] most participants in the included studies had lived with persistent pain for many years. As was the case for most of the older adults in this study, accessing support much earlier should be encouraged.

The POPPY study found no compelling evidence to support the creation of a dedicated pain and frailty service. Instead, the study's findings suggest that older adults with frailty can be effectively managed within existing service frameworks, provided there is some upskilling of community service personnel and adjustments to current pain service offerings. The study highlights the importance of delivering pain services in community settings wherever possible to improve accessibility and promote a more holistic model of care.[47,48]

Community service personnel who regularly engage with older adults with frailty would benefit from additional training to equip them with the necessary skills and knowledge about persistent pain and appropriate referral pathways to pain clinics. Personnel should also be familiar with local pain services to avoid mismatches between patients' expectations and service provision; some Phase 3 personnel highlighted a disconnect between patients' expectations of a *cure* and a pain service's typical focus on managing pain impact.

Historically, older adults with frailty have not been the focus of UK pain services. However, the POPPY study identified services that were attempting to meet their needs. Service personnel across community-based, secondary care, specialist, across NHS and non-NHS providers, generally demonstrated a good understanding of the challenges associated with working with older, frailer populations. Despite this, service providers recognised the limitations of what they could offer, particularly regarding older adults who were housebound or residing in care homes.

Optimising access to pain services, ensuring flexibility in service delivery, adapting group-based approaches, addressing digital exclusion, and involving spouses, partners or family members in the process, are all strategies that can enhance support for this group. Some pain service personnel reported scepticism among older adults towards psychological approaches, emphasising the importance of clear communication and appropriate language when making referrals to such services and delivering them. Additionally, some service personnel highlighted the need for further training on ageing, frailty and dementia to better support this population.

Older adults within the study actively sought information about pain management. However, many relied on informal sources, such as family, friends or the internet, rather than HCPs, demonstrating the need for accessible, trustworthy resources, with particular attention to digital exclusion in this population.[52]

Given the high prevalence of persistent pain among older adults with frailty, providing pain education in community settings can extend outreach and support inclusion of diverse groups. The POPPY study identified one service that successfully adopted a community-focused model for pain education in a diverse population. Although not specifically tailored for older adults, this model could be adapted to meet the needs of an older population.

This synopsis should be referenced as follows:
Brown L, Antcliff D, Clegg A, Grice A, Schofield P, Suleman A, *et al.* Developing the evidence and associated service models to improve pain management in older people living with frailty: a synopsis of the POPPY mixed method, co-design study. *Health Soc Care Deliv Res* 2026;**14**(18). https://doi.org/10.3310/GJLB4820

Pain and pain impact are modifiable. Older adults with frailty should be equipped with the knowledge, support and confidence to manage it. Failing to do so risks leaving this population to suffer avoidable distress, reduced quality of life and unnecessary loss of independence.

## Patient and public involvement

We established a PPI oversight group comprising of older adults living with pain or caring for someone with pain. Members were recruited from a GP patient participation group and the frailty oversight group.[64] One member was from the Chinese community and was supported by a POPPY researcher with the relevant language skills. In total, seven members contributed. Members received a Terms of Reference document outlining roles, responsibilities and reimbursement for attendance and travel. Member Anne Grice was a study co-applicant and attended the PMG meetings (study leads and co-applicants) to provide the PPI perspective and 'voice'.

To accommodate members, considering their age and health conditions, we included a flexible approach, offering in-person meetings, virtual (Teams) and home visit meetings. Some meetings included all members, and some smaller groups for specific tasks.

Meetings and workshops addressed different study aspects:

- Meeting 1 (January 2022): Inaugural meeting introducing the study and PPI role. Feedback on Participant Information Sheets (PIS) was gathered.
- Meeting 2 (May 2022): Members reviewed Phase 2 interview topic guides.
- Mock interviews (June 2022): Phase 2 mock interviews were conducted with PPI members (one online, two in person, one dyadic). This provided an opportunity to test the topic guide and for the less experienced researcher to practice her interview skills.
- Meeting 3 (September 2022): Focused on developing case studies vignettes which were used in interviews with HCPs (Phase 3) to encourage discussions.
- Meeting 4 (January 2023): Discussed key outcome measures for pain interventions identified from the Phase 1 literature review.
- Meeting 5 (May 2023): Practiced qualitative coding of anonymised transcripts from Phase 2 interviews.
- Workshops (June, July, October and November 2023): Case study and coding workshops. These benefitted researchers as PPI members validated the Phase 2 findings and members were able to provide fresh perspectives and identify a new theme.
- Meeting 6 (November 2023): Shared and discussed initial findings from Phase 2 interviews.
- Meeting 7 (March 2024): Shared and discussed findings from Phase 3 interviews.
- Meeting 8 (June 2024): Discussed themes identified from the Phase 4 co-design workshops on the components of a good frailty and pain service.
- Meeting 9 (February 2025): Reflections on the study overall and review of a lay summary for Phase 2 participants.

### Reflections and critical perspective

Members contributed valuable insights based on their personal experience of living with pain or supporting someone with pain. The group fostered camaraderie and peer support, although this was not its original remit. Members reported meaningful engagement, growing confidence, and valued participation. Their input shaped study design and offered fresh perspectives during data analysis.

The group included seven members (five women, two men). One member passed away in 2024. Attendance varied; some could not attend all meetings, one member relied on family for transport and one for interpretation, and another member was unable to attend meetings due to ongoing illness. Hybrid meetings posed challenges as several members lived with hearing loss. As such, we ended this meeting format early on. The PPI group comprised some experienced members and others new to involvement. This was valuable as more experienced members could support those less experienced. Formal training was offered but declined. Most members have gone on to support other departmental research at the end of the POPPY study.

### Dissemination to participants and public communities

- Researchers presented findings at a GP patient participation group (September 2024). This was arranged and supported by a PPI member.
- A PPI member coauthored a blog about POPPY PPI activities. This was shared via the Applied Research Collaboration Yorkshire and Humber.[65]

## Equality, diversity and inclusion

### *Language and terminology*

The study team were mindful of their proposed populations when developing materials. Phase 2 materials were provided in hard copy format as many older adults remain digitally excluded[52] and informed by Royal National

Institute for Blind People guidance.[66] Information sheets were developed with PPI members to ensure the language was appropriate.

Some participants were from the South Asian community, where written materials are less relevant to an older population due to low literacy rates. Furthermore, some dialects do not have a written equivalent (e.g. Pothwari).[67] However, we included a researcher with the relevant language skills and cultural knowledge of the proposed population[67] to approach potential participants and conduct interviews.

The study included older adults with frailty, a population known to experience more intrusive pain compared to fit older adults,[19] under-represented in research than expected from population estimates,[68] and with particular neglect of how they engage with healthcare services compared with other groups.[23] By recruiting participants from the CARE75+ cohort,[32,33] the research team efficiently identified older adults with frailty[14,17] and pain and enabled the team to approach participants from varied living circumstances (living alone/living with spouse) and from different geographical locations. Furthermore, the POPPY study could promote the study in the CARE75+ study newsletter, optimising reach and providing reassurance on the legitimacy of the project.

## *Generalisability and transferability of evidence*

### Participant representation

Most Phase 2 participants (92%) had mild or moderate frailty, with few older adults with severe frailty taking part.[3] Many with severe frailty declined due to health issues, caregiving responsibilities, or not feeling up to it, even when home-based flexible interviews were offered. Future studies aiming to recruit this population should allow significantly more time for engagement and consider their limited availability due to ill health or hospitalisation.

Two participants (Phase 2) did not complete a second interview, as they could not be contacted despite several attempts; 92% completed both interviews.

The recruitment strategy, which leveraged an established cohort, enabled the inclusion of an equal number of male and female participants as sex is an important factor influencing health-seeking behaviour for pain.[69] Additionally, in Phase 2 we ensured representation across a range of deprivation levels using IMD scores.

### Enrol and retain diverse participants

Drawing on departmental expertise,[67] we recognised for some older adults from the South Asian community, written materials were less relevant due to language barriers and a lack of written equivalents in some South Asian dialects. To address this, we enlisted an experienced researcher fluent in multiple South Asian languages and familiar with the facilitators to engage with this population.[67] This enabled the inclusion of two older adults from the South Asian community in Phase 2, as well as one participant from the Afro-Caribbean community. However, the number of participants from diverse populations was insufficient for subgroup analysis in Phase 2.

For Phase 3, we strategically included services in geographically diverse locations, incorporating both urban and rural settings. We were fortunate to collaborate with a community pain service that served a diverse population. This service facilitated an outreach approach to providing information on pain management in diverse communities, including a women's community group (in a mosque) and a peer support group (community centre). Sessions were delivered by personnel with the appropriate language skills and cultural awareness, enabling engagement with underserved communities.

In Phase 3, participants were required to participate in a single interview. Of those who consented, 100% completed one interview. Similarly, attendees of Phase 4 workshops were only required to attend once, and of those who consented, 100% participated. However, two commissioners who had planned to attend the workshops were unable to do so due to conflicting work commitments

### Participant data

For Phase 2, we collected data on: age, sex, ethnicity, living circumstances (alone, with spouse or partner, with family) and the IMD score which provides a relative measure of deprivation. We had good representation from across different levels of deprivation. We did not undertake sub-group analysis for ethnicity, as we did not include adequate participants from minoritised groups.

## *Reflections on your research team and wider involvement*

We have drawn on a range of experience and expertise across the team, ensuring opportunities for junior members to gain experience leading the writing of papers[1] and submitting abstracts to conferences. Opportunities have resulted in career advancements and outputs:

- Co-lead (Lesley Brown) was mentored by co-lead (Anne Forster), developing the skills to submit a successful Research for Patient Benefit (RfPB) application as lead applicant.
- Research fellow (Rahena Mossabir) led the Phase 2 qualitative work and the PPI activities and subsequently secured a departmental promotion and is co-applicant on a successful RfPB grant application.
- Research fellow (Natalie Lam) led the conduct and write-up of the published review paper (21) and progressed to a PhD programme.
- Research fellow (Nikki Harrison) was an inexperienced researcher at the project's outset. Nikki Harrison attended a qualitative research course to learn the required skills and subsequently led the Phase 2 paper write-up and presented poster abstracts at national conferences: Health Service Research UK (HSR UK) and British Geriatric Society.
- Senior research fellow (Nicky Kime) and research fellow (Alan Wright) were both experienced qualitative researchers and their expertise proved valuable in facilitating the Phase 4 workshops and summarising the findings for outputs.

## Impact and learning

### *What difference has been made already?*

The POPPY study highlighted the critical intersection of frailty and pain across health services, academic networks, and lay audiences. Presentations, discussions and workshops have facilitated knowledge dissemination at national and international conferences.

Key messages conveyed included the importance of providing older adults with frailty the opportunity to report pain. Additionally, we shared the concerns raised about this population's perception of being a burden on NHS resources, their tendency to prioritise other health conditions over pain, and the lack of readily available information on pain management. Summary Phase 3 findings were also shared, including examples of current pain service provision and potential service enhancements to better support older adults with frailty.

### Presentations and workshops

***Pain service personnel and academic networks:***

- British Pain Society (Older People Special Interest Group) Online Seminar (28 July 2022). Co-lead Lesley Brown and co-applicant Pat Schofield introduced the POPPY study during this virtual seminar.
- Pain showcase – Leeds Beckett University special interest group (academics and students) (16 June 2023). Rahena Mossabir and Nikki Harrison presented an overview of the POPPY study.
- British Pain Society (Pain in Older Adults Special Interest Group) Virtual Workshop (11 April 2024). Co-lead Lesley Brown presented study findings during this session, including a summary of key results and a question-and-answer session. The workshop engaged clinicians and academics with a focus on pain management in older adults.
- International Association for the Study of Pain (IASP) 2024 World Congress, Amsterdam (5–9 August 2024). Co-lead Lesley Brown participated in a workshop titled Understanding the Needs of Older Adults with Chronic Pain and Adapting Treatment Approaches. Preliminary findings from the POPPY study were shared with an international audience of scientists, clinicians and HCPs.

***Wider health networks:***

- Frailty Implementation Advisory Group Meeting. Co-lead Lesley Brown presented an overview of the POPPY study and preliminary Phase 2 findings to representatives from NHS England, public health, local authorities, GPs and integrated care boards (ICBs) (23 February 2024). This laid the groundwork for a second discussion based on study findings (27 March 2025), focusing on practical dissemination strategies.
- HSR UK Conference, University of Oxford (8–10 July 2024). Research fellow Nikki Harrison presented a poster on Phase 2 findings, A Qualitative Investigation of the Experience of Older Adults Living with Frailty and Pain. The event attracted academics, clinicians and policy leaders.
- British Geriatrics Society Autumn Meeting (20–22 November 2024). Nikki Harrison delivered a poster presentation titled Healthcare Professionals' Views on Optimising Pain Services for Older Adults Living with Frailty, sharing Phase 3 findings with HCPs specialising in geriatric care.

### Lay audiences

- **Memory Tree Dementia Group, Bradford (10 January 2024).** Research fellows Rahena Mossabir and Nikki Harrison shared Phase 2 findings with 15 attendees, including older adults with dementia, their carers and volunteers. Discussions focused on GP access and communication about pain.
- **Patient Participation Group, Saltaire (6 October 2024**). Co-lead Lesley Brown, research fellow Nikki Harrison and a PPI member, presented Phase 2

findings to a group of older adults. The session included a presentation followed by a discussion, enabling direct engagement with patients on the topics of frailty and pain.
- **St Paul's Church, Manningham, Bradford (March 2025).** Research fellow Nikki Harrison shared findings with a mixed group of South Asian female elders and other church members who attend for social activities and exercise. Findings were shared in both English and the community dialect, resonating strongly with attendees, all of whom had lived experience of pain.
- **Girlington Elders Association, Girlington Centre, Bradford (March 2025).** Research fellow Nikki Harrison and a departmental researcher shared findings with a group of South Asian male elders ($n$ = 6). Findings were presented in the community dialect. Group attendees had lived experience of pain and multiple health conditions. A key discussion topic was access to GPs and the limitation that only one health condition could be discussed per appointment.

### Potential impact

The outputs of this work will help inform development of better service provision for older adults living with frailty and pain.

### Future work

We have shared findings with the Frailty Implementation Advisory Group, aligned to the ARC Yorkshire and Humber Older Peoples theme.[49] The group comprise representatives from NHS England, public health, local authorities, GPs and ICBs. We intend to engage with further representatives from ICBs to assess the feasibility of a combined frailty and pain role at a regional level. Recognising that each trust operates differently and that commissioners hold varying perspectives, further consultation will help clarify the role within diverse staffing structures.

Co-lead Lesley Brown held a preliminary discussion with a community pain service manager to consider appropriate methods for upskilling pain service personnel on the topic of ageing and frailty.

### Reporting on climate, health and sustainability

We implemented an efficient study design to identify Phases 2 and 4 participants by inviting older adults who were current or past participants of the established CARE75+ study.[32,33] This approach maximised researcher time by eliminating the need for speculative mail-outs. First interviews and 67% of second interviews with older adults (Phase 2) were conducted in person, in the participant's home, rather than remotely (via telephone or Teams). This was necessary as many older adults with frailty experience digital exclusion, live with sensory impairments, and may find discussing topics such as pain and its impact easier in a face-to-face setting.

For Phase 3, interviews with HCPs, were conducted remotely via Teams. This was time-efficient for both researchers and interviewees, as sites were located across the country and no travel was required.

### Lessons learnt for future research

While recruitment from the CARE75+ cohort[32,33] provided access to a well-phenotyped population and enabled efficient and effective participant recruitment, future research on frailty and pain may benefit from additional strategies, such as collaboration with community engagement workers and direct engagement with community groups. Following team discussions and consultations with community engagement workers, we propose the following approach to identify older adults from minoritised populations:

Community centre group leaders should be approached to explore the possibility of a researcher attending a session to provide study information in person. Information should be delivered verbally and, if applicable, translated into the relevant community language. Verbal explanations should be supported by a brief information sheet or flyer, if appropriate, mindful of literacy levels in some minoritised older populations.

A researcher with the relevant language skills should introduce the study and ask if anyone would like to find out more about the study. Interested individuals could be spoken to during the visit, if an appropriate space is available, or later via a follow-up telephone call or home visit. Potential participants should be encouraged to share study details with a trusted person, such as a spouse, family member, or close friend. Frailty measures should be incorporated, such as a simple screening tool like PRISMA-7,[70] to identify older adults with frailty.

### What difference has been made already?

Preliminary findings have been disseminated to national and international audiences, including academics, clinicians, and representatives from NHS England, public health, local authorities, GPs and ICBs. Shared findings have highlighted the critical intersection between frailty and pain.

### *Related work*

- Co-lead Lesley Brown presented POPPY study findings at a 'Lunch and Learn' session for service leads in mental health and suicide prevention, and healthy ageing across Yorkshire (July 2025). The study's insights into pain in older adults, particularly the theme of perceived burden, was considered relevant to session attendees.
- A departmental researcher (AE) undertook secondary analysis of Phase 2 POPPY study data, combined with data from their PhD research (see *Table 1*).
- Co-lead Lesley Brown and departmental researcher (AE) collaborated on a grant application to the NIHR School of Primary Care Research (SPCR) Round 12 – Understanding the health information needs of older people (INFO-80). The proposal aimed to use Phase 2 POPPY data (secondary analysis) to understand information provision requirements for older adults with frailty. This application was unsuccessful. However, feedback was positive, and the lead researcher will resubmit the proposal to an alternative funding source.

## Research recommendations

### *Recommendation 1: how should GPs identify which older adults with frailty and pain would benefit from referral to pain services?*

General practices face challenges in determining which older adults with frailty and pain would benefit from referral to a pain service. The POPPY study explored a range of pain service models, including specialist, community-based, secondary care, and non-NHS providers, highlighting variations in personnel, treatment approaches and service availability. Despite these differences, all services indicated a willingness to support frail older adults if referred. However, a question remains: how should GPs identify which patients would derive the most benefit from a referral?

General practices may struggle to decide who to refer and when, particularly in the absence of a clear framework for referral decision-making. Study findings highlighted that service personnel reported how prolonged medicalised pain management and excessive reliance on pharmacological treatments may contribute to poorer outcomes. As such, there is a need for structured referral criteria to ensure timely and appropriate access to pain services.

Several key considerations arise:

- Referral criteria: Should priority be given to older adults with inadequately managed pain or those whose pain significantly impacts mobility, mental health, or social participation?
- Referral timing: Could earlier referral prevent prolonged ineffective treatments and improve outcomes?
- Service accessibility: Local service provision may shape referral decisions. Community-based services may be more accessible for frail older adults, whereas hospital-based services could pose logistical challenges (e.g. transport).

Given the variability in service provision and patient needs, a standardised yet flexible approach is required to support GPs in making evidence-based referral decisions. Further research and guidance is required to develop a structured framework that ensures equitable access to pain management for frail older adults.

The eFI[17] provides a tool for aiding UK GPs to readily identify frailty within their practice patients and refer to services accordingly. Additionally, population segmentation,[71] is a system which applies a RAG (Red, Amber, Green) rating to identify subgroups of people within a wider population who may be appropriate for different care pathways. This can help identify those at high risk and enable effective prioritisation. Could these combined tools provide an opportunity to identify those requiring more support when reporting pain? Further research is needed to develop standardised referral guidelines, determine optimal timing and assess how service availability informs decisions. Addressing these gaps could improve pain management, enhancing quality of life and reducing the risks of excessive medicalisation in older adults with frailty.

### *Recommendation 2: how can information and service awareness around pain management be improved for older adults living with frailty?*

Enhancing information provision for older adults with persistent pain at the GP and community level is essential, alongside exploring strategies to raise awareness of pain and frailty through public health initiatives. Phase 2 of the POPPY study revealed that some older adults with frailty actively sought information on pain management; however, they often relied on informal sources, such as family, friends or the internet, rather than healthcare providers.

A community service participating in the POPPY study sought to improve knowledge and skills about pain management through a community-based service that employed a proactive outreach approach. The service engaged with diverse populations in community settings, to disseminate information about pain and pain management. Service users were encouraged

to involve family members, caregivers or friends to attend educational modules or consultations, ensuring that those living or caring for individuals experiencing pain also received relevant information. However, this community-based model was an exception rather than the norm, and the average age of service users was approximately 48 years. Nevertheless, this model holds potential for expansion to reach older adults. Future research should explore effective methods of providing pain management information to older adults within community settings. Key questions include:

- Identifying optimal delivery methods to ensure accessibility, particularly for older adults with frailty, including those who are digitally excluded.
- Determining the most suitable individuals to deliver information, whether GPs, community health services, social prescribers, health coaches or other personnel, to ensure optimal benefit for older adults with frailty and persistent pain. Older adults with frailty frequently engage with HCPs, offering opportunities for information provision.
- Understanding the optimal time to provide information to maximise its relevance and utility.
- Exploring where information should be provided to maximise reach and accessibility.
- How to better engage family members and spouses in the information-sharing process to foster a supportive network for older adults managing pain. This is particularly important for a population more accustomed to a medicalised model of care, which may require support in adopting other pain management approaches.

## Additional information

### *CRediT contribution statement*

**Lesley Brown** (https://orcid.org/0000-0001-5499-9145): Conceptualisation, Methodology, Project administration, Writing – original draft, Writing – review and editing, Data curation, Supervision.

**Deborah Antcliff** (https://orcid.org/0000-0002-9771-8232): Methodolgy, Writing – review and editing

**Andrew Clegg** (https://orcid.org/0000-0001-5972-1097): Methodolgy, Writing – review and editing.

**Anne Grice**: Methodolgy.

**Pat Schofield** (https://orcid.org/0000-0003-4242-754X): Methodolgy, Writing – review and editing.

**Asim Suleman** (https://orcid.org/0000-0002-6665-255X): Methodology, Writing – review and editing.

**Amanda Williams** (https://orcid.org/0000-0003-3761-8704): Methodolgy, Writing – review and editing.

**Nikki Harrison** (https://orcid.org/0000-0002-8043-3433): Investigation, Writing – review and editing.

**Nicky Kime** (https://orcid.org/0000-0002-6714-7539): Investigation, Writing – review and editing.

**Alan Wright** (https://orcid.org/0000-0002-5787-293X): Investigation, Writing – review and editing.

**Natalie Lam** (https://orcid.org/0000-0001-8591-444X): Methodology, Investigation, Writing – review and editing.

**Dan Howdon** (https://orcid.org/0000-0001-8052-2893): Methodology, Investigation, Writing – review and editing.

**Davide Tebaldi** (https://orcid.org/0000-0001-6450-5487): Investigation.

**Rahena Mossabir** (https://orcid.org/0000-0001-6964-4742): Methodology, Investigation, Writing – review and editing.

**Sarah Hallas** (https://orcid.org/0000-0002-4713-0553): Investigation, Writing – review and editing.

**Thomas F Crocker** (https://orcid.org/0000-0001-7450-3143): Methodology, Supervision, Writing – review and editing.

**Anne Forster** (https://orcid.org/0000-0001-7466-4414): Conceptualisation, Methodology, Project administration, Writing – original draft, Writing – review and editing, Data curation, Supervision.

All authors have commented on drafts of this report. Co-lead Lesley Brown and co-lead Anne Forster have final responsibility for this report.

### *Acknowledgements*

In addition to the authors listed on this report, the POPPY team would like to acknowledge the invaluable contributions of many organisations, groups and individuals. Additionally, we extend our heartfelt thanks to the late Mary Godfrey, who was originally the lead for this study. Although she sadly passed away before the study commenced, she played an instrumental role in the development of the original idea and of the study plan.

We are grateful to the members of the patient and public involvement group, whose insight and collaboration have helped

to shape this project and who have been a pleasure to work with. Members include Anne Grice, Christine Dracup, Jane Gray, Malcolm Palmer, Marilyn Foster, Yau Tai Cheung and Joss Brown, who sadly passed away in June 2024.

We also thank the members of the Steering Committee for their thoughtful and expert guidance throughout. Members include Catherine Walshe, Kate Seers, Victoria Welsh, Paul Newton and Phyllis Farrington.

Many thanks to artist Tom Bailey for his fantastic work turning our study finding into visual illustrations for use in the study and to support our dissemination activities.

We wish to acknowledge the support and participation of multiple organisations, including NHS pain and community services, non-NHS pain service providers, supporting organisations and third-sector organisations. Their involvement has been essential to the progress of this project.

## Patient data statement

This work uses data provided by patients and collected by the NHS as part of their care and support. Using patient data is vital to improve health and care for everyone. There is huge potential to make better use of information from people's patient records, to understand more about disease, develop new treatments, monitor safety and plan NHS services. Patient data should be kept safe and secure, to protect everyone's privacy, and it is important that there are safeguards to make sure that they are stored and used responsibly. Everyone should be able to find out about how patient data are used. #datasaveslives. You can find out more about the background to this citation here: https://understandingpatientdata.org.uk/data-citation.

## Data-sharing statement

All data requests should be submitted to the corresponding author for consideration. Access to anonymised data may be granted following review.

## Ethics statement

The POPPY study was approved by Leeds-East Research Ethics Committee on 28 April 2022 (22/YH/0080).

## Information governance statement

Bradford Teaching Hospitals NHS Foundation Trust are committed to handling all personal information in line with the UK Data Protection Act (2018) and the General Data Protection Regulation (EU GDPR) 2016/679. Under the Data Protection legislation, Bradford Teaching Hospitals NHS Foundation Trust is the Data Controller. We process personal data in accordance with their instructions. You can find out more about how we handle personal data, including how to exercise your individual rights and the contact details for Bradford Teaching Hospitals NHS Foundation Trust's Data Protection Officer (dataprotectionofficer@bthft.nhs.uk) or the Information Governance team on Information.Governance@bthft.nhs.uk, www.bradfordhospitals.nhs.uk/privacy-statement/.

## Disclosure of interests

***Full disclosure of interests:*** Completed ICMJE forms for all authors, including all related interests, are available in the toolkit on the NIHR Journals Library report publication page at https://doi.org/10.3310/GJLB4820.

### *Primary conflicts of interest:*

Lesley Brown reports that she is a co-lead on an NIHR HSDR grant (NIHR131319) and a co-applicant on a Nuffield Foundation grant (FR-000024773).

Deborah Antcliff reports that she is a co-applicant on an NIHR HSDR grant (NIHR131319), with costings for her clinical backfill held by her employer, the Northern Care Alliance NHS Foundation Trust. She is the lead applicant on a Chartered Society of Physiotherapy Charitable Trust Physiotherapy Research Foundation Post-doctoral Award (PRF-21-POD01), August 2022 to November 2023, with the grant also held by her employer. Additionally, she is lead applicant on an NIHR School of Primary Care Research (SPCR) post-doctoral award (Ref C075), from November 2022 to October 2024, with the grant held by Keele University. This grant covers part of her clinical backfill and project-related costs. She is also a named consultant and Project Advisory Group member for the Nuffield Health (Oliver Bird)/Versus Arthritis project (OBF/FR-000023819), for which a small award is held by her employer. Deborah Antcliff is co-applicant on an NIHR RfPB grant (NIHR206212), March 2024 to February 2028, with clinical backfill costings held by her employer. She is the lead applicant on an NIHR Senior Clinical and Practitioner Research Award (NIHR304546), from October 2024 to September 2028, with the grant held by the Northern Care Alliance NHS Foundation Trust. This grant supports her clinical backfill and research activities.

Andrew Clegg reports receiving grants from the NIHR, Dunhill Medical Trust, and UK Research and Innovation. Andrew Clegg led the development and national implementation of the UK eFI which uses routinely available primary care electronic health record (EHR) data to support frailty identification. The eFI is available for research use and licensed to UK suppliers of EHR systems at no cost on the basis that a subsequent premium charge is not subsequently applied to the end user. Andrew Clegg also led the development of the eFI version 2 (eFI2). The eFI2 model equation and associated code lists used to define variables are available for research use. The eFI2 research team aim to make eFI2 available to suppliers of UK electronic health record systems, risk stratification software, and for use in national

policy and commissioning under the terms of an agreed license agreement. Andrew Clegg is named on the eFI2 revenue share distribution, in the event of future commercialisation. Andrew Clegg received consulting fees from the Geras Centre for Aging Research for the 2023 Centre Review, and support for attending the Australia and New Zealand Society of Geriatric Medicine. Andrew Clegg participates on Trial Steering Committees and Data Monitoring and Ethics Committees for NIHR trials, serves as Chair of the global Ageing Research Trialists collaborative and is a member of the NICE Falls Prevention Guideline Development Group. Andrew Clegg reports HTA Post-Funding Committee (Commissioning) – 1 September 2018–31 March 2027; HTA Commissioning Funding Committee – 1 September 2017–30 September 2028.

Anne Grice reports receiving payment for attending PPI meetings, with transport arranged and/or costs reimbursed for the NIHR HSDR grant (NIHR131319).

Pat Schofield reports receiving funding from the Pearn Charitable Trust, RDUHT and NIHR. She is also a member of the Social Care Nursing Advisory Council, an unpaid role.

Asim Suleman reports receiving payments from Idorsia Pharmaceuticals for lecturing on sleep, and for his role as Clinical Lead for 'Rethinking Pain' in Bradford, with payments made directly to him. He is also a Director of Olive Holistic Health Ltd and a Partner at Hollyns Health and Wellbeing, Bradford. He is Pain-Lead for the Bradford S & W MSK Service.

Amanda Williams reports no conflicts of interest.

Nikki Harrison reports no conflicts of interest.

Nicky Kime reports no conflicts of interest.

Alan Wright reports no conflicts of interest.

Natalie Lam reports no conflicts of interest.

Dan Howden reports receiving NIHR funding, with payment made to the University of Leeds for this manuscript. He also reports receiving consulting fees from the United Nations Asia-Pacific Region.

Davide Tebaldi reports no conflicts of interest.

Rahena Mossabir reports no conflicts of interest.

Sarah Hallas reports no conflicts of interest.

Thomas F Crocker reports that NIHR made a payment to his institution for the manuscript. He also reports receiving funding from NIHR, Leeds Hospital Charity, Research England, and the Medical Research Council, with all payments made to institutions.

Anne Forster reports being a co-applicant on the bid with 8% salary going to the Institution, receiving an NIHR HTA Grant 5% of salary March 2017–May 2023, receiving an NIHR Senior Investigator award 2017–present, receiving an NIHR Programme Grant 10% of salary 2017–present, receiving an NIHR PDG 10% of salary 2024–2025, receiving an NIHR HTA 5% of salary March 2023 to February 2024, receiving an NIHR ARC YH 5% of salary, being a Chair Programme Steering Committee, NIHR 202339 Improving the lives of stroke survivors with data, being a Chair Programme Steering Committee, NIHR202020 Research Title Personalised Exercise-Rehabilitation FOR people with Multiple long-term conditions (multimorbidity)-The PERFORM trial, being a Chair.

## *Department of Health and Social Care disclaimer*

This publication presents independent research commissioned by the National Institute for Health and Care Research (NIHR). The views and opinions expressed by authors in this publication are those of the authors and do not necessarily reflect those of the NHS, the NIHR, MRC, NIHR Coordinating Centre, the Health and Social Care Delivery Research programme or the Department of Health and Social Care.

This synopsis was published based on current knowledge at the time and date of publication. NIHR is committed to being inclusive and will continually monitor best practice and guidance in relation to terminology and language to ensure that we remain relevant to our stakeholders.

## *Study registration*

This study is registered as Research Registry: 7169.

## *Funding*

This synopsis presents independent research funded by the National Institute for Health and Care Research (NIHR) Health and Social Care Delivery Research programme as award number NIHR131319.

## *Award publications*

This synopsis provided an overview of the research award *Developing the evidence and associated service model to support older people living with frailty to manage their pain and to reduce its impact on their lives: a mixed method, co-design study*.

Other articles published as part of this thread are:

Lam N, Green J, Hallas S, Forster A, Crocker TF, Andre D, *et al*. Mapping review of pain management programmes and

psychological therapies for community-dwelling older people living with pain. *Eur Geriatr Med* 2023;**15**:33–45. https://doi.org/10.1007/s41999-023-00871-1.

Harrison N, Mossabir R, Forster A, Kime N, Williams ACC, Brown L. Qualitative investigation of the experiences of older people living with persistent pain and frailty and their decision to seek support: findings from the POPPY-Q study. *BMJ Open* 2025;**15**:e104744. https://doi.org/10.1136/bmjopen-2025-104744.

Wright A, Antcliff D, Kime N, Harrison N, Mossabir R, Suleman A, *et al*. Maximising pain services for frail older adults, the views of healthcare professionals and commissioners: findings from the pain in older people with frailty (POPPY) study. *BMC Geriatr* 2025;**25**:836. https://doi.org/10.1186/s12877-025-06554-9.

For more information about this research, please view the award page (www.fundingawards.nihr.ac.uk/award/NIHR131319).

## Additional outputs

Brown L, Mossabir R, Harrison N, Lam N, Grice A, Clegg A, *et al*. Developing the evidence and associated service models to support older adults living with frailty to manage their pain and to reduce its impact on their lives: protocol for a mixed-method, co-design study (The POPPY Study). *BMJ Open* 2023;**13**:e074785. https://doi.org/10.1136/bmjopen-2023-074785

### Conference papers

Harrison N, Brown L, Mossabir R, Williams A, Antcliff D, Sulemen A, Schofield P, Clegg A, Forster A. *A Qualitative Investigation of the Experience of Older Adults Living with Frailty and Pain*. HSR UK Conference, University of Oxford (8–10 July 2024).

Wright A, Harrison N, Brown L, Kime N, Forster A, on behalf of the POPPY Programme Management. *Professionals' Views on Optimising Pain Services for Older Adults Living with Frailty Group*. British Geriatrics Society Autumn Meeting (20–22 November 2024).

### Seminars and workshops

British Pain Society (Older People Special Interest Group) Online Seminar (28th July 2022). Co-lead Lesley Brown and co-applicant Pat Schofield introduced the POPPY study during this virtual seminar.

British Pain Society (Pain in Older Adults Special Interest Group) Virtual Workshop (11 April 2024). Co-lead Lesley Brown presented study findings during this session, which included a summary of key results and a question-and-answer segment. The workshop engaged clinicians and academics with a focus on pain management in older adults.

International Association for the Study of Pain (IASP) 2024 World Congress, Amsterdam (5–9 August 2024). Co-lead Lesley Brown participated in a workshop titled Understanding the Needs of Older Adults with Chronic Pain and Adapting Treatment Approaches. Preliminary findings from the POPPY study were shared with an international audience of scientists, clinicians and HCPs.

## About this synopsis

The contractual start date for this research was in April 2022. This synopsis began editorial review in April 2025 and was accepted for publication in September 2025. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The Health and Social Care Delivery Research editors and publisher have tried to ensure the accuracy of the authors' article and would like to thank the reviewers for their constructive comments on the draft document. However, they do not accept liability for damages or losses arising from material published in this synopsis.

## Copyright



Published by the NIHR Journals Library (www.journalslibrary.nihr.ac.uk), produced by Newgen Digitalworks Pvt Ltd, Chennai, India (www.newgen.co).

## Copyright and credit statement



## List of supplementary materials

**Report Supplementary Material 1** Phase 4 POPPY workshop summary

**Report Supplementary Material 2**
Summary per patient costings for different service models

Supplementary material can be found on the NIHR Journals Library report page (https://doi.org/10.3310/GJLB4820).

Supplementary material has been provided by the authors to support the report and any files provided at submission will have been seen by peer reviewers, but not extensively reviewed. Any supplementary material provided at a later stage in the process may not have been peer reviewed.

The supplementary materials (which include but are not limited to related publications, patient information leaflets and questionnaires) are provided to support and contextualise the publication. Every effort has been made to obtain the necessary permissions for reproduction, to credit original sources appropriately, and to respect copyright requirements. However, despite our diligence, we acknowledge the possibility of unintentional omissions or errors and we welcome notifications of any concerns regarding copyright or permissions.

## List of abbreviations

| | |
|---|---|
| AfC | Agenda for Change |
| BMA | British Medical Association |
| CARE75+ | Community Ageing Research 75+ |
| CCG | Clinical Commissioning Group |
| CGA | comprehensive geriatric assessment |
| CSPMS | Core Standards for Pain Management Services |
| eFI | electronic Frailty Index |
| FTE | full-time equivalent |
| GP | general practice |
| HCP | healthcare professional |
| HSR UK | Health Service Research UK |
| ICB | integrated care board |
| ICS | integrated care system |
| IMD | Index of Multiple Deprivation |
| NICE | National Institute for Health and Care Excellence |
| PCNs | Primary Care Networks |
| PPI | patient and public involvement |
| PMG | programme management group |
| PMP | pain management programme |
| PSSRU | Personal Social Services Research Unit |
| PsyTs | psychological therapies |
| RCT | randomised controlled trial |
| RfPB | Research for Patient Benefit |
| SR | systematic review |

## References


1. Brown L, Mossabir R, Harrison N, Lam N, Grice A, Clegg A, *et al*. Developing the evidence and associated service models to support older adults living with frailty to manage their pain and to reduce its impact on their lives: protocol for a mixed-method, co-design study (The POPPY Study). *BMJ Open* 2023;**13**:e074785. https://doi.org/10.1136/bmjopen-2023-074785
2. Lam N, Green J, Hallas S, Forster A, Crocker TF, Andre D, *et al*. Mapping review of pain management programmes and psychological therapies for community-dwelling older people living with pain. *Eur Geriatr Med* 2024;**15**:33–45.
3. Harrison N, Mossabir R, Forster A, Kime N, Williams A, Brown L. Qualitative investigation of the experiences of older people living with persistent pain and frailty, and their decision to seek support: findings from the POPPY-Q Study. *BMJ Open* 2025;**15**:e104744. https://doi.org/10.1136/bmjopen-2025-104744
4. Wright A, Antcliff D, Kime N, Harrison N, Mossabir R, Suleman A, *et al*. Maximising pain services for frail older adults, the views of healthcare professionals and commissioners: findings from the Pain in Older People with Frailty (POPPY) study. *BMC Geriatr* 2025;**25**:836. https://doi.org/10.1186/s12877-025-06554-9
5. Abdulla A, Adams N, Bone M, Elliott AM, Gaffin J, Jones D, *et al*.; British Geriatric Society. Guidance on the management of pain in older people. *Age Ageing* 2013;**42**:i1–57.
6. Van Hecke O, Torrance N, Smith B. Chronic pain epidemiology and its clinical relevance. *Br J Anaesth* 2013;**111**:13–8.

7. Fayaz A, Croft P, Langford R, Donaldson L, Jones G. Prevalence of chronic pain in the UK: a systematic review and meta-analysis of population studies. *BMJ Open* 2016;**6**:e010364. https://doi.org/10.1136/bmjopen-2015-010364
8. Chou KL. Reciprocal relationship between pain and depression in older adults: evidence from the English Longitudinal Study of Ageing. *J Affect Disord* 2007;**102**:115–23.
9. Reid MC, Eccleston C, Pillemer K. Management of chronic pain in older adults. *BMJ* 2015;**350**:h532.
10. Ong T, Thiam CN. Special consideration for pain management in the older person. *Clin Med* 2022;**22**:295–7.
11. Clegg A, Young J, Iliffe S, Rikkert MO, Rockwood K. Frailty in elderly people. *Lancet* 2013;**381**:752–62.
12. O'Caoimh R, Sezgin D, O'Donovan MR, Molloy DW, Clegg A, Rockwood K, Liew A. Prevalence of frailty in 62 countries across the world: a systematic review and meta-analysis of population-level studies. *Age Ageing* 2021;**50**:96–104.
13. Rockwood K, Song X, MacKnight C, Bergman H, Hogan DB, McDowell I, Mitnitski A. A global clinical measure of fitness and frailty in elderly people. *CMAJ* 2005;**173**:489–95.
14. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J, *et al*.; Cardiovascular Health Study Collaborative Research Group. Frailty in older adults: evidence for a phenotype. *J Gerontol A Biol Sci Med Sci* 2001;**56**:M146–56.
15. Harrison JK, Clegg A, Conroy SP, Young J. Managing frailty as a long-term condition. *Age Ageing* 2015;**44**:732–5.
16. Department of Health. *NHS Long Term Plan*. London; 2019. URL: www.longtermplan.nhs.uk/ (accessed 8 April 2025).
17. Clegg A, Bates C, Young J, Ryan R, Nichols L, Ann Teale E, *et al*. Development and validation of an electronic frailty index using routine primary care electronic health record data. *Age Ageing* 2016;**45**:353–60.
18. Brown L, Young J, Clegg A, Heaven A. Pain in older people with frailty. *Rev Clin Gerontol* 2015;**25**:159–71.
19. Brown L, Young J, Teale E, Santorelli G, Clegg A. A cross-sectional study of the impact of pain in older people with frailty: findings from the community ageing research 75+(CARE75+) study. *Adv Geriatr Med Res* 2019;**1**:e190002. https://doi.org/10.20900/agmr20190002
20. Veronese N, Maggi S, Trevisan C, Noale M, De Rui M, Bolzetta F, *et al*. Pain increases the risk of developing frailty in older adults with osteoarthritis. *Pain Med* 2017;**18**:414–27.
21. Saraiva MD, Suzuki GS, Lin SM, de Andrade DC, Jacob-Filho W, Suemoto CK. Persistent pain is a risk factor for frailty: a systematic review and meta-analysis from prospective longitudinal studies. *Age Ageing* 2018;**47**:785–93.
22. Crocker TF, Brown L, Clegg A, Farley K, Franklin M, Simpkins S, Young J. Quality of life is substantially worse for community-dwelling older people living with frailty: Systematic review and meta-analysis. *Qual Life Res* 2019;**28**:2041–56.
23. National Institute for Health Research. *Improving Inclusion of Under-Served Groups in Clinical Research: Guidance from INCLUDE Project*. 2020. URL: www.nihr.ac.uk/documents/improving-inclusion-of-under-served-groups-in-clinical-research-guidance-from-include-project/25435 (accessed 8 April 2025).
24. Clapton J, Rutter D, Sharif N. *SCIE Systematic Mapping Guidance*. Social Care Institute for Excellence; 2009. URL: https://lx.iriss.org.uk/sites/default/files/resources/rr03.pdf (accessed 2 February 2026).
25. James KL, Randall NP, Haddaway NR. A methodology for systematic mapping in environmental sciences. *Environ Evid* 2016;**5**:7.
26. Treede RD, Rief W, Barke A, Aziz Q, Bennett MI, Benoliel R, *et al*. A classification of chronic pain for ICD-11. *Pain* 2015;**156**:1003–7.
27. The British Pain Society. *Guidelines for Pain Management Programmes for Adults*. London: The British Pain Society; 2013. URL: www.britishpainsociety.org (accessed 8 April 2025).
28. National Institute for Health and Care Excellence. *Chronic Pain (Primary and Secondary) in Over 16s: Assessment of All Chronic Pain and Management of Chronic Primary Pain*. 2021. URL: www.nice.org.uk/guidance/ng193 (accessed 8 April 2025).
29. Hoffmann TC, Glasziou PP, Boutron I, Milne R, Perera R, Moher D, *et al*. Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide. *BMJ* 2014;**348**:g1687.
30. Maheshwarappa HM, Majumder S. Critical appraisal of randomized controlled trials: an overview. *Indian J Respir Care* 2023;**12**:163–8.
31. Keefe FJ, Blumenthal J, Baucom D, Affleck G, Waugh R, Caldwell DS, *et al*. Effects of spouse-assisted coping skills training and exercise training in patients with osteoarthritic knee pain: a randomized controlled study. *Pain* 2004;**110**:539–49.
32. Heaven A, Brown L, Young J, Teale E, Hawkins R, Spilsbury K, *et al*. Community ageing research 75+ study (CARE75+): an experimental ageing and frailty research cohort. *BMJ Open* 2019;**9**:e026744.

33. Brown L, Heaven A, Quinn C, Goodwin V, Chew-Graham C, Mahmood F, *et al*. Community Ageing Research 75+(CARE75+) REMOTE study: a remote model of recruitment and assessment of the health, well-being and social circumstances of older people. *BMJ Open* 2021;**11**:e048524.
34. Charmaz K. *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis*. 2nd edn. London: SAGE Publications Ltd; 2014.
35. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap) – a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform* 2009;**42**:377–81.
36. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol* 2006;**3**:77–101.
37. Research Governance Unit Australia, Experience-Based Co-Design (EBCD). *Participatory Action Research: Using Experience-based Co-design (EBCD) to Improve Healthcare Services*. Oxford: Oxford University Press; 2013.
38. Jones K, Weatherly HLA, Birch S, Castelli A, Chalkley MJ, Dargan A, *et al*. *Unit Costs of Health and Social Care 2022*. 2022. URL: https://pure.york.ac.uk/portal/en/publications/unit-costs-of-health-and-social-care-2022 (accessed 8 April 2025).
39. NHS Business Services Authority (NHSBSA). *NHS Jobs* 2025. URL: https://beta.jobs.nhs.uk/candidate (accessed 1 August 2025).
40. Gammons V, Caswell G. Older people and barriers to self-reporting of chronic pain. *Br J Nurs* 2014;**23**:274–8.
41. Makris UE, Higashi RT, Marks EG, Fraenkel L, Sale JE, Gill TM, *et al*. Ageism, negative attitudes, and competing co-morbidities – why older adults may not seek care for restricting back pain: a qualitative study. *BMC Geriatr* 2015;**15**:1–9.
42. BMA. *Safe Working Guidance in General Practice in England – A Summary*. 2024. URL: www.bma.org.uk/media/agfcxgkj/bma-safe-working-in-general-practice-a-summary.pdf (accessed 8 April 2025).
43. Atherton H, Leach H, Mortell R, Parsons J. What patients want from access to UK general practice: systematic review. *Br J Gen Pract* 2025;**75**:e526–32.
44. Clarke A, Martin D, Jones D, Schofield P, Anthony G, McNamee P, *et al*. 'I try and smile, I try and be cheery, I try not to be pushy. I try to say 'I'm here for help' but I leave feeling… worried': a qualitative study of perceptions of interactions with health professionals by community-based older adults with chronic pain. *PLOS ONE* 2014;**9**:e105450.
45. Rastogi R, Meek BD. Management of chronic pain in elderly, frail patients: finding a suitable, personalized method of control. *Clin Interv Aging* 2013;**8**:37–46.
46. Chen N, Farrell M, Kendall S, Levy L, Mehan R, Katz B. The pain clinic for older people. *Pain Med (Malden, Mass.)* 2023;**24**:182–7.
47. Ghio D, Peters S. *The Value of Social Relationships in the Biopsychosocial Model of Pain*. London, England: SAGE Publications Ltd; 2024. pp. 448–49.
48. Meints SM, Edwards RR. Evaluating psychosocial contributions to chronic pain outcomes. *Prog Neuropsychopharmacol Biol Psychiatry* 2018;**87**:168–82.
49. Applied Research Collaboration Yorkshire and Humber. *Older People*. 2025. URL: https://arc-yh.nihr.ac.uk/themes/older-people/ (accessed 1 August 2025).
50. Office for Health Improvement and Disparities. *Health Disparities and Health Inequalities: Applying All Our Health* 2021. URL: www.gov.uk/government/publications/health-disparities-and-health-inequalities-applying-all-our-health/health-disparities-and-health-inequalities-applying-all-our-health (accessed 1 August 2025).
51. Older Peoples Commissioner for Wales. *Access to GP Practices in Wales. Older People's Experiences*. URL: https://olderpeople.wales/wp-content/uploads/2024/03/Access-to-GP-Practices-in-Wales-Older-Peoples-Experiences.pdf (accessed 8 April 2025).
52. Age UK. *Facts and Figures About Digital Inclusion and Older People*. 2024. URL: www.ageuk.org.uk/siteassets/documents/reports-and-publications/reports-and-briefings/active-communities/internet-use-statistics-june-2024.pdf (accessed 8 April 2025).
53. Lansbury G. Chronic pain management: a qualitative study of elderly people's preferred coping strategies and barriers to management. *Disabil Rehabil* 2000;**22**:2–14.
54. Jackson T, Phillips H. Social comparison performance standards, threat, and tolerance for experimentally-induced pain. *Eur J Pain* 2011;**15**:1081–6.
55. Chopra S, Kodali RT, McHugh GA, Conaghan PG, Kingsbury SR. Home-based health care interventions for people aged 75 years and above with chronic, non-inflammatory musculoskeletal pain: a scoping review. *J Geriatr Phys Ther* 2023;**46**:3–14.
56. Figueiredo T, Midão L, Sampaio R, Carrilho J, Coelho C, Cerullo G, *et al*. Managing non-cancer chronic pain in frail older adults: a pilot study based on a

multidisciplinary approach. *Int J Environ Res Public Health* 2023;**20**:7150.

57. Barker RO, Hanratty B, Kingston A, Ramsay SE, Matthews FE. Changes in health and functioning of care home residents over two decades: what can we learn from population-based studies? *Age Ageing* 2021;**50**:921–7.
58. Garrard JW, Cox NJ, Dodds RM, Roberts HC, Sayer AA. Comprehensive geriatric assessment in primary care: a systematic review. *Aging Clin Exp Res* 2020;**32**:197–205.
59. Pilkington G, Johnson MI, Thompson K. Social prescribing for adults with chronic pain in the UK: a rapid review. *Br J Pain* 2025:20494637241312064.
60. NHS England. *Neighbourhood Health Guidelines 2025/26*. 2025. URL: www.england.nhs.uk (accessed 8 April 2025).
61. Johnson MI, Page K, Woodall J, Thompson K. Perspectives on community-based system change for people living with persistent pain: insights from developing the 'Rethinking Pain service'. *Front Pain Res (Lausanne)* 2024;**5**:1299027.
62. Faculty of Pain Medicine of the Royal College of Anaesthetists. *Core Standards for Pain Management Services in the UK (Second Edition)*. 2021. URL: www.britishpainsociety.org/static/uploads/resources/files/FPM-Core-Standards-2021.pdf (accessed 1 August 2025).
63. NHS England. *Workforce Development Framework for Health and Wellbeing Coaches*. 2023. URL: www.england.nhs.uk (accessed 8 April 2025).
64. Brown L, Heaven A, Young J, Clegg A. The importance of oversight in Trials within Cohorts (TwiCs): Experiences from the Community Ageing Research 75+ (CARE 75+) study. *Trials* 2017;**18**(Suppl 2). https://doi.org/10.1186/s13063-017-1961-0
65. Yorkshire and Humber Applied Research Collaboration. *Blogs*. 2025. URL: https://arc-yh.nihr.ac.uk/resources/blogs/ (accessed 1 August 2025).
66. RNIB. *Creating Accessible Information and Communication Resources for Health and Social Care*. URL: www.rnib.org.uk/living-with-sight-loss/independent-living/accessible-nhs-and-social-care-information/accessible-health-and-social-care-resources/ (accessed 8 April 2025).
67. Jacob I, Mahmood F, Brown L, Heaven A, Mahmood S, Clegg A. Recruiting older people from the Pakistani community in Community Ageing Research 75+. *Br J Community Nurs* 2020;**25**:110–3.
68. Goodwin VA, Low MS, Quinn TJ, Cockcroft EJ, Shepherd V, Evans PH, *et al*. Including older people in health and social care research: best practice recommendations based on the INCLUDE framework. *Age Ageing* 2023;**52**:afad082.
69. Cornally N, McCarthy G. Help-seeking behaviour for the treatment of chronic pain. *Br J Community Nurs* 2011;**16**:90–8.
70. Hoffmann S, Wiben A, Kruse M, Jacobsen KK, Lembeck MA, Holm EA. Predictive validity of PRISMA-7 as a screening instrument for frailty in a hospital setting. *BMJ Open* 2020;**10**:e038768.
71. NHS England. *Transforming Care Through Modern General Practice and Population Segmentation*. 2025. URL: www.england.nhs.uk/long-read/transforming-care-through-modern-general-practice-and-population-segmentation/ (accessed 8 April 2025).

## Appendix 1 Literature search (update)

### MEDLINE search

| | | |
|---|---|---|
| 1 | TI (frailty OR frail OR sarcopenia) OR AB (frailty OR frail OR sarcopenia) | 56,847 |
| 2 | (MH "Frailty") | 12,121 |
| 3 | S1 OR S2 | 57,370 |
| 4 | (MM "Pain") | 84,381 |
| 5 | AB pain* OR TI pain* | 938,711 |
| 6 | S4 OR S5 | 950,978 |
| 7 | TI (aged OR aging OR elderly OR elder* OR older OR senior* OR geriatric*) OR AB (aged OR aging OR elderly OR elder* OR older OR senior* OR geriatric*) | 1,739,202 |
| 8 | (MM "Aged") OR (MM "Aged, 80 and over") | 18,518 |

| | | |
|---|---|---|
| 9 | (MH "Frail Elderly") | 16,672 |
| 10 | S7 OR S8 OR S9 | 1,745,731 |
| 11 | S3 AND S6 AND S10 | 1255 |
| 12 | 2014-2024 date limit | 986 |

## CINAHL search

| | | |
|---|---|---|
| 1 | TI (frailty OR frail OR sarcopenia) OR AB (frailty OR frail OR sarcopenia) | 25,510 |
| 2 | (MH "Frailty Syndrome") | 5717 |
| 3 | AB pain* OR TI pain* | 321,480 |
| 4 | (MM "Pain") | 49,403 |
| 5 | S1 OR S2 | 26,391 |
| 6 | S3 OR S4 | 329,318 |
| 7 | TI (aged OR aging OR elderly OR elder* OR older OR senior* OR geriatric*) OR AB (aged OR aging OR elderly OR elder* OR older OR senior* OR geriatric*) | 597,358 |
| 8 | (MM "Frail Elderly") OR (MM "Aged") | 8381 |
| 9 | S7 OR S8 | 599,154 |
| 10 | S5 AND S6 AND S9 | 605 |
| 11 | 2014-2024 date limit | 466 |

When deduplicated altogether = 1246 references

## Appendix 2 Search strategy for Phase 1

SRDatabase: Ovid MEDLINE(R) ALL <1946 to December 15, 2021>

Search strategy:

---

1 pain, intractable/ (6296)
2 chronic pain/ (18,557)
3 ((persist* or intract* or idiopathic or atypical or "a typical" or chronic or prolong* or long last* or sustain* or longstanding or long standing or longterm or long term or refractory or sustain* or linger* or syndrome*) adj5 pain*).tw,kf. (126,960)
4 or/1-3 [chronic pain] (132,609)
5 Pain Management/ (38,372)
6 (pain management adj2 (program* or rehab*)).tw,kf. (921)
7 ((management or rehab*) adj3 (program* or course* or session* or group* or class* or scheme* or strateg* or initiative* or training)).tw,kf. (119,931)
8 self care/ (34,921)
9 (selfcar* or selfmanagement or selfhelp or selfadministrat* or selfmonitor* or selfmedicat*).tw,kf. (267)
10 (Self adj2 (car* or manag* or program* or help or administrat* or monitor* or medicat*)).tw,kf. (73,523)
11 Self-Help Groups/ (9424)
12 telemedicine/ (31,614)
13 telerehabilitation/ (684)
14 telehealth/ (31,614)
15 ((tele adj2 (heal* or medicine or care)) or telehealth or telemedicine or telecare).tw,kf. (26,086)
16 pain education.tw,kf. (593)
17 patient education as topic/ (87,703)
18 health education/ (62,528)
19 teaching/ (50,938)
20 or/5-18 [pain management programmes] (418,041)
21 exp psychotherapy/ (208,480)
22 psychotherap*.tw,kf. (50,012)
23 (psychological adj (treatment* or therapy or therapies)).tw,kf. (6756)
24 (group* adj3 (therap* or program*)).tw,kf. (47,618)
25 exp mind-body therapies/ (53,422)
26 hypnosis.tw,kf. (8388)
27 biofeedback.tw,kf. (7528)

28 "eye movement desensiti?ation and reprocessing".tw,kf. (644)
29 ((behavio?r* or cognitive or relax* or psycho* or compassion or solution) adj3 (technique* or therap* or treatment* or training or rehab*)).tw,kf. (131,066)
30 (CBT or CBASP or EMDR).tw,kf. (13,500)
31 (acceptance adj3 therap*).tw,kf. (1993)
32 (commitment adj3 therap*).tw,kf. (1487)
33 meditat*.tw,kf. (7208)
34 guided imagery.tw,kf. (811)
35 mindfulness.tw,kf. (9947)
36 (sleep adj3 (manag* or program* or regulat* or therap*)).tw,kf. (10,134)
37 adaptation, psychological/ (100,178)
38 coping skill*.tw,kf. (3577)
39 or/21-38 [psychological therapies] (470,213)
40 20 or 39 [pain management programmes or psychological therapies] (847,998)
41 "systematic review"/ (179,666)
42 Meta-Analysis/ (149,097)
43 exp Meta-Analysis as Topic/ (23,617)
44 (meta analy* or metanaly* or metaanaly* or meta regression).ti,ab. (222,005)
45 ((systematic* or evidence*) adj3 (review* or overview*)).ti,ab. (291,950)
46 (reference list* or bibliograph* or hand search* or manual search* or relevant journals).ab. (48,982)
47 (search strategy or search criteria or systematic search or study selection or data extraction).ab. (67,706)
48 (search* adj4 literature).ab. (80,956)
49 (medline or pubmed or cochrane or embase or psychlit or psyclit or psychinfo or psycinfo or cinahl or science citation index or bids).ab. (293,021)
50 cochrane.jw. (15,781)
51 ((multiple treatment* or indirect or mixed) adj2 comparison*).ti,ab. (3318)
52 or/41-51 (578,486)
53 letter/ (1,162,808)
54 editorial/ (589,856)
55 news/ (210,577)
56 exp historical article/ (406,575)
57 anecdotes as Topic/ (4746)
58 comment/ (943,079)
59 case report/ (2,233,045)
60 (letter or comment*).ti. (172,098)
61 or/53-60 (4,670,219)
62 52 not 61 [Adapted from systematic review search filter used by NICE] (547,263)
63 4 and 40 and 62 [chronic pain and pain management programmes or psychological therapies and systematic reviews] (1964)
64 exp animals/ not humans.sh. (4,931,018)
65 63 not 64 [human only studies] (1958)
66 (exp adolescent/ or exp child/ or exp newborn/) not ((exp adult/ or exp aged/ or exp middle aged/) and (exp adolescent/ or exp child/ or exp newborn/)) (1,872,193)
67 65 not 66 [excluding studies about children] (1865)
68 ((cancer adj2 pain) not ("non cancer pain" or "noncancer pain")).ti. (5037)
69 67 not 68 [excluding studies about cancer pain in title] (1829)
70 limit 69 to yr="2000 -Current" (1792)

## Randomised controlled trials search strategies

Database: Ovid MEDLINE(R) ALL <1946 to June 29, 2022>

Search strategy:

---

1 Pain, Intractable/ (6331)
2 chronic pain/ (20,156)
3 ((persist* or intract* or idiopathic or atypical or "a typical" or chronic or prolong* or long last* or sustain* or longstanding or long standing or longterm or long term or refractory or linger* or syndrome*) adj5 pain*).tw,kf. (132,020)
4 or/1-3 [chronic pain] (137,738)
5 Pain Management/ (39,465)
6 (pain management adj2 (program* or rehab*)).tw,kf. (967)
7 ((management or rehab*) adj3 (program* or course* or session* or group* or class* or scheme* or strateg* or initiative* or training)).tw,kf. (125,715)
8 Self Care/ (35,400)
9 (selfcar* or selfmanagement or selfhelp or selfadministrat* or selfmonitor* or selfmedicat*).tw,kf. (293)
10 (Self adj2 (car* or manag* or program* or help or administrat* or monitor* or medicat*)).tw,kf. (77,324)
11 Self-Help Groups/ (9482)
12 Telemedicine/ (34,037)
13 Telerehabilitation/ (808)
14 ((tele adj2 (heal* or medicine or care)) or telehealth or telemedicine or telecare).tw,kf. (29,363)
15 pain education.tw,kf. (639)
16 Patient Education as Topic/ (88,081)
17 Health Education/ (62,970)
18 Teaching/ (51,356)
19 or/5-18 [pain management programmes] (481,003)
20 exp Psychotherapy/ (212,665)
21 psychotherap*.tw,kf. (51,301)
22 (psychological adj (treatment* or therapy or therapies)).tw,kf. (7056)

23 (group* adj3 (therap* or program*)).tw,kf. (49,234)
24 exp Mind-Body Therapies/ (45,946)
25 hypnosis.tw,kf. (8509)
26 biofeedback.tw,kf. (7774)
27 "eye movement desensiti?ation and reprocessing".tw,kf. (666)
28 ((behavio?r* or cognitive or relax* or psycho* or compassion or solution) adj3 (technique* or therap* or treatment* or training or rehab*)).tw,kf. (136,096)
29 (CBT or CBASP or EMDR).tw,kf. (14,232)
30 (acceptance adj3 therap*).tw,kf. (2187)
31 (commitment adj3 therap*).tw,kf. (1667)
32 meditat*.tw,kf. (7625)
33 guided imagery.tw,kf. (847)
34 mindfulness.tw,kf. (10,967)
35 Mindfulness/ (5399)
36 (sleep adj3 (manag* or program* or regulat* or therap*)).tw,kf. (10,508)
37 Adaptation, Psychological/ (101,799)
38 coping skill*.tw,kf. (3750)
39 or/20-38 [psychological therapies] (475,041)
40 19 or 39 [pain management or psychological therapies] (911,902)
41 randomized controlled trial.pt. (571,827)
42 controlled clinical trial.pt. (94,924)
43 randomized.ab. (566,615)
44 placebo.ab. (229,523)
45 drug therapy.fs. (2,505,782)
46 randomly.ab. (385,683)
47 trial.ab. (606,130)
48 groups.ab. (2,372,385)
49 or/41-48 (5,393,958)
50 exp animals/ not humans.sh. (5,022,766)
51 49 not 50 [Cochrane Cochrane Highly Sensitive Search Strategy for identifying randomized trials in MEDLINE] (4,696,754)
52 4 and 40 and 51 [chronic pain and pain management or psychological therapy and RCTs] (8976)
53 exp Aged/ (3,405,047)
54 Geriatrics/ (31,090)
55 Geriatric Assessment/ (31,266)
56 (gerontol* or ageing or aging or elder* or geriatric* or senior* or old age* or "older person*" or "older people" or "older adult" or late* life or very old or oldest old).tw,kf. (692,751)
57 or/53-56 [aged 65 and over] (3,741,261)
58 52 and 57 [limited to aged 65 and over] (2278)
59 ((cancer adj2 pain) not ("non cancer pain" or "noncancer pain")).ti. (5155)
60 58 not 59 [excluding cancer pain] (2231)
61 limit 60 to yr="2020 -Current" (284)

**********

Database: EMBASE <1996 to 2022 Week 25>

Search strategy:

---

1 intractable pain/ (3837)
2 chronic pain/ (67,620)
3 ((persist* or intract* or idiopathic or atypical or "a typical" or chronic or prolong* or long last* or sustain* or longstanding or long standing or longterm or long term or refractory or linger* or syndrome*) adj5 pain*).tw,kf. (176,986)
4 or/1-3 [chronic pain] (192,265)
5 analgesia/ (122,186)
6 (pain management adj2 (program* or rehab*)).tw,kf. (1322)
7 ((management or rehab*) adj3 (program* or course* or session* or group* or class* or scheme* or strateg* or initiative* or training)).tw,kf. (162,134)
8 self care/ (64,562)
9 (selfcar* or selfmanagement or selfhelp or selfadministrat* or selfmonitor* or selfmedicat*).tw,kf. (4336)
10 self help/ (10,656)
11 (Self adj2 (car* or manag* or program* or help or administrat* or monitor* or medicat*)).tw,kf. (99,374)
12 telemedicine/ (37,726)
13 telerehabilitation/ (1839)
14 teletherapy/ (834)
15 ((tele adj2 (heal* or medicine or care)) or telehealth or telemedicine or telecare).tw,kf. (38,037)
16 pain education.tw,kf. (924)
17 patient education/ (103,434)
18 health education/ (79,094)
19 teaching/ (81,096)
20 or/5-19 [pain management programmes] (678,277)
21 exp psychotherapy/ (216,732)
22 psychotherap*.tw,kf. (50,630)
23 (psychological adj (treatment* or therapy or therapies)).tw,kf. (9257)
24 (group* adj3 (therap* or program*)).tw,kf. (66,850)
25 alternative medicine/ (45,288)
26 hypnosis.tw,kf. (6020)
27 biofeedback.tw,kf. (8749)
28 "eye movement desensiti?ation and reprocessing".tw,kf. (792)
29 biofeedback/ (3014)
30 ((behavio?r* or cognitive or relax* or psycho* or compassion or solution) adj3 (technique* or therap* or treatment* or training or rehab*)).tw,kf. (160,918)
31 (CBT or CBASP or EMDR).tw,kf. (20,737)
32 (acceptance adj3 therap*).tw,kf. (2982)
33 (commitment adj3 therap*).tw,kf. (2257)

34 meditat*.tw,kf. (9649)
35 guided imagery.tw,kf. (1114)
36 mindfulness.tw,kf. (13,954)
37 meditation/ (8299)
38 (sleep adj3 (manag* or program* or regulat* or therap*)).tw,kf. (13,717)
39 psychological adjustment/ (1718)
40 coping skill*.tw,kf. (4826)
41 coping behavior/ (64,987)
42 or/21-41 [psychological therapies] (497,898)
43 20 or 42 [pain management or psychological therapies] (1,120,573)
44 Randomized controlled trial/ (669,354)
45 Controlled clinical study/ (422,095)
46 random$.ti,ab. (1,670,358)
47 randomization/ (85,803)
48 intermethod comparison/ (275,649)
49 placebo.ti,ab. (294,680)
50 (compare or compared or comparison).ti. (453,469)
51 ((evaluated or evaluate or evaluating or assessed or assess) and (compare or compared or comparing or comparison)).ab. (2,396,084)
52 (open adj label).ti,ab. (95,957)
53 ((double or single or doubly or singly) adj (blind or blinded or blindly)).ti,ab. (210,310)
54 double blind procedure/ (170,290)
55 parallel group$1.ti,ab. (27,398)
56 (crossover or cross over).ti,ab. (97,120)
57 ((assign$ or match or matched or allocation) adj5 (alternate or group$1 or intervention$1 or patient$1 or subject$1 or participant$1)).ti,ab. (350,557)
58 (assigned or allocated).ti,ab. (411,477)
59 (controlled adj7 (study or design or trial)).ti,ab. (380,362)
60 (volunteer or volunteers).ti,ab. (219,596)
61 human experiment/ (452,418)
62 trial.ti. (330,698)
63 or/44-62 (5,208,249)
64 (random$ adj sampl$ adj7 (cross section$ or questionnaire$1 or survey$ or database$1)).ti,ab. not (comparative study/ or controlled study/ or randomi?ed controlled.ti,ab. or randomly assigned.ti,ab.) (8155)
65 Cross-sectional study/ not (randomized controlled trial/ or controlled clinical study/ or controlled study/ or randomi?ed controlled.ti,ab. or control group$1.ti,ab.) (308,047)
66 (((case adj control$) and random$) not randomi?ed controlled).ti,ab. (18,944)
67 (Systematic review not (trial or study)).ti. (212,657)
68 (nonrandom$ not random$).ti,ab. (15,364)
69 Random field$.ti,ab. (2660)
70 (review.ab. and review.pt.) not trial.ti. (969,462)
71 we searched.ab. and (review.ti. or review.pt.) (42,322)
72 update review.ab. (111)
73 (databases adj4 searched).ab. (51,375)
74 (rat or rats or mouse or mice or swine or porcine or murine or sheep or lambs or pigs or piglets or rabbit or rabbits or cat or cats or dog or dogs or cattle or bovine or monkey or monkeys or trout or marmoset$1).ti. and animal experiment/ (795,533)
75 Animal experiment/ not (human experiment/ or human/) (1,653,526)
76 or/64-75 (3,168,076)
77 63 not 76 [Cochrane Highly Sensitive Search Strategy for identifying controlled trials in Embase] (4,587,931)
78 4 and 43 and 77 [chronic pain and pain management or psychological therapy and RCTs] (11,575)
79 exp aged/ (2,896,640)
80 geriatrics/ (25,579)
81 geriatric assessment/ (18,681)
82 (gerontol* or ageing or aging or elder* or geriatric* or senior* or old age* or “older person*” or “older people” or “older adult” or late* life or very old or oldest old).tw,kf. (794,639)
83 or/79-82 [aged 65 and over] (3,279,485)
84 78 and 83 [limited to aged 65 and over] (2479)
85 ((cancer adj2 pain) not (“non cancer pain” or “noncancer pain”)).ti. (5903)
86 84 not 85 [excluding cancer pain] (2426)
87 limit 86 to yr=“2020 -Current” (458)

**********

Database: APA PsycInfo <2002 to June Week 3 2022>

Search strategy:

---

1 chronic pain/ (11,898)
2 ((persist* or intract* or idiopathic or atypical or “a typical” or chronic or prolong* or long last* or sustain* or longstanding or long standing or longterm or long term or refractory or linger* or syndrome*) adj5 pain*).tw. (24,134)
3 or/1-2 [chronic pain] (24,832)
4 pain management/ (8773)
5 (pain management adj2 (program* or rehab*)).tw. (362)
6 ((management or rehab*) adj3 (program* or course* or session* or group* or class* or scheme* or strateg* or initiative* or training)).tw. (32,185)
7 self-care/ (2742)
8 (selfcar* or selfmanagement or selfhelp or selfadministrat* or selfmonitor* or selfmedicat*).tw. (191)

9 self-help techniques/ (2535)
10 (Self adj2 (car* or manag* or program* or help or administrat* or monitor* or medicat*)).tw. (36,066)
11 self-management/ (5608)
12 support groups/ (2908)
13 telemedicine/ (6736)
14 telerehabilitation/ (194)
15 telepsychology/ (197)
16 ((tele adj2 (heal* or medicine or care)) or telehealth or telemedicine or telecare).tw. (5431)
17 pain education.tw. (188)
18 client education/ (2735)
19 health education/ (10,024)
20 teaching/ (40,284)
21 or/4-20 [pain management programmes] (133,906)
22 exp psychotherapy/ (119,650)
23 psychotherap*.tw. (68,437)
24 (psychological adj (treatment* or therapy or therapies)).tw. (7547)
25 (group* adj3 (therap* or program*)).tw. (18,146)
26 mind body therapy/ (323)
27 hypnosis.tw. (4056)
28 hypnosis/ (2750)
29 biofeedback.tw. (2109)
30 biofeedback/ (1067)
31 "eye movement desensiti?ation and reprocessing".tw. (1544)
32 ((behavio?r* or cognitive or relax* or psycho* or compassion or solution) adj3 (technique* or therap* or treatment* or training or rehab*)).tw. (112,400)
33 (CBT or CBASP or EMDR).tw. (17,215)
34 (acceptance adj3 therap*).tw. (3167)
35 (commitment adj3 therap*).tw. (2967)
36 meditat*.tw. (8458)
37 meditation/ (3989)
38 guided imagery.tw. (814)
39 mindfulness.tw. (17,255)
40 mindfulness/ (11,583)
41 (sleep adj3 (manag* or program* or regulat* or therap*)).tw. (3565)
42 coping skill*.tw. (4363)
43 coping behavior/ (32,969)
44 or/22-43 [psychological therapies] (279,398)
45 21 or 44 [pain management or psychological therapies] (395,991)
46 exp Clinical Trials/ or Placebo/ or (random* or sham or placebo* or ((singl* or doubl*) adj (blind* or dumm* or mask*)) or ((tripl* or trebl*) adj (blind* or dumm* or mask*)) or (control* adj3 (study or studies or trial* or group*)) or Nonrandom* or non random* or non-random* or quasi-random* or quasirandom* or allocated or ((open label or open-label) adj5 (study or studies or trial*)) or ((equivalence or superiority or non-inferiority or noninferiority) adj3 (study or studies or trial*)) or ((pragmatic or practical) adj3 trial*) or ((quasiexperimental or quasi-experimental) adj3 (study or studies or trial*)) or (phase adj3 (III or "3") adj3 (study or studies or trial*))).ti,ab,hw. [CADTH's database search filters - randomized controlled trials/ controlled clinical trials - PsycInfo] (291,401)
47 3 and 45 and 46 [chronic pain and pain management or psychological therapy and RCTs] (1748)
48 aging/ (61,169)
49 geriatrics/ (10,618)
50 older adulthood/ (7250)
51 geriatric assessment/ (757)
52 (gerontol* or ageing or aging or elder* or geriatric* or senior* or old age* or "older person*" or "older people" or "older adult" or late* life or very old or oldest old).tw. (146,015)
53 or/48-52 [aged 65 and over] (157,310)
54 47 and 53 [limited to aged 65 and over] (85)
55 ((cancer adj2 pain) not ("non cancer pain" or "noncancer pain")).ti. (742)
56 54 not 55 [excluding cancer patients] (85)
57 limit 56 to yr="2020" (3)

**********

CENTRAL Search strategy

Search Name: Brown pain management6

Date Run: 30/06/2022 16:23:18

Comment: SD 23/06/22

ID Search Hits

#1 MeSH descriptor: [Pain, Intractable] this term only 275
#2 MeSH descriptor: [Chronic Pain] this term only 3064
#3 ((persist* or intract* or idiopathic or atypical or "a typical" or chronic or prolong* or "long last*" or sustain* or longstanding or "long standing" or longterm or "long term" or refractory or linger* or syndrome*) NEAR/5 pain*):ti,ab,kw (Word variations have been searched) 30,269
#4 #1 or #2 or #330269
#5 MeSH descriptor: [Pain Management] this term only 4344
#6 ("pain management" NEAR/2 (program* or rehab*)):ti,ab,kw (Word variations have been searched) 253

#7 ((management or rehab*) NEAR/3 (program* or course* or session* or group* or class* or scheme* or strateg* or initiative* or training)):ti,ab,kw (Word variations have been searched) 29,451
#8 MeSH descriptor: [Self Care] this term only 4362
#9 ((selfcar* or selfmanagement or selfhelp or selfadministrat* or selfmonitor* or selfmedicat*)):ti,ab,kw (Word variations have been searched) 22,207
#10 (self NEAR/2 (car* or manag* or program* or help or admistrat* or monitor* or medicat*)):ti,ab,kw (Word variations have been searched) 27,689
#11 MeSH descriptor: [Self-Help Groups] this term only 741
#12 MeSH descriptor: [Telemedicine] this term only 2714
#13 MeSH descriptor: [Telerehabilitation] this term only 170
#14 ((tele NEAR/2 (heal* or medicine or care)) or (telehealth or telemedicine or telecare)):ti,ab,kw (Word variations have been searched) 6810
#15 ("pain education"):ti,ab,kw (Word variations have been searched) 329
#16 MeSH descriptor: [Patient Education as Topic] this term only 9229
#17 MeSH descriptor: [Health Education] this term only 4195
#18 MeSH descriptor: [Teaching] this term only 1817
#19 #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #1874808
#20 MeSH descriptor: [Psychotherapy] explode all trees 26,860
#21 (psychotherap*):ti,ab,kw (Word variations have been searched) 14,873
#22 (psychological NEAR/1 (treatment* or therapy or therapies)):ti,ab,kw (Word variations have been searched) 25,006
#23 (group* NEAR/3 (therap* or program*)):ti,ab,kw (Word variations have been searched) 34,731
#24 MeSH descriptor: [Mind-Body Therapies] explode all trees 6932
#25 (hypnosis):ti,ab,kw (Word variations have been searched) 1767
#26 (biofeedback):ti,ab,kw (Word variations have been searched) 3733
#27 ("eye movement desensiti?ation and reprocessing"):ti,ab,kw (Word variations have been searched) 0
#28 ((behavio?r* or cognitive or relax* or psycho* or compassion or solution) NEAR/3 (technique* or therap* or treatment* or training or rehab*)):ti,ab,kw (Word variations have been searched) 84,609
#29 ((CBT or CBASP or EMDR)):ti,ab,kw (Word variations have been searched) 9743
#30 ((acceptance NEAR/3 therap*)):ti,ab,kw (Word variations have been searched) 2505
#31 (commitment NEAR/3 therap*):ti,ab,kw (Word variations have been searched)1419
#32 (meditat*):ti,ab,kw (Word variations have been searched)3695
#33 ("guided imagery"):ti,ab,kw (Word variations have been searched) 749
#34 (mindfulness):ti,ab,kw (Word variations have been searched) 11,218
#35 MeSH descriptor: [Mindfulness] this term only 1279
#36 (sleep NEAR/3 (manag* or program* or regulat* or therap*)):ti,ab,kw (Word variations have been searched) 4225
#37 MeSH descriptor: [Adaptation, Psychological] this term only 4423
#38 (coping skill*):ti,ab,kw (Word variations have been searched) 2921
#39 #20 or #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32 or #33 or #34 or #35 or #36 or #37 or #38141634
#40 #4 and #19 and #39 1337
#41 MeSH descriptor: [Aged] this term only 219,901
#42 MeSH descriptor: [Geriatrics] this term only 213
#43 MeSH descriptor: [Geriatric Assessment] this term only 1582
#44 (gerontol* or ageing or aging or elder* or geriatric* or senior* or "old age*" or "older person*" or "older people" or "older adult" or "late* life" or "very old" or "oldest old"):ti,ab,kw (Word variations have been searched) 787,921
#45 #41 or #42 or #43 or #44787921
#46 #40 and #45 835
#47 ((cancer NEAR/2 pain) NOT ("non cancer pain" or "noncancer pain")):ti,ab,kw (Word variations have been searched)3130
#48 #46 NOT #47 with Publication Year from 2020 to 2022, in Trials 137

# Appendix 3 : Example case study

## Mr Brian Kelly

Brief intro

Eighty-one, lives with wife who has dementia in a town in Somerset. He served in the Navy for 30 years until retirement 23 years ago.

General health and well-being

- His general health is very good, he has a good diet and healthy lifestyle.
- He had surgery on his lower spine 5–6 years ago due to slipped discs which was effective as was his previous heart surgery several years ago.
- He has been a very sporty man in the past and enjoyed cycling, running and swimming. He gave up long distance cycling only a few years ago, following surgery on his spine. But he walks for about an hour every morning when he takes the dog out and also has a gym set up in his garage where he regularly exercises.

Pain

- He has pain in his shoulders and back, which has been ongoing and undiagnosed for over 30 years. He believes heavy lifting and carrying (without guidance on doing this safely) in the Navy has contributed to his current pain.
- His most recent pain is in his hips which appears to be getting worse. After a physical examination of his hip, a couple of months ago, his GP suggested it could be age-related/arthritis and offered him paracetamol and cocodamol.

Pain impact on daily life

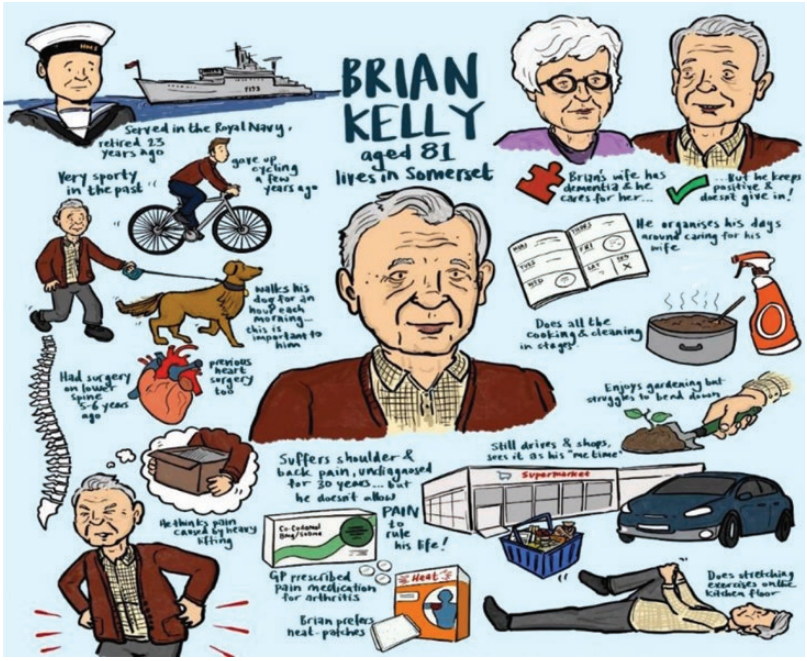
- He enjoys gardening but struggles to bend and lift now.
- He does all the cooking and cleaning but must do things in stages.
- He still drives and goes shopping, which is his 'me' time.
- He is organised in his caring role as he is mentally alert but recognises, he is slowing down physically.

Attitude to living with pain

- He is not a moaner and has a very positive attitude- his time in the Navy has helped with his overall approach to life – to stay positive and not give in.
- He does not consider caring for his wife to be a burden as it appears to keep him going and motivates him to 'fight' the pain.

Management strategies

- He uses heat patches which offer some relief and he does stretching exercises on his kitchen floor.
- He tries to avoid taking pain killers, even when prescribed by his GP and has told his GP that he does not want to take cocodamol.
- He had tried physiotherapy in the past which has not worked for him long-term.
- He would not consider surgery as he needs to be able to care for his wife.


BRIAN KELLY
aged 81
lives in Somerset
Served in the Royal Navy, retired 23 years ago
Very sporty in the past
gave up cycling a few years ago
walks his dog for an hour each morning... this is important to him
Had surgery on lower spine 5-6 years ago
previous heart surgery too
He thinks pain caused by heavy lifting
Suffers shoulder & back pain, undiagnosed for 30 years... but he doesn't about PAIN to rule his life!
GP prescribed pain medication for arthritis
Brian prefers heat patches
Heat
Brian's wife has dementia & he cares for her...
...But he keeps positive & doesn't give in!
He organises his days around caring for his wife
Does all the cooking & cleaning in stages
Enjoys gardening but struggles to bend down
Still drives & shops, sees it as his "me time"
Supermarket
Does stretching exercises on the kitchen floor