Experiences of living with hip osteoarthritis and of receiving advice, education and ultrasound-guided intra-articular hip injection in the hip injection trial

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RESEARCH ARTICLE

Experiences of living with hip osteoarthritis and of receiving advice, education and ultrasound-guided intra-articular hip injection in the hip injection trial. A qualitative study

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Abstract

Objectives: The Hip Injection Trial (HIT) compared the effectiveness of adding a single ultrasound-guided intra-articular injection of either corticosteroid and local anaesthetic or local anaesthetic alone to advice and education among people with hip osteoarthritis (OA). This nested qualitative study explored participants' experiences of living with hip OA and of the trial treatment they received.

Method: Semi-structured telephone interviews were undertaken with a purposeful sample of trial participants after a 2-month trial follow-up. Interviewers were blinded to which injection participants had received. Thematic analysis using constant comparison was undertaken prior to knowing the trial results.

Results: 34 trial participants were interviewed across all arms. OA causes pain, physical limitations, difficulties at work, lowered mood, and disrupted sleep. Those who received advice and education alone felt that they had not received 'treatment' and described little/no benefit. Participants in both injection groups described marked improvements in pain, physical function, and other aspects of life (e.g., sleep, confidence). The perceived magnitude of benefit appeared greater among those who received the corticosteroid injection; however, the length of benefit varied in both injection groups. There was uncertainty about the longer-term benefits of injection and repeated injections.

Conclusion: Hip OA is highly burdensome. Participants perceived little/no benefit from advice and education alone but reported marked improvements when combined with either injection. However, the magnitude of benefit was greater among those who received corticosteroid. The varying duration of response to injection and uncertainty regarding longer-term benefits of injection and repeated injections suggests that these areas are important for future research.

Trial registration: EudraCT 2014-003412-37; ISRCTN50550256.

KEYWORDS
corticosteroid, education, hip, injection, osteoarthritis, qualitative

1 | INTRODUCTION

Hip osteoarthritis (OA) is a common, disabling chronic condition, with an estimated 33 million cases worldwide (Vos et al., 2020). The prevalence of hip OA is increasing due to the ageing population and global obesity epidemic (Hunter & Bierma-Zeinstra, 2019). The economic cost associated with hip OA is significant and is related to numerous factors including direct treatment and care costs and lost work productivity (Hunter & Bierma-Zeinstra, 2019). Clinical guidelines for hip OA recommend combining core non-pharmacological approaches including education, exercise and weight reduction with pharmacological treatments (National Institute for Health and Care Excellence, 2022). Although intra-articular corticosteroid injections are recommended for knee OA, they are not consistently recommended for hip OA (Bannuru et al., 2019). The clinical and economic evidence to support an intra-articular hip corticosteroid injection is limited and conflicting (McCabe et al., 2016; National Institute for Health and Care Excellence, 2022), and the experiences and views of individuals receiving injections are unknown.

The Hip Injection Trial (HIT) compared the effectiveness of adding a single ultrasound-guided intra-articular (USGI) injection of either corticosteroid and local anaesthetic or local anaesthetic alone to advice and education among people with hip OA (Paskins et al., 2018, 2022). Advice and education included written information, and personalised advice and information about weight loss, exercise (including a written exercise programme), footwear, walking aids and optimising pain management, given in a single clinic visit. The trial found that advice and education combined with a USGI injection of corticosteroid and local anaesthetic led to greater pain reduction and improvement in function over 6 months and was more cost-effective than advice and education alone (Paskins et al., 2018, 2022). There was no significant overall difference between the injection arms in hip pain intensity (Paskins et al., 2022). This nested qualitative study in the HIT trial aimed to explore participants' experiences of living with hip OA and the experiences and impact of receiving advice and education with or without a USGI of either corticosteroid and local anaesthetic or local anaesthetic alone.

2 | MATERIALS AND METHODS

Following approval by the National Research Ethics Service Committee North West (UK) Central (15/NW/0546) and Medicines and Healthcare Products Regulatory Agency (2014-003412-37), semi-structured telephone interviews were undertaken with a sample of trial participants after a 2-month trial follow-up. The sample was purposefully selected to include males and females with differing hip pain severity at baseline, with a range of self-reported improvement (measured by global rating of change) from all three trial arms (advice and education alone, advice and education plus either a single USGI injection of corticosteroid and local anaesthetic (triamcinolone acetonide 40 mg and 1% lidocaine hydrochloride), or local anaesthetic alone (1% lidocaine hydrochloride)). Details about the participants' characteristics were obtained from their trial questionnaires. Interviews lasted up to 1 h and were completed by one of three researchers (MH (clinical background in physiotherapy), JL (social scientist), and AB (applied health research fellow). To minimise potential participant unblinding, researchers did not know the type of injection that participants had received. Based on previous experience [for example, (Waterfield et al., 2015)], it was anticipated that approximately 30 participants (10 from each arm) would be adequate to achieve data saturation (Creswell, 2007; Saunders et al., 2018). Sampling ceased when data saturation had been achieved at the data collection stage, that is, when new data repeated what was expressed in previous data (Creswell, 2007; Saunders et al., 2018).

2.1 | Interview topic guide

The structure and content of the interview topic guide was developed by the research team. It was informed by previous literature, the overall aim and objective of the main RCT, and analysis of ongoing interviews. The topic guide included questions about participants' experiences of hip OA, previous treatment, expectations for the future, and experiences and perceived impact of trial interventions. Open-ended questions provided participants with the opportunity to raise other related issues (see supplementary file 1).

2.2 | Data analysis

All interviews were audiotaped, transcribed verbatim and anonymised. Data were analysed inductively, completed concurrently with data collection. Data were analysed thematically and a coding framework was developed incorporating generated themes. Data underwent repeated comparisons through coding, recoding and memo writing to generate themes and concepts (Charmaz, 2006; Clark et al., 2016), drawing on recognised techniques including scrutiny of deviant cases, and checking for confirmatory or challenging evidence within the dataset (Miles & Huberman, 1994). MH developed an initial coding framework, which was iteratively reappraised and revised through discussion with two other experienced qualitative researchers (CJ, AH). The final coding framework was applied to all transcripts by MH, CJ, or AH. Cross-case comparative analysis identified different patterns between the intervention arms. Data analysis was undertaken prior to knowledge of the clinical trial results, facilitating an interpretive and inductive approach (Plano Clark et al., 2013).

2.3 | Patient and public involvement

A study patient advisory group advised on the design of the RCT before funding, in study set-up, and during recruitment. They informed the design of clinic procedures (including how best to reduce the burden of intervention), and participant information. The group also guided the interpretation of the findings.

3 | RESULTS

3.1 | Participants

Eighty-seven trial participants were invited to take part in an interview; 41 agreed and 34 were interviewed (see Figure 1). Audio-recording failed during three interviews; one interviewee agreed to be re-interviewed, and the other two were excluded. Interviewees included 13 males and 19 females between 53 and 83 years old with a range of pain intensity, functional ability, and pain self-efficacy (Table 1). At 2-month follow-up, perception of global rating of change varied from 'somewhat worse' to 'much better.' No interview participants who received advice and education alone reported any improvement in their global rating of change; symptoms were either 'about the same' or 'somewhat worse'.

3.2 | Experiences of living with hip OA

Key themes identified included the impact of hip OA, management strategies used, and thoughts about the future.

3.3 | Impact of hip OA

Hip OA impacted many aspects of participants' lives. Physically, it caused pain and limitation in a wide range of daily activities, including sitting, standing, walking, getting in and out of the car, driving, and ascending and descending stairs. It caused difficulties with self-care (e.g. toileting) and made undertaking valued activities (e.g. gardening) difficult.

> *The pain at times is agonising, especially when you are just sat and you can feel it all the time, and then you get up to move, you are stiff, you can't walk properly and I just feel like, oh I just want my life back, that's all I want. #161114* (Group: Advice, Exercise, USGI corticosteroid and local anaesthetic)

Sleep was affected, including difficulty getting to sleep, resulting in tiredness.

> *"It's very painful through the night, turning over and just getting comfortable in bed, so that kind of wakes me up and then I don't get such a good night's sleep….It makes you feel very fuzzy and zombified in the mornings but with being sort of retired, sometimes I, after a bad night, I just stay in bed." #10282 (Group: Advice and education alone)*

Hip OA also impacted work. Some participants described not being able to perform all their work tasks and others had to stop work altogether, which could have significant financial implications.

> *"I used to have my own businesses, self-employed, sub-contract work, don't do anything now, can't do anything. I've gone from earning a wage to nothing basically. All my savings spent all that, that's gone and now it's just a case of surviving that's what, that's all it is isn't it, just surviving".* #10121 (Group: Advice, Education, USGI local anaesthetic)

Emotionally, some participants described hip OA as making them feel 'low', depressed or frustrated.

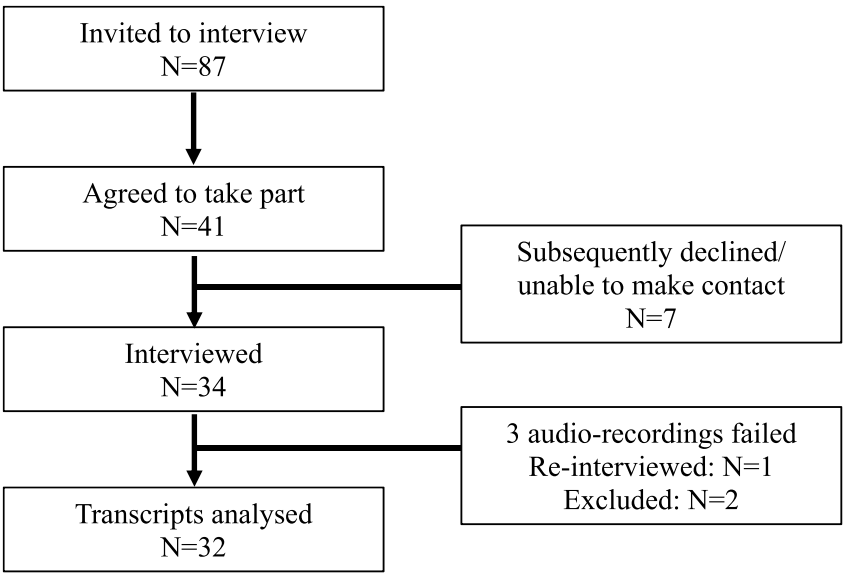

FIGURE 1 Participant flowchart.

TABLE 1 Participant characteristics.

Participant ID	Trial arm	Age	Gender	Symptom duration	Pain NRS	WOMAC-function	PSEQ	GRC (2 months)
33	1	69	Male	>1 year	4	46	24	Somewhat better
49	1	53	Female	>1 year	4	32	46	Much better
132	1	72	Female	>1 year	8	29	38	Somewhat worse
430	1	65	Male	6–12 months	4	45	20	Somewhat better
10,103	1	61	Female	6–12 months	7	45	35	About the same
10,104	1	66	Female	>1 year	8	36	23	About the same
10,121	1	56	Male	>1 year	8	38	10	Somewhat worse
10,155	1	46	Male	>1 year	5	51	14	Somewhat better
10,174	1	51	Female	>1 year	6	47	16	Somewhat better
10,189	1	77	Female	>1 year	3	41	54	Somewhat better
10,198	1	61	Male	>1 year	4	9	55	About the same
10,214	1	60	Female	>1 year	8	48	50	Much better
30,018	1	61	Female	>1 year	7	32	37	Somewhat better
161,018	2	64	Female	>1 year	4	14	56	About the same
429	2	54	Male	<3 months	4	37	32	Much better
10,072	2	69	Male	>1 year	7	40	33	Much better
10,111	2	51	Female	>1 year	6	20	60	About the same
10,116	2	69	Female	6–12 months	6	29	58	Much better
10,168	2	60	Female	>1 year	1	4	57	Much better
10,172	2	83	Male	>1 year	4	27	45	Much better
10,187	2	60	Female	6–12 months	5	11	55	Much better
10,239	2	65	Female	6–12 months	4	31	45	Somewhat worse
161,114	2	54	Female	>1 year	8	44	25	Much better
30,027	2	73	Male		6	41	29	Somewhat worse
10	3	67	Male	>1 year	4	45	6	About the same
10,128	3	70	Female	>1 year	2	15	51	Somewhat worse
10,140	3	74	Male	>1 year	4	41	23	About the same
10,177	3	65	Male	>1 year	6	38	60	Somewhat worse
10,276	3	64	Female	3–6 months	8	26	56	About the same
10,282	3	64	Female	>1 year	6	36	27	About the same
30,017	3	79	Female	>1 year	7	41	38	About the same
30,020	3	77	Male	>1 year	5	10	50	About the same

Note: Arm 1 = Advice and education plus USGI of local anaesthetic, Arm 2 = Advice and education plus USGI of corticosteroid and local anaesthetic, Arm 3 = Advice and education alone.

Abbreviations: GRC, Global Rating of Change; NRS, Numerical Rating Scale; PSEQ, Pain Self-Efficacy Questionnaire; WOMAC-F, Western Ontario and McMaster University Arthritis Index Physical Function Subscale.

> *"I'm not how I used to be, and this hip pain is just well, it's like a ball and chain. It just slows you down and drags you down."* #10128 (Group: Advice and education alone)

Socially, hip OA caused some participants to stay in their house more and for others it impacted relationships, for example, not being able to play with grandchildren, and a partner taking on a carer role.

> *"I've been having pillows under my leg and in between so [husband's] got out and he's gone in the other bed, so it disrupts—disrupts your family life with your husband and your close family really."* #161018 (Group:

Advice, Exercise, USGI corticosteroid and local anaesthetic)

3.4 | Management strategies

Participants reported a wide range of strategies for managing hip OA, including pacing, making adaptations (e.g., changing type of footwear worn), keeping active, exercise, heat, Transcutaneous Electrical Nerve Stimulation (TENs), and pain-relieving medication. Some individuals did not like to use oral pain medication due to side effects, worry about addiction, and a belief that they would not address the underlying problem.

> *"I'm not very good at taking pills. I'm a bit of a martyr. I like to battle on and put up with the pain because I don't err, you know, paracetamol can give me headaches and things so I try and just not use much at all."* #10128 (Group: Advice and education alone)

Participants also described visiting different health care professionals about their hip OA, predominantly their family doctor. Some were satisfied with the care provided by their family doctor; others felt unsupported.

> *"The consultation was really good, he was really helpful."* #10111 (Group: Advice, Exercise, USGI corticosteroid and local anaesthetic)

> *"He just gave me painkillers and told me, I'm…basically there was nothing they could do, so I was too young for a hip replacement and it wasn't bad enough and just carry on."* #10187 (Group: Advice, Exercise, USGI corticosteroid and local anaesthetic)

3.5 | Thoughts about the future

Views about the future varied. Some participants expected an inevitable decline in their condition that would ultimately result in joint replacement surgery.

> *"Well to me it's going to get worse, I can't see it getting any better. The only thing I could think of is that it will get worse, I'm sure it will, to the point where, as I say I need a new hip. I've seen other people, well I've watched my dad go downhill you know, so I can see which direction I will eventually head in."* #161114 (Group: Advice, Exercise, USGI corticosteroid and local anaesthetic)

Others, more notably among those who had received either injection, felt that if symptoms remained as they were, they would be able to manage. For many, there was uncertainty about what the future would hold in terms of hip OA.

> *"Hopefully it will stay like this and it will be fine, hopefully it won't deteriorate that's what I hope for but I don't know."* #10111 (Group: Advice, Exercise, USGI corticosteroid and local anaesthetic)

3.6 | Experiences and impact of trial interventions

Key themes identified included experiences of receiving trial treatments, exercise adherence, and perceived impact.

3.7 | Experiences of receiving trial treatments

3.7.1 | Advice and education

All but one participant who received advice and education alone described talking about exercise or being given an exercise sheet at their trial appointment. A small number of participants described discussing when to consult their family doctor, using medication and being offered advice on aids (e.g. use of walking sticks). Despite this, most felt that they had not received any 'treatment'. The reasons for this included the focus and format of exercise advice given (e.g., it did not focus on a cure and involved talking) or because they had 'already tried exercise'.

> *"In some respects I don't feel like I've had treatment because I was already doing the exercise anyway and I was taking something to help the pain. So I think if I hadn't up to that point have done any exercise or taken any medication then maybe yes, but I suppose I don't really feel I've had treatment as such."* #10282 (Group: Advice and education alone)

Among those who received either type of injection, some participants recalled receiving components of advice and education, including information on footwear, exercise, keeping active, and advice on performing daily activities such as dressing. However, others were unable to recollect receiving any advice or treatments other than the injection itself.

3.8 | USGI hip injection

In general, participants were satisfied that they had received an injection because it offered something different from usual care, demonstrating progress in their treatment.

> *"I thought 'something', you know, I'm going forward."* #430 (Group: Advice, Education, USGI local anaesthetic)

Although some described initial anxiety, participants were willing to undergo a hip injection due to the hope of benefit.

> *"I'd do anything [laughter] to get out of pain."* #30018 (Group: Advice, Education, USGI local anaesthetic)

The injection process itself was acceptable, and on the whole positive regardless of injection type. Some participants reported feeling mild discomfort/pain when the injection was administered, similar to receiving any other injection.

> *"The injection was fine, it's like any injection really, you feel a little bit of pain when they put the needle in or whatever it is they put in you and, that was it. I mean I know they were using an ultrasound screen to make sure they put it in the correct place and I know that they told me I may get a bit of bruising or something around the area but no, all was fine."* #161114 (Group: Advice, Exercise, USGI corticosteroid and local anaesthetic)

> *"She said it would be a little bit painful going in and it was. I've had worse injections, I've had a lumbar puncture, that's bad. So no, it wasn't as bad as that, but I just felt it go in you know, but it wasn't 'painful' painful, I wasn't screaming. On a scale of one to ten it was like a one or a two."* #10198 (Group: Advice, Exercise, USGI and local anaesthetic)

Most participants reported no injection-related side effects. When present, side effects among those who received the corticosteroid and local anaesthetic included temporary severe pain during the injection, feeling sick the day after the injection, and facial redness and transient flushing following the injection. Side effects among those who received local anaesthetic alone included temporary severe pain during the injection and extensive bruising post injection. There was no evidence of participant unblinding about the type of injection received.

3.9 | Exercise adherence

Across all treatment arms, exercise adherence varied between participants but was generally low.

> *"I didn't really do them [exercises] to be honest."* #10072 (Group: Advice, Exercise, USGI corticosteroid and local anaesthetic)

Although some participants described completing the exercise initially, adherence commonly declined over time. Some continued with all exercises but undertook them less frequently, some undertook only selected exercises (e.g., the most basic ones), and others stopped them altogether.

> *"I used to do them two or three times a week. I didn't do them every day. To be honest I've give up now [laughs]."* #10 (Group: Advice and education alone)

A broad range of barriers to exercise were identified, including personal (including psychological), physical and social-environment. These are summarised in Figure 2 with example quotes provided below.

> Personal: *"I've just been so tired and worn out, I must admit I haven't even done the exercises for quite some time."* #10282 (Group: Advice and education alone)

> Physical: *"When they say bending your knees and things like that, I just can't do that."* #10189 (Group: Advice, Education, USGI local anaesthetic)

> Social-environmental: *"To begin with I was doing them [the exercises] quite religiously, a couple of days and what have you during the week but I work shifts, which then you sort of get out of the habit of doing it."* #161114 (Group: Advice, Exercise, USGI corticosteroid and local anaesthetic)

3.10 | Perceived impact from trial treatments

3.10.1 | Advice and education alone

Participants described a lack of benefit from doing exercises or were ambivalent about the benefits of participating in the HIT trial.

> *"From the personal point of view at this moment in time I don't feel that there's been much of a benefit to me."* #10276 (Group: Advice and education alone)

> *"I can't say it's had any effect. No, just carry on as normal, as long as I get up in the morning and I'm breathing well I'm here [laughs] that's how I look at it now."* #70 (Group: Advice and education alone)

3.10.2 | Advice and education plus USGI hip injection

Most participants reported marked benefits from the injection, irrespective of the type received, and were pleased with the outcome.

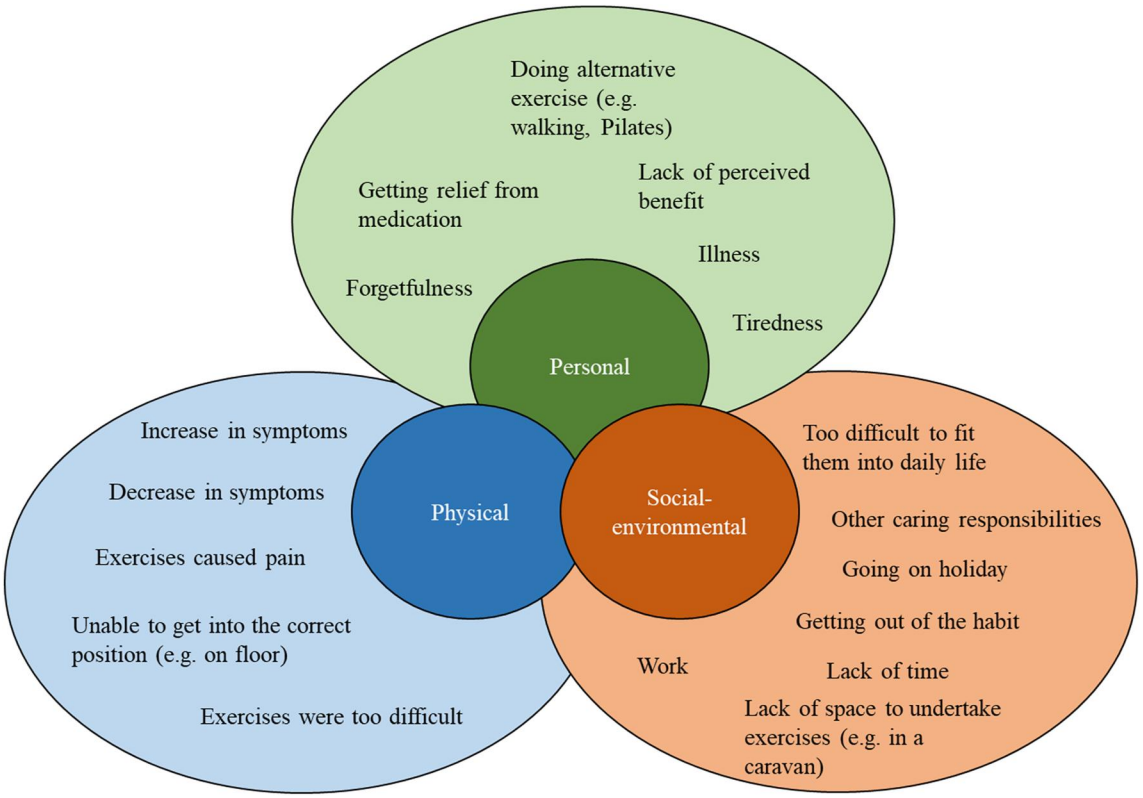

FIGURE 2 Barriers to exercise adherence among participants in all trial arms.

> *"If it was unicorn dust I'd have it again."* #10168 (Group: Advice, Exercise, USGI corticosteroid and local anaesthetic)

However, the magnitude of benefit appeared greater among those who received corticosteroids, which was described with words such as *"unbelievable"* (#10116), *"fantastic"* (#10072), and *"brilliant"* (#10168). Across both injection groups, for some, relief was almost instant after receiving the injection *("it was like somebody flicking a switch"* #10166), and for others, it was a gradual improvement over a few weeks. Benefit was noted in relation to pain relief and the subsequent ability to walk, perform daily activities, work, sleep and participate in valued activities more easily.

> *"I thought, gosh, I've got my life back and its only, when you reflect you realise how much you can do or you did do that's been taken away from you and suddenly you're given this gift of being able to bounce along with a walk."* #10239 (Group: Advice, Exercise, USGI corticosteroid and local anaesthetic)

> *"I kept boring everybody saying look at what I can do, I can move, I'm not in pain. I wasn't restricted, I still carried on doing things, so, it didn't make any difference. It was just [laugh] I was like beaming when I was doing them as opposed to going oh, oh, because it hurt."* #49 (Group: Advice, Education, USGI local anaesthetic)

Pain relief also enabled some participants to reduce analgesia use.

> *"I've barely had even so much as a paracetamol since."* #10168 (Group: Advice, Exercise, USGI corticosteroid and local anaesthetic)

Social and psychological benefits from either injection included an increase in confidence and a desire to socialise with friends and family again.

> *"It's made me more confident for walk, walking around, you know."* #33 (Group: Advice, Education, USGI local anaesthetic)

Although the overall magnitude of benefit was high, irrespective of the type of injection, participants reported variable duration, ranging from a few days to weeks and months (with benefits still maintained at time of interview). Symptoms gradually returned in those who had short-term benefit, and this could be difficult after a period of relief.

> *"Once I'd had the injection I was up for anything, I wanted to go out more, I felt more sociable, more wanting to do the things that we've, had been doing prior to me suffering the pain that I'd got to the point of quite a lot of pain. Whereas now again we've sort of, we are still going out and I still try*

and push myself, but I feel that again we will start doing something and then I'm having to say "can I have a sit down." #161114 (Group: Advice, Exercise, USGI corticosteroid and local anaesthetic)

There was some uncertainty about how long benefits from the injection were likely to last, how many injections could be received, and how to access subsequent hip injections in the future.

"We have wondered does this go, it's bound to wear off, isn't it, this injection at some time?" #10116 (Group: Advice, Exercise, USGI corticosteroid and local anaesthetic)

"I don't know whether it's something that you have another x-ray just to see how things are going on as a follow up perhaps in 12 months or something, if there's no more problems or—I don't know. And how often and if it is improving and if you needed another injection, how often between are they likely to say you can have them?" #10214 (Group: Advice, Education, USGI local anaesthetic)

4 | DISCUSSION

This qualitative study was embedded within the HIT trial to explore participants' experiences of living with hip OA, and their experiences and perceived impact of trial interventions. It is an important addition to the HIT trial through in-depth exploration of trial interventions, adherence to treatments and perceptions of outcomes (Creswell et al., 2006; Cooper et al., 2014; O'Cathain et al., 2013; Craig et al., 2008). We found that hip OA is highly burdensome, affecting many different aspects of life. It causes pain, physical, emotional, psychological and social limitations and can also significantly affect sleep. This demonstrates that a full understanding of the impact of OA can be best achieved when viewed within the biopsychosocial framework (Engel, 1980).

Participants who received advice and education alone did not perceive this as 'treatment', despite receiving written information, personalised advice, and a written exercise programme. Furthermore, participants in this group described a lack of benefit from the intervention. Whilst this could be due to 'resentful demoralisation' (participants being resentful of not receiving the experimental intervention (Bradley, 1993)), it may also suggest that a single consultation focused on advice and education alone is insufficient, and more needs to be done to support people to live well with OA. Across all three arms, exercise adherence was variable but generally low and reduced over time. Given the importance of exercise adherence in determining the outcome (Pisters et al., 2010), and the multitude of barriers to exercise adherence identified, a greater focus on supporting exercise adherence is likely to be important.

The experience of receiving an injection was on the whole perceived as acceptable and beneficial. Whilst the magnitude of benefit appeared greater among those who received corticosteroid and local anaesthetic, participants in both injection groups reported marked improvements in pain and other aspects of life, including improved function, ability to work, and ability to participate in valued activities. Although lidocaine has been demonstrated to reduce pain in comparison to saline in the short term (Eker et al., 2017), together with the main HIT trial finding (no significant difference in hip pain intensity over 6 months between the injection arms (Paskins et al., 2022)), this highlights that contextual effects may, in part, contribute to the mechanism of effect from USGI (Zhang, 2019). These could include the belief expressed by participants that having an injection demonstrated progress in their OA treatment, and the positive experiences when injections were administered (Di Blasi et al., 2001).

4.1 | Comparison to other research

Findings from recent systematic reviews of qualitative research support the results of this study that the impacts of hip OA are far reaching and affect many aspects of individuals' lives, and many varied strategies are adopted in an attempt to manage hip OA (Hurley et al., 2018; Smith et al., 2014; Tollefsrud & Mengshoel, 2019; Wallis et al., 2019). Similar to this study, previous OA research highlighted reluctance to take analgesia, a multitude of barriers to exercise, and consultations with health care professionals not always being positive (Dobson et al., 2016; Hurley et al., 2018; Kanavaki et al., 2017).

To our knowledge, this is the first qualitative exploration of the use of USGI corticosteroid injection for hip OA. The potential role of contextual effects in contributing to the perceived benefits of USGI corticosteroid is supported by a previous meta-analysis by Zou et al. (2016), that concluded the proportion of the contextual effect of intra-articular corticosteroid for OA was 47%.

4.2 | Strengths and weaknesses

Embedding a qualitative study within the HIT trial has enabled in-depth exploration of trial interventions and outcomes, and has helped to contextualise the magnitude of perceived benefit from USGI hip injections (O'Cathain, 2018). This approach is novel in injection trials (Clement et al., 2018).

The purposive sample allowed maximum variation in study participants and the robust thematic analysis undertaken without knowledge of the clinical trial results strengthens the credibility of findings (Miles & Huberman, 1994; Plano Clark

et al., 2013). Whilst on the whole purposive sampling was successful, no interviewed participants who received advice and education alone reported any improvement in their global rating of change. It is therefore possible that participants who rated their global rating of change more positively might have expressed different views.

4.3 | Clinical and research implications

As hip OA is highly burdensome and affects many aspects of life, its impact and management should be considered within the biopsychosocial framework (Engel, 1980). Within clinical practice, a single clinic visit focussing on advice and education alone, including the provision of a written exercise sheet, appears insufficient in supporting people to live well with OA. Further research is needed to test new sustainable models of care for supported hip OA self-management. USGI of corticosteroid and local anaesthetic is an acceptable intervention for people with moderate to severe hip OA and can provide marked benefits, although some benefits may be attributable to contextual effects. Future research should explore the varying length of benefit from USGI between individuals in addition to long-term effects of intra-articular corticosteroid injection, and repeated injections for hip OA. The latter were areas of uncertainty expressed by participants for which evidence is lacking (Raveendhara et al., 2015).

In conclusion, hip OA is highly burdensome. Participants perceived little/no benefit from advice and education alone but reported marked improvements when combined with USGI of either corticosteroid and local anaesthetic or local anaesthetic alone. The varying duration of response to injection and uncertainty regarding longer-term benefits of injection and repeated injections suggest these areas as important for future research.

AUTHOR CONTRIBUTIONS

Melanie Ann Holden contributed to the acquisition of data, analysis and interpretation of data, drafting and revising the article. Ashley Hawarden contributed to the analysis and interpretation of data, drafting and revising the article. Zoe Paskins contributed to study conception and design, interpretation of data, drafting and revising the article. Edward Roddy contributed to study conception and design, interpretation of data, drafting and revising the article. Christian D Mallen contributed to study conception and design, interpretation of data, drafting and revising the article. Jennifer Liddle contributed to acquisition of data, analysis and interpretation of data, drafting and revising the article. Amy Bourton contributed to the acquisition of data, analysis and interpretation of data, drafting and revising the article. Clare Jinks contributed to study conception and design, acquisition of data, analysis and interpretation of data, drafting and revising the article. All authors have given final approval of the version of the manuscript to be published and agree to be accountable for all aspects of the work.

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CONFLICT OF INTEREST STATEMENT

None of the authors have any disclosures. The School of Medicine at Keele University has received funding from BMS to support a non-pharmacological atrial fibrillation screening trial.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

Approvals were obtained from the National Research Ethics Service Committee NorthWest (UK) Central (15/NW/0546) and the Medicines and Healthcare Products Regulatory Agency (2014-003412-37).

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REFERENCES

Bannuru, R. R., Osani, M. C., Vaysbrot, E. E., Arden, N., Bennell, K., Bierma-Zeinstra, S., Kraus, V., Lohmander, L., Abbott, J., Bhandari, M., Blanco, F., Espinosa, R., Haugen, I., Lin, J., Mandl, L., Moilanen, E., Nakamura, N., Snyder-Mackler, L., Trojian, T., & McAlindon, T.

(2019). OARSI guidelines for the non-surgical management of knee, hip, and polyarticular osteoarthritis. *Osteoarthritis and Cartilage*, *27*(11), 1578–1589. https://doi.org/10.1016/j.joca.2019.06.011

Bradley, C. (1993). Designing medical and educational intervention studies. *Diabetes Care*, *16*(2), 509–518. https://doi.org/10.2337/diacare.16.2.509

Charmaz, K. (2006). Constructing grounded theory: A practical guide through qualitative research.

Clark, V., & Braun, V. (2016). Thematic analysis. In E. Lyons & A. Coyle (Eds.), *Analysing qualitative data in psychology*. Sage.

Clement, C., Edwards, S. L., Rapport, F., Russell, I. T., & Hutchings, H. A. (2018). Exploring qualitative methods reported in registered trials and their yields (EQUITY): Systematic review. *Trials*, *19*(1), 589. https://doi.org/10.1186/s13063-018-2983-y

Cooper, C., O'Cathain, A., Hind, D., Adamson, J., Lawton, J., & Baird, W. (2014). Conducting qualitative research within clinical trials units: Avoiding potential pitfalls. *Contemporary Clinical Trials*, *38*(2), 338–343. https://doi.org/10.1016/j.cct.2014.06.002

Craig, P., Dieppe, P., Macintyre, S., et al. (2008). *Developing and evaluating complex interventions: New guidance*. Medical Research Council.

Creswell, J. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (2nd ed.). Sage.

Creswell, J. W., Shope, R., Plano Clark, V. L., & Green, D. O. (2006). How interpretive qualitative research extends mixed methods research. *Research in the Schools*, *13*(1), 1–11.

Di Blasi, Z., Harkness, E., Ernst, E., Georgiou, A., & Kleijnen, J. (2001). Influence of context effects on health outcomes: A systematic review. *Lancet*, *357*(9258), 757–762. https://doi.org/10.1016/s0140-6736(00)04169-6

Dobson, F., Bennell, K., French, S., Nicolson, P. J. A., Klassman, R., Holden, M., Atkins, L., & Hinman, R. S. (2016). Barriers and facilitators to exercise participation in people with hip and/or knee osteoarthritis: Synthesis of the literature using behaviour change theory. *American Journal of Physical Medicine and Rehabilitation*, *95*(5), 372–389. https://doi.org/10.1097/phm.0000000000000448

Eker, H. E., Cok, O. Y., Aribogan, A., & Arslan, G. (2017). The efficacy of intra-articular lidocaine administration in chronic knee pain due to osteoarthritis: A randomized, double-blind, controlled study. *Anaesth Crit Care Pain Med*, *36*(2), 109–114. https://doi.org/10.1016/j.accpm.2016.05.003

Engel, G. L. (1980). The clinical application of the biopsychosocial model. *American Journal of Psychiatry*, *137*, 5.

Hunter, D. J., & Bierma-Zeinstra, S. (2019). Osteoarthritis. *Lancet*, *393*(10182), 1745–1759. https://doi.org/10.1016/s0140-6736(19)30417-9

Hurley, M., Dickson, K., Hallett, R., Grant, R., Hauari, H., Walsh, N., Stansfield, C., & Oliver, S. (2018). Exercise interventions and patient beliefs for people with hip, knee or hip and knee osteoarthritis: A mixed methods review. *Cochrane Database of Systematic Reviews*, *4*(4), CD010842. https://doi.org/10.1002/14651858.cd010842.pub2

Kanavaki, A. M., Rushton, A., Efstathiou, N., Alrushud, A., Klocke, R., Abhishek, A., & Duda, J. L. (2017). Barriers and facilitators of physical activity in knee and hip osteoarthritis: A systematic review of qualitative evidence. *BMJ Open*, *7*(12), e017042. https://doi.org/10.1136/bmjopen-2017-017042

McCabe, P. S., Maricar, N., Parkes, M. J., Felson, D. T., & O'Neill, T. W. (2016). The efficacy of intra-articular steroids in hip osteoarthritis: A systematic review. *Osteoarthritis and Cartilage*, *24*(9), 1509–1517. https://doi.org/10.1016/j.joca.2016.04.018

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Sage.

National Institute for Health and Care Excellence. (2022). *NICE guidance: Osteoarthritis in over 16s: diagnosis and management*. NICE guideline [NG226].

O'Cathain, A. (2018). *A practical guide to using qualitative research with randomized controlled trials*. Oxford University Press.

O'Cathain, A., Thomas, K. J., Drabble, S. J., Rudolph, A., & Hewison, J. (2013). What can qualitative research do for randomised controlled trials? A systematic mapping review. *BMJ Open*, *3*(6), e002889. https://doi.org/10.1136/bmjopen-2013-002889

Paskins, Z., Bromley, K., Lewis, M., Hughes, G., Hughes, E., Hennings, S., Cherrington, A., Hall, A., Holden, M. A., Stevenson, K., Menon, A., Roberts, P., Peat, G., Jinks, C., Kigozi, J., Oppong, R., Foster, N. E., Mallen, C., & Roddy, E. (2022). Clinical and cost-effectiveness of adding a single ultrasound-guided intra-articular corticosteroid and local anaesthetic injection, to advice and education for hip osteoarthritis (HIT trial): A single-blind, parallel-group three-arm randomised controlled trial. *BMJ*, *377*, e068446. https://doi.org/10.1136/bmj-2021-068446

Paskins, Z., Hughes, G., Myers, H., Hughes, E., Hennings, S., Cherrington, A., Evans, A., Holden, M. A., Stevenson, K., Menon, A., Bromley, K., Roberts, P., Hall, A., Peat, G., Jinks, C., Oppong, R., Lewis, M., Foster, N. E., Mallen, C. D., & Roddy, E. (2018). A randomised controlled trial of the clinical and cost-effectiveness of ultrasound-guided intra-articular corticosteroid and local anaesthetic injections: The Hip Injection Trial (HIT) protocol. *BMC Musculoskeletal Disorders*, *19*(1), 218. https://doi.org/10.1186/s12891-018-2153-0

Pisters, M. F., Veenhof, C., Schellevis, F. G., Twisk, J. W. R., Dekker, J., & Bakker, D. H. D. (2010). Exercise adherence improving long-term patient outcome in patients with osteoarthritis of the hip and/or knee. *Arthritis Care & Research*, *62*(8), 1087–1094. https://doi.org/10.1002/acr.20182

Plano Clark, V. L., Schumacher, K., West, C. M., Edrington, J., Dunn, L. B., Harzstark, A., Melisko, M., Rabow, M. W., Swift, P. S., & Miaskowski, C. (2013). Practices for embedding an interpretive qualitative approach within a randomized clinical trial. *Journal of Mixed Methods Research*, *7*(3), 219–242. https://doi.org/10.1177/1558689812474372

Raveendhara, R., Bannuru, M. D., ChristopherSchmid, H. PhD., David, M., Kent, M. D., ElizavetaVaysbrot, E. M. D., JohnWong, B. M. D., & TimothyMcAlindon, E. M. D. (2015). Comparative effectiveness of pharmacologic interventions for knee osteoarthritis. A systematic review and Network meta-analysis. *Annals of Internal Medicine*, *162*(1), 46–54. https://doi.org/10.7326/m14-1231

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H., & Jinks, C. (2018). Saturation in qualitative research: Exploring its conceptualization and operationalization. *Quality and Quantity*, *52*(4), 1893–1907. https://doi.org/10.1007/s11135-017-0574-8

Smith, T. O., Purdy, R., Lister, S., Salter, C., Fleetcroft, R., & Conaghan, P. (2014). Living with osteoarthritis: A systematic review and meta-ethnography. *Scandinavian Journal of Rheumatology*, *43*(6), 441–452. https://doi.org/10.3109/03009742.2014.894569

Tollefsrud, I., & Mengshoel, A. M. (2019). A fragile normality - illness experiences of working-age individuals with osteoarthritis in knees or hips. *Disability & Rehabilitation*, *1–7*.

Vos, T., Lim, S. S., Abbafati, C., Abbas, K. M., Abbasi, M., Abbasifard, M., Abbasi-Kangevari, M., Abbastabar, H., Abd-Allah, F., Abdelalim, A., Abdollahi, M., Abdollahpour, I., Abolhassani, H., Aboyans, V., Abrams, E. M., Abreu, L. G., Abrigo, M. R. M., Abu-Raddad, L. J., Abushouk, A. I., & Murray, C. J. L. (2020). Global burden of 369 diseases and injuries in 204 countries and territories, 1990-2019: A systematic analysis for the global burden of disease study 2019. *Lancet*, *396*(10258), 1204–1222. https://doi.org/10.1016/s0140-6736(20)30925-9

Wallis, J. A., Taylor, N. F., Bunzli, S., & Shields, N. (2019). Experience of living with knee osteoarthritis: A systematic review of qualitative studies. *BMJ Open*, *9*(9), e030060. https://doi.org/10.1136/bmjopen-2019-030060

Waterfield, J., Bartlam, B., Bishop, A., Holden, M. A., Barlas, P., & Foster, N. E. (2015). Physical therapists' views and experiences of pregnancy-related low back pain and the role of acupuncture: A qualitative exploration. *Physical Therapy*, *95*(9), 1234–1243. https://doi.org/10.2522/ptj.20140298

Zhang, W. (2019). The powerful placebo effect in osteoarthritis. *Clinical & Experimental Rheumatology*, *37*(Suppl 120), 118–123.

Zou, K., Wong, J., Abdullah, n, Chen, X., Smith, T., Doherty, M., & Zhang, W. (2016). Examination of overall treatment effect and the proportion attributable to contextual effect in osteoarthritis: meta-analysis of randomised controlled trials. *Annals of the Rheumatic Diseases*, *75*(11), 1964–1970. https://doi.org/10.1136/annrheumdis-2015-208387

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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APPENDIX

Further detail on HIT qualitative study authorship.

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