Managing shoulder pain: a meta-ethnography exploring healthcare providers’ experiences

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\textbf{ABSTRACT}

\textbf{Objective:} To review and synthesize qualitative research studies exploring the experiences of Healthcare Providers (HCPs) of managing shoulder pain.

\textbf{Methods:} A meta-ethnographic approach was adopted to review and synthesize eligible studies. The findings from each included study were translated into one another using Noblit and Hares’ seven-stage process. A systematic search of eleven electronic databases was conducted in February 2021. Methodological quality was assessed using the CASP Appraisal Tool.

\textbf{Results:} Ten studies were included in the meta-synthesis, all deemed of high methodological quality. Three themes were identified: (1) Lack of consensus: “we all have different approaches.” (2) Challenges to Changing Practice: It’s “really hard to change and switch to a different approach,” (3) Getting “Buy in” to Treatment: “…so you have to really sell it early”.

\textbf{Conclusion:} Healthcare providers working with people with shoulder pain struggle to reconcile, often conflicting, research recommendations with their own clinical experience, beliefs and patient expectations. These findings help explain the continued lack of consensus on how best to manage shoulder pain in clinical practice.

\textbf{IMPLICATIONS FOR REHABILITATION}

- Healthcare providers (HCPs) working with people with shoulder pain struggle to resolve conflicts between evidence-based recommendations, clinical experience, their own shoulder pain beliefs and patient expectations and preferences.
- Stronger collaboration across professional disciplines is needed to address the current lack of consensus on the management of shoulder pain.
- Many HCP’s find it difficult to engage patients with shoulder pain in exercise and they work hard to “sell” this approach to patients using strategies such as education, shared decision making and therapeutic alliance.

\section*{Introduction}

Shoulder pain is the third most common musculoskeletal (MSK) condition reported in primary care, with about 4% of adults attending their GP with new shoulder pain each year [1,2]. The most common diagnosis is rotator cuff-related shoulder pain (RCRSP), a term that encompasses a spectrum of conditions including; subacromial pain (impingement) syndrome, rotator cuff tendinopathy, as well as partial and full-thickness rotator cuff tears [3,4]. The general prognosis is highly variable, with 40% of individuals reporting persistent symptoms beyond 1 year [5]. The high risk of chronicity and disability associated with MSK shoulder pain has been shown to negatively impact quality of life, psychological wellbeing, and the ability to maintain employment [6].

Approaches to the management of shoulder pain vary widely amongst healthcare providers (HCPs) [7,8]. Although recent shoulder pain treatment recommendations/guidelines, developed to guide Physiotherapists [3], and GPs [9], both recommend against the early use of imaging for non-traumatic shoulder pain due to its lack of correlation with structural pathology [10,11], there is a continued over-reliance on this approach amongst GPs [12]. Similar inconsistencies are noted in relation to treatment strategies. Exercise therapy has consistently been recommended as the first-line treatment, along with active rest and analgesia [13,14], with more invasive treatment, such as steroid injections and surgery, typically recommended as second-line options [15], with some surgical interventions for RCRSP not recommended [16,17]. Despite these findings, surgery rates continue to rise worldwide [18], with evidence of significant discrepancy in opinion amongst HCPs in relation to first-line treatment recommendations for MSK shoulder pain [12,19].

A similar evidence-practice gap has been demonstrated in relation to other MSK conditions, such as low back pain (BP) [20], with attempts to improve the application of research recommendations demonstrating only short-term changes in clinical practice and patient outcomes [21]. Researchers are increasingly utilizing qualitative methods in an effort to improve understanding of the challenges HCPs face when applying research evidence for various
MSK conditions [22–25]. In relation to BP, HCPs highlighted the challenges posed when research recommendations conflict with patient beliefs and expectations, with HCPs opting instead to align their treatment with patient expectations to avoid conflict and preserve the therapeutic relationship [25–27]. Some HCPs also expressed negative opinions and attitudes towards BP clinical guidelines, suggesting they constrained professional practice [26], were not applicable to them [28], or conflicted with their biomedical understanding of BP [25,29]. In contrast, few qualitative studies exist exploring the experiences of HCPs in managing MSK shoulder pain, with recent studies highlighting some of the challenges they face, in relation to diagnosis [30], and implementation of first-line treatment [31].

Deepening our understanding of HCP experiences of managing shoulder pain is likely to play a role in improving adherence to evidence-based recommendations [25]. The objective of this study is therefore to review and synthesize qualitative research studies exploring HCPs experiences of managing shoulder pain. To the authors’ knowledge, there has been no previous attempt to synthesize qualitative research on this topic. Findings of this synthesis have the potential to enhance understanding of the challenges HCPs face in applying evidence-based recommendations for the management of MSK shoulder pain, thereby helping to close the existing evidence-practice gap.

Methods

Study design

A meta-ethnographic approach, often used to help study complex social phenomena, was adopted to conduct this qualitative evidence synthesis (QES) [32]. This methodological approach was chosen as it is frequently used in syntheses of healthcare research and this method goes beyond the findings of the individual included studies to facilitate the production of a new interpretation or theory [33]. Thus, this approach has the potential to generate new evidence on the experience of HCPs working with people with shoulder pain. This review follows the preferred reporting items for systematic reviews and meta-analyses (PRISMA) statement (Supplementary Material S1) and the eMERGe reporting guidelines for systematic reviews and meta-analyses of qualitative research (34,35). The protocol can be accessed via the PROSPERO database [36]. Notably, the systematic search conducted, as outlined within this protocol, included studies exploring the experiences of both HCPs and patients. Due to the large number of studies identified, the experiences of patients and of healthcare providers (HCPs) were analysed and synthesized separately. This report considers only the experiences of HCPs.

Search strategy

A comprehensive systematic search was conducted in February 2019, updated in March 2020, and again in February 2021, of CINAHL, EMBASE, ERIC, PsychINFO, SCOPUS, Web of Science, MEDLINE, AMED, PEDro and The Cochrane Library databases. Google Scholar was used to supplement this search. A grey literature search within ProQuest, ETHOS, and DART-Europe E-theses Portal was also conducted as well as citation and reference checking. No search period restriction was applied in order to increase confidence that all potentially relevant records were retrieved [37]. Keywords “qualitative research” and “shoulder pain” were used, as well as thesaurus and MeSH terms, recent reviews [15,38], InterTASC Information Specialists’ Sub-Group Search Filter Resource [39], and guidance from a medical librarian (Supplementary Material S2).

Eligibility criteria

Qualitative studies in the English language exploring the perceptions and/or experiences of healthcare providers (HCPs) (e.g., General Practitioner, Orthopaedic Surgeon, Physiotherapist etc.) of managing non-traumatic musculoskeletal shoulder pain were included. Mixed group studies were included provided the experience of the HCPs could be extracted. Studies exploring experiences of managing non-musculoskeletal shoulder pain (i.e., stroke or cancer related) or atraumatic shoulder instability (uncommon in adults) [40] were excluded.

Screening and selection

Two authors (CM, KR) independently screened all titles and abstracts, and read the full text of potentially eligible articles, recording an exclusion rationale for each. Discussion with the third author (KM) resolved any differences of opinion.

Quality appraisal

Two authors (CM, KR) independently assessed methodological quality, again using the CASP critical appraisal skills programme qualitative checklist [41], with the third author (KM) resolving any disagreements.

Data extraction and synthesis

The seven-stages of meta-ethnography described by Noblit and Hare were followed, including (1) getting started (i.e., deciding the focus of the synthesis), (2) identifying what is relevant to the initial interest (i.e., identifying and selecting studies to synthesize), (3) reading the studies, (4) determining how the studies are related, (5) translating the studies into one another, (6) synthesizing translations, and finally, (7) expressing the synthesis [42]. Two authors (CM, KR) closely read the included articles, extracting metaphors, themes, or concepts and study characteristics [43]. Metaphors, themes or concepts from the included studies were uploaded to NVivo 12, read repeatedly and juxtaposed against one another using a grid displaying concepts across all included studies [43]. Through an iterative, interpretive process of comparing and contrasting concepts, studies were translated into one another by CM. Given the common findings across the included studies reciprocal translation was possible [33]. The process of translation has been described as fundamental to conducting a meta-ethnography, and was achieved by systematically comparing the meaning of metaphors, concepts, or themes and their relationship across the studies in a process similar to constant comparison [33]. With guidance and critical feedback from KR, these translations were then synthesized to develop higher order interpretations, reported here as key themes, and a line of argument or overarching explanation of the experience of HCP’s [33,43].

Results

Search outcomes

The search yielded 23 002 articles. Following title/abstract screening and removal of duplicates (CM), 88 full-text articles were considered ((CM, KR), with 30 deemed eligible for inclusion, ten of which explored the experiences of HCPs (Figure 1).
Characteristics of included studies

See Table 1 for study characteristics. Four studies were conducted in the United Kingdom [31,44,46,47,49,51], and one each in Ireland [48], Australia [45], the Netherlands [30], and Finland [50]. Data collection involved semi-structured interviews in all but two studies, using focus groups [48,50], with one study using both methods [51]. Most studies recruited Physiotherapists/Physical Therapists (6/10), with the remainder recruiting General Practice Registrars [51], General Practitioners [30], and two studies including a mix of HCP disciplines [44,45]. Studies explored HCP beliefs and experiences of treatments, including; corticosteroid injections [46], education [45], exercise [31,47–49], post-surgical rehabilitation [44], as well as experiences of assessing and managing shoulder pain [30,51], and decision-making in relation to choice of approach [50].

Quality appraisal

Overall, methodological quality was high (Table 2) and no studies were excluded based on quality appraisal. Failing to adequately reflect on the researchers’ potential influence and bias was the main methodological flaw, with only one study demonstrating adequate consideration of this aspect [51]. One study did not confirm if it had received ethical approval [50].

Synthesis

Analysis identified three themes: (1) Lack of consensus: “we all have different approaches,” (2) Challenges to Changing Practice: It’s “really hard to change and switch to a different approach,” (3) Getting “Buy in” to Treatment: “…so you have to really sell it...
Table 1. Characteristics of included studies.

| Paper                        | Research aim(s)                                                                 | Phenomena of Interest                                      | Population                                      | Methods                        | Summary of findings                           |
|------------------------------|--------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------|----------------------------------|---------------------------------------------|
| Stephens et al. 2020 [44]    | To investigate acceptability, barriers to adherence with the interventions, and which outcome measures best reflect the participants’ rehabilitation goals in an RCT evaluating early patient-directed rehab and standard rehab. | Experience of Rx Early post-surgical patient-directed rehab Vs Standard Rehab | Healthcare practitioners (Physiotherapists, Nurse, Clinical trials practitioner, Surgeons) Experience: 8-26 years (mean = 15 years) N: 10 (6 Physiotherapists, 2 Surgeons, 1 Nurse, 1 Clinical trials practitioner) | R: Purposive sampling C: In-depth semi-structured interviews Length: 22 mins (range 12-39) A: Thematic Analysis | Four Themes: 1. Preconceptions of early mobilisation 2. Sling use and movement restrictions 3. Tensions associated with early mobilisation 4. Appropriateness of outcome measures and evaluation of the RCT processes. |
| White et al. 2020 [45]       | To explore expert shoulder clinician’s experiences with managing rotator cuff tendinopathy including practice beliefs towards providing education. | Experience Rx Education | Expert shoulder clinicians (Sports medicine physicians, surgeons or physical therapists (PT) who had published about shoulder tendinopathy in the past 5 years) Experience: >10 years clinical N: 8 (6 PT, 1 surgeon, 1 unknown) | R: Purposive sampling C: In-depth semi-structured interviews Length: 45–90 mins A: Inductive thematic analysis | Three Themes: 1. The need for early, focused education: “Some beliefs can be detrimental to rehabilitation options.” 2. Developing therapeutic alliance: “If a patient trusts you then you are generally going to get much better results.” 3. What is required moving forward in current day RT management: “Maybe we can get better.” |
| Lee and Diver 2020 [46]      | To investigate the experiences and decision making of physiotherapists in relation to the use of corticosteroid injections for subacromial pain. | Experience of Rx and decision making Corticosteroid injections | Physiotherapists Experience: 1-29 years (mean = 11 years) N: 9 (f = 6) 2/9 qualified injectors | R: Convenience sample + purposive sampling C: 1:1 semi-structured interviews A: Thematic analysis | Three Codes (and Subthemes) 1. Initial Management • Diagnosis by exclusion • Conservative management 2. Patient Factors • Presentation • Engagement • Psychosocial factors 3. Therapist beliefs • Efficacy • Dissuasive factors |
| Gilbert et al. (2018) [47]   | To determine whether or not the MUJO System was acceptable to patients with shoulder dysfunction and their rehabilitation professionals. | Experience of Rx Using MUJO System | Physiotherapists Experience: >10 years N: 7 | R: Purposive sample – Clinicians with experience treating patients with MUJO System C: 1:1 Interviews Duration: 13.3–31.5 (median: 18.35 min) A: Directed Content Analysis – 4 constructs of Normalisation Process Theory | Perceived advantages: 1. Helped target particular shoulder muscles 2. Enhanced patient motivation and compliance 3. Provided some quantifiable measure of performance 4. Machines easy to set up 5. Appeared clinically effective |
| Hanratty et al. (2016) [48]  | To investigate physical therapists’ perceptions and experiences regarding the use of exercise in MANAGING SHOULDER PAIN: A META-ETHNOGRAPHY EXPLORING HEALTHCARE PROVIDERS EXPERIENCES | Experience Rx Exercise | Physical Therapists Experience: >5 yrs postgraduate experience with formal postgraduate training in manual | R: Purposive sampling C: Focus groups (semi-structured) (three groups with 6–8 per | Perceived Disadvantages: 1. Added consultation time 2. Poor software reliability reduced motivation to use 3. Exercises weren’t functional 4. Only used if patient lived close enough to use devices. Overarching theme: Gaining buy-in to exercise Main category: Patient education Subcategories: |
| Paper | Research aim(s) | Phenomena of Interest | Population | Methods | Summary of findings |
|-------|----------------|-----------------------|------------|---------|---------------------|
| Republic of Ireland (1 private practice) | the treatment of patients with SAIS. therapy | N: 20 (f = 18) | Length: 60–90min | A: Thematic Content Analysis |
| Littlewood et al. (2015) [31] | To explore possible implementation barriers and facilitators with regard to a self-management loaded exercise programme for rotator cuff tendinopathy. | Physiotherapists N: 13 (f = 6) | R: Convenience sampling C: Semi-structured face-to-face interviews | Six Themes: 1. The Physiotherapists preferred therapeutic option 2. The role of the physiotherapist 3. Expectations and preferences 4. Establishing strategies for diagnostic work-up 5. Characteristics of a successful outcome 6. Continuing professional development Three themes: 1. Varieties in diagnostic classifications (Non-) specific diagnosis and interdisciplinary differences 2. Establishing strategies for diagnostic work-up Use of existing tools Motives to deviate from existing 3. Strategies dealing with diagnostic uncertainties Accepting diagnostic uncertainties Diagnostic imaging tests Interdisciplinary consultation and referral |
| Littlewood et al. (2014) [49] | To explore potential barriers that might prevent implementation of a self-managed loaded exercise programme for rotator cuff tendinopathy. | Physiotherapists N: 2 (f = 2) | R: Purposive sample — selected by chief investigator C: Individual interviews A: Framework method |
| Ottenheijm et al. (2014) [30] | To explore GPs perspectives on the diagnostic work-up of patients with shoulder pain. | General Practitioners N: 18 (f = 5) | R: Purposive sampling C: Face-to-face Semi-structured interviews A: Constant comparative method |
| Palenius and Nyman (2015) [50] | To explore physiotherapists' work with patients and assess how physiotherapist in different contexts face shoulder problems. What determines their choice of approach to their patients? | Physiotherapists N: 36 (f = 28) C: Focus group interviews (7 groups) | R: Snowballing recruitment technique Length: Approx. 60 min A: Thematic analysis |
| Wise (2010) [51] | To investigate what MSK conditions general practice registrars are experiencing managing MSK conditions | General Practice Registrars N: Registrars Themes & Subthemes 1. Clinical Experience | Four categories: 1. A client-centred approach 2. A method-centred approach 3. Focus on function and work 4. Holistic approach |
Table 1. Continued.

| MSK Conditions seen | Paper Research aim(s) | Phenomena of Interest | Population | Methods | Summary of findings |
|---------------------|-----------------------|-----------------------|------------|---------|---------------------|
| 13 Registrar interviews (7 first R: Convenience sampling seeing in their day-to-day work, 6 Final year) | 2. Educational Experiences | How they learn currently | 13 Semi-structured interviews | A: Framework analysis | Desired Learning |
| 11 Registrars in 2 Focus Groups (FG 1 – phase one registrars, FG 2 – 3 phase registrars) | 2. Educational Experiences | Effect of this education | 2 Focus groups | A: Framework analysis | Desired Learning |

Note: A: Data Analysis Method. Ax: Assessment, C: Data collection method, f: female, FG: Focus group, m: male, mins: minutes, MSK: Musculoskeletal, N: Number of participants, R: Recruitment method, RCT: Randomised Controlled Trial, Rehab: Rehabilitation, Rx: Treatment, SAIS: Subacromial Impingement Syndrome, yrs: years.

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However, for some Physiotherapists, this knowledge did not early”. The contribution of each study to the themes is provided in Table 3.

(1) Lack of consensus: “we all have different approaches.”

Within six of the included studies, including Physiotherapists [31,44,46], Physical Therapists [48], GPs [30], GP registrars [51], Surgeons [44], and Nurses [44], HCPs expressed ambiguity in relation to making a diagnosis, the purpose and criteria for referral for diagnostic imaging, rationalising different treatment strategies and criteria applied for onwards referral [30,31,44,46,48,51].

HCPs expressed conflicting views in relation to their ability, and indeed clinical relevance, of making a specific structural or pathoanatomical diagnosis [30,46,51]. Physiotherapists within one study felt strongly that symptoms should not be attributed to a specific anatomical structure, preferring a more non-specific “diagnostic label” [46]. In contrast, in two other studies, some GPs and GP registrars expressed a clear preference towards a more specific pathoanatomical diagnosis although noting this was not always possible [30,51], with many GP registrars expressing concern over their lack of confidence in making a specific diagnosis based on limited experience or clinical knowledge; “If you don’t really know what you’re looking for, then you can’t check.” [51].

Conflicting rationales were given by some GPs and GP registrars in relation to the purpose and criteria for referral for medical imaging, with some GPs describing their rationale for its use as a means to “confirm a diagnosis,” [30] and for GP registrars a means of providing them with reassurance nothing serious had been missed [51]. A lack of consensus specifically in relation to referral for ultrasound imaging was highlighted, with some GPs viewing this as appropriate only if a traumatic tendon tear was suspected and unnecessary for more “chronic complaints,” with others considering its use only for those with symptoms resistant to therapy or persisting into the chronic phase [30].

Contrasting views were also noted in relation to many treatment options for shoulder pain, such as oral analgesia [30,46,51], corticosteroid injections [46,51], exercise therapy [31,48], and early patient-directed post-surgical rehabilitation [44]. While a general consensus emerged in relation to the rationale for the use of non-steroidal anti-inflammatories (NSAIDs), due to the “inflammatory processes” involved [30,46,51], the timelines for its use varied. Although NSAIDs were considered by some GP registrars as “first line” treatment [51], or by some GPs as appropriate for more chronic shoulder complaints [30], many Physiotherapists viewed this as more of a second-line option to be explored only if response to exercise was disappointing [46]. None of the HCPs across the range of included studies made reference to the use of simple analgesics, such as paracetamol.

HCPs also expressed contrasting views in relation to the use of corticosteroid injections (CSIs) [46,51]. Although many HCPs referred to their “anti-inflammatory” effects [46,51], some Physiotherapists expressed the opinion there was likely a “placebo effect,” and that the “the context” is more important than the precise mechanism involved [46]. The threshold to consider the use of CSIs varied between these HCPs, with some GP registrars referring to this as a second-line treatment option following NSAIDs [51], while Physiotherapists appeared to have a higher threshold for its use, only considering this option to provide “a window of opportunity” to engage with rehabilitation, or if “conservative treatment hasn’t been effective” [46]. GP Registrars expressed an awareness of the deleterious effects of CSIs, and for some, this appeared to completely deter their use of this treatment [51]. However, for some Physiotherapists, this knowledge did not
appears to be sufficient to “sway” against its use, instead identifying subjective variables to inform decision-making [46]. Exercise therapy emerged as another point of contention [31,48]. Although many HCPs expressed a preference towards taking an individualized approach, recognising that “every patient is different, and we all have different approaches,” the similarities in prescribed exercise programmes contradicted these views [48]. A lack of consensus was also evident in relation to exercise dosage, with Physiotherapists from one study describing a range of methods used, such as prescribing specific sets/repetitions, a time limit to complete exercises, or based on the patient’s perceived level of fatigue [48]. There was also uncertainty expressed by some Physiotherapists in relation to prescribing exercises that would “push into pain,” while others appeared more comfortable with this approach [31]. Conflicting views were also described between HCPs in relation to implementing earlier post-surgical rehabilitation [44]. Although many Physiotherapists within this one study appeared confident in this approach, noting the “reduced fear” in patients by moving their shoulders earlier, not all HCPs shared this positive outlook, with some raising concerns that this might compromise the surgical repair or that earlier removal of the sling may not be appropriate for older or more anxious patients [44].

Lastly, there appeared to be little agreement amongst HCPs in relation to the appropriate timelines for onwards referral [30,48,51]. Many GPs and GP registrars touched on the referral of patients for physiotherapy treatment [30,51]. However, some GPs expressed a preference to refer those with more chronic or traumatic complaints directly to the Orthopaedic Surgeon, expressing a fear over the potential “delay” caused by attending a “physiotherapist for three months,” suggesting this could limit surgical treatment options available and result in there being “nothing left” for them to do [30]. Physiotherapists also expressed uncertainty, noting a wide variation in timelines (i.e., between 3 and 12 weeks) before acknowledging the need to “re-think” their treatment approach or consider onward referral [48].

### Challenges to changing practice: it’s “really hard to change and switch to a different approach”

The second theme highlighted the perceived challenges HCPs expressed in terms of changing their usual way of practice, including Physiotherapists [31,44,46,49,50] GPs [30], Surgeons [44], and Nurses [44]. Across a number of studies, HCPs described a reliance on their own “habitual” way of doing things, even when this conflicted with clinical guidelines or research evidence [30,31,44,46,50]. More experienced Physiotherapists appeared less influenced by research evidence, focusing instead on their own subjective assessment as well as individual patient factors to direct decision-making concerning the use of CSIs [46]. Similarly,

### Table 2. CASP quality appraisal of included studies.

| Citation                          | CASP Criterion 1 Clear statement of aim | CASP Criterion 2 Qualitative methodology appropriate | CASP Criterion 3 Appropriate research design | CASP Criterion 4 Sampling | CASP Criterion 5 Data collection | CASP Criterion 6 Research reflexivity | CASP Criterion 7 Ethical consideration | CASP Criterion 8 Appropriate data analysis | CASP Criterion 9 Clear statement of findings | CASP Criterion 10 Research value |
|----------------------------------|---------------------------------------|-----------------------------------------------------|--------------------------------------------|--------------------------|-------------------------------|-----------------------------------|--------------------------------------|------------------------------------------|--------------------------------------------|-----------------------------|
| Stephens et al. (2020) [44]      | Yes                                   | Yes                                                 | Yes                                       | Yes                      | No                            | Yes                               | Yes                                  | Yes                                      | Yes                                        | Yes                                        |
| White et al. (2020) [45]         | Yes                                   | Yes                                                 | Yes                                       | Yes                      | No                            | Yes                               | Yes                                  | Yes                                      | Yes                                       | Yes                                        |
| Lee and Diver (2020) [46]        | Yes                                   | Yes                                                 | Yes                                       | Yes                      | No                            | Yes                               | Yes                                  | Yes                                      | Yes                                       | Yes                                        |
| Gilbert et al. (2018) [47]       | Yes                                   | Yes                                                 | Yes                                       | Yes                      | No                            | Yes                               | Yes                                  | Yes                                      | Yes                                       | Yes                                        |
| Hanratty et al. (2016) [48]      | Yes                                   | Yes                                                 | Yes                                       | Yes                      | No                            | Yes                               | Yes                                  | Yes                                      | Yes                                       | Yes                                        |
| Littlewood et al. (2014) [49]    | Yes                                   | Yes                                                 | Yes                                       | Yes                      | No                            | Yes                               | Yes                                  | Yes                                      | Yes                                       | Yes                                        |
| Littlewood et al. (2015) [31]    | Yes                                   | Yes                                                 | Yes                                       | Yes                      | No                            | Yes                               | Yes                                  | Yes                                      | Yes                                       | Yes                                        |
| Ottenheijm et al. (2014) [30]    | Yes                                   | Yes                                                 | Yes                                       | Yes                      | No                            | Yes                               | Yes                                  | Yes                                      | Yes                                       | Yes                                        |
| Palenius and Nyman (2015) [50]   | Yes                                   | Yes                                                 | Yes                                       | Yes                      | No                            | Yes                               | Yes                                  | Yes                                      | Yes                                       | Yes                                        |
| Wise (2010) [51]                 | Yes                                   | Yes                                                 | Yes                                       | Yes                      | Yes                           | Yes                               | Yes                                  | Yes                                      | Yes                                       | Yes                                        |

| Citation                          | Dealing with uncertainty | Challenges to changing practice | Getting “buy in” to treatment |
|----------------------------------|--------------------------|-------------------------------|-------------------------------|
| Stephens et al. (2020) [44]      | X                        | X                             | X                             |
| White et al. (2020) [45]         | X                        | X                             | X                             |
| Lee and Diver (2020) [46]        | X                        | X                             | X                             |
| Hanratty et al. (2016) [48]      | X                        | X                             | X                             |
| Littlewood et al. (2015) [31]    | X                        | X                             | X                             |
| Littlewood et al. (2014) [49]    | X                        | X                             | X                             |
| Palenius and Nyman (2015) [50]   | X                        | X                             | X                             |
| Gilbert et al. (2018) [47]       | X                        | X                             | X                             |
| Ottenheijm et al. (2014) [30]    | X                        | X                             | X                             |
| Wise (2010) [51]                 | X                        | X                             | X                             |
some experienced GP’s reported difficulty adhering to diagnostic imaging guidelines, suggesting benefits of early imaging based on their past clinical experience [30]:

If I would stick to the guideline, patients would have to wait too long for us or an X-ray.

In three studies, Physiotherapists expressed perceived challenges to adapting their approach to treatment, in particular when the treatment included a solely self-management approach, which seemed in contrast with the usual way of practice for others [31,49,50]. Although exercise was acknowledged as being central to their usual treatment approach, some expressed a preference for a more “hands on” approach [49]. Physiotherapists also appeared reluctant to simplify their approach to exercise prescription (i.e., limit to one exercise), preferring to prescribe multiple exercises [31]. In two studies, Physiotherapists were instructed to prescribe exercises that provoked pain [31,49]. Some were hesitant at first, stating that this “went against their clinical reasoning” [31]. They also expressed the perception that patients would be dissatisfied by the prospect of receiving a solely “self-managed” exercise programme [31,49,50], as highlighted by one Physiotherapist [49].

...there were a few crestfallen faces when they got the self-managed side of it.

Similarly, the prospect of implementing earlier rehabilitation and sling removal post-surgery was also challenging for some surgeons in one study where they reported expressing caution to patients towards this earlier approach to rehabilitation, and other HCP’s noted reluctance of surgeons to allow their patients participate in this novel approach to post-surgical care, as expressed by one of the nurses in this study [44].

The main problem we had was we only managed to persuade one of our surgeons to let his patients take part. All the others weren’t interested...they were worried taking the sling off would damage the surgery.

The concerns Physiotherapists expressed in relation to changing their approach to treatment appeared amplified within a private practice setting, with greater perceived pressure to “to make the customer satisfied,” even if this did not align with clinical recommendations [50]. Also, when engaging with patients with previous experience of receiving treatment within a private practice setting, some Physiotherapists highlighted the pressure they were put under by patients to provide more than simply self-management [31]:

For my patients, they certainly found it slightly different, especially those that had experienced private physio before, erm they said oh, is that it? They were, well are you not doing anything else? Is it just one exercise? Is that it?

Some Physiotherapists expressed a view that adopting a solely self-managed exercise approach was unsuitable or even “inappropriate” for some patients [49], viewing this approach as appropriate only for those who are “very positive about life” and appear “quite outgoing, quite confident in themselves and quite determined” [49]. However, despite initial reservations, many expressed surprise at its effectiveness and the positive feedback from patients, prompting those physiotherapists to critically reflect on their “usual” approach [31]:

...it’s probably challenged my way of thinking which has been nice.

(3) Getting “buy-in” to treatment: “...so you have to really sell it early”

Healthcare Providers across most of the included studies, including Physiotherapists [31,44-47,49,50], Physical Therapists [48], GPs [30], Nurses [44], Sports Medicine Physicians [45], and Surgeons [44,45], identified the importance of early patient “buy-in” to treatment, acknowledging their central role in facilitating or selling various treatment options to patients [30,31,44-50]. In particular, many HCPs referred to the challenges of getting patients to “buy-in” to exercise, with some referring to this as the “key” component to successful treatment emphasising the need to “sell it early” in the patient journey [48,49].

Various factors were identified by HCPs as important to facilitate early patient “buy-in” or engagement with treatment, such as; early education [45,46,48], shared decision-making, trust and a strong therapeutic relationship [30,45,46,50], early response to treatment [48,49], prescribing exercises that were easy to complete and enjoyable [44,47], as well as ongoing support and monitoring [31,49,50].

Within three of the included studies, HCPs referred to the “critical” importance of early patient education, highlighting the need to firstly identify patient fears, concerns and expectations, and then, provide patients with reassurance, a clear understanding of their condition, treatment options, as well as realistic expectations of treatment outcome(s) [45,46,48]. As highlighted by one Physiotherapist in the study by White et al. [45]:

We are on a losing streak if patients arrive with … a catastrophizing mind set about this torn tendon or piece of bone. We are achieving absolutely nothing unless we can break those down, educate the patient.

A number of Expert Shoulder Clinicians from this same study also noted the importance of tailoring patient information based on factors such as, gender, age and level of education [45], as well as evaluating patient understanding – “what do you think I have said?” thought to facilitate engagement with treatment [45]. Physiotherapists in another study described their use of visual educational aids, such as videos and skeletons, helping to guide correct exercise technique as well as educate in relation to the nature of the condition [48]. Some Physiotherapists within this same study highlighted their preference towards adopting a more biomechanical approach to educating patients, perceiving this as easier for patients to understand and relate to [48].

If we show them on a skeleton, they can actually relate how small that space is between the acromion and the humeral head, and if there is any enlargement—say in the tendon—and that space is closed down, ... then they take it on board.

Across four of the included studies, HCPs highlighted the importance of shared decision-making, with trust and a strong therapeutic alliance considered vital to facilitate this [30,45,46,50]. Although HCPs recognised their role in guiding patients in terms of treatment, many expressed the need for patients to “make the decision,” [45] also noting the necessity for patients to actively choose to “opt-in” to treatment, viewed as an important step in improving outcomes - “because they’re getting a treatment they want and they’ve made an informed decision.” [46]. HCPs described various strategies to build therapeutic alliances, with some GPs expressing their need to get the diagnosis “correct” as a means to “gain trust” as well as strengthen their rationale to the patient as to why they don’t need to seek “additional tests” [30]. Physiotherapists within one study also referred to the greater challenges placed on their profession with patients increasingly “more active and conscious”, requiring a greater level of social competence to develop a good rapport with patients, requiring them to be “a little bit of everything: from physicians to priests” to enable them to establish this rapport [50].

HCPs also noted the value of providing immediate or early improvements in symptoms [48,49], describing the benefits
accrued as a means of facilitating patient buy-in to exercise, even if only short lived, promoting trust and positive patient expectations towards this approach. Likewise, finding ways to render exercise enjoyable and easier to complete was also highlighted as a means of facilitating patient engagement and adherence [47]. Observing patients enjoying exercise and being motivated also integrated "dence-based practice wherein practitioners are called on to balance conflicting influences on their clinical practice. Evidence-based recommendations, past clinical experience, clinician beliefs about shoulder pain, as well as patient expectations and preferences, are all reported to influence practice, and often these influences conflict. The use of imaging in the diagnostic process and the prescription of exercise as treatment were two points where evidence-based recommendations are often at variance with reported past clinical experience and patient expectations. To bridge the gap between recommendations and patient preferences, HCPs work to facilitate patient engagement and buy-in to treatment through early patient education, shared decision-making, development of trust and the establishment of strong therapeutic relationships by prescribing exercises that are easy to complete and enjoyable, while simultaneously providing ongoing support and monitoring.

**Discussion**

The findings of this review provide novel insights into the experiences of HCPs in relation to managing MSK shoulder pain. HCPs, across the range of included studies, struggled to balance research evidence with their clinical experience and patient preferences. This challenge clearly reflects the implementation of evidence-based practice wherein practitioners are called on to integrate "the best available evidence, clinical expertise and patient preferences and values" [52].

There was a lack of agreement across respondents in relation to their approaches to diagnosis and treatment. This lack of consensus has been highlighted previously [4], with numerous studies highlighting the varied opinions and practices of HCPs in relation to the management of shoulder pain [12,19,53–55]. The reasons for this variation is likely to be multifactorial, influenced by the impact of inconsistent research findings, a lack of high quality clinical practice guidelines [56], different guidelines and recommendations produced by and targeted to individual HCP discipline groups [3,9], and also the individual role and expertise of the HCP with different levels of training and emphases in professional education. It was highlighted in one recent survey that physiotherapists are more likely to prescribe physical therapy as the 1st line treatment for rotator cuff tears, and surgeons are more likely to recommend surgery [19]. This suggests that professional biases influence HCP management approaches, and the recommendations of the authors of this study to produce shared and updated clinical guidelines, as well as the need for stronger collaboration across professions [19], are certainly warranted, and further supported given the lack of consensus amongst HCPs as highlighted in this review. Clinical uncertainties are not unique to the management of shoulder pain, with ample ambiguity also noted in the management of chronic pain [57], BP [22,25,28], as well as knee osteoarthritis [23,24]. As evident from the current synthesis, some HCPs continue to express a preference towards identifying a specific pathoanatomical structure, viewing imaging as a means of confirming a diagnosis and alleviating uncertainty [30,46,51]. Such biomechanical orientated approaches have been heavily criticized, suggesting the need to reduce reliance on imaging [12], and avoid the use of "threatening" language associating shoulder pain with damage or abnormality [4]. HCPs treating other MSK conditions, such as low BP and knee osteoarthritis [23,25], have also described similar biomechanical bias and over-reliance on imaging, despite similar criticisms [29,58].

HCPs expressed conflicting views in relation to the threshold to consider the use of NSAIDs and corticosteroid injections, with many rationalising their use based on their anti-inflammatory effect. The efficacy of both of these anti-inflammatory modalities continues to be debated [59]. Although shown to produce short-term pain relief, they have also been shown to cause tissue damage [60], increase risk of tendon rupture [61], and negatively impact long-term tendon healing [59]. While some HCPs expressed an awareness of these deleterious effects [46,51], subjectively identified determinants, such as adequate engagement with rehabilitation, or a previous positive outcome with a CSI, appeared to strongly inform decision-making, at times superseding evidence-based recommendations [46]. HCPs also made no reference to the use of simple analgesics (i.e., paracetamol), despite best-evidence recommendations advocating their use as first-line therapy for MSK pain [62].

A degree of ambiguity was expressed in regard to exercise prescription and post-surgical rehabilitation, reflecting the current lack of consensus on both optimal exercise parameters appropriate for shoulder pain [4], and timeframe to implement post-surgical mobilisation and rehabilitation [63,64]. Scant agreement was also noted in relation to criteria for onward referral or to explore alternative treatments. Although limited research exists exploring treatment decision-making for shoulder pain, the findings of this review reflect those of previous studies which have also noted disagreement in relation to referring for imaging and injections [12], as well as for rotator cuff surgery [65]. Similar inconsistencies have been noted for other MSK conditions, such as referral for lumbar decompression surgery, with little agreement in relation to screening processes utilized [58].

Many challenges to changing practice were also identified within this review, reflecting the preferences of some HCPs towards certain management approaches, and the perceived difficulties, and at times reluctance, towards embracing change. For some HCPs, clinical experience, biomechanical beliefs, and perceived patient expectations, as opposed to evidence-based guidelines, appeared to supersede decisions in relation to managing shoulder pain. HCPs involved in treating people with other MSK conditions have described similar challenges adhering to clinical guidelines, rationalising their lack of compliance based on the perception of interference with professional autonomy [57], and, if recommendations conflicted with patient expectations, on negatively impacting their therapeutic relationship [25–27,66].

Some HCPs expressed a preference towards early imaging as a means of reducing diagnostic uncertainty, providing reassurance to the HCP, and informing treatment decision-making. In contrast,
the use of imaging for shoulder pain has been criticized, suggesting this can lead to inaccurate diagnoses and unnecessary treatment [4]. HCPs also described the identification of various subjectively identified patient characteristics, associating these with a higher likelihood of a positive outcome. Adopting such a subjective approach to predicting treatment response for shoulder pain has been criticized previously, with strong indications that this approach cannot be relied upon and that a more formalized approach, evaluating key predictors, such as pain self-efficacy and patient expectations, should be applied [67]. Such recommendations are further supported by research evaluating the beliefs and attitudes of HCPs in relation to other MSK conditions, such as back pain, with evidence of similar subjective approaches to decision-making, with HCPs associating factors such as patient passivity, [25] and the presence of chronic pain and/or psychological co-morbidities with poorer treatment outcomes [58].

Patients with shoulder pain struggle to understand the cause of their shoulder pain and commonly report fear around moving and exercising their shoulder [68]. These findings on patient’s expectations reflect the findings of this review where HCP’s anticipated patient reluctance to engage in exercise as a treatment. Although many HCPs within the current review acknowledged the important role of exercise therapy, the prospect of prescribing exercise that was solely self-managed or induced pain, or commencing earlier post-surgical rehabilitation, was sometimes in contrast with their usual approach. Those HCPs who worked within a private practice setting appeared to perceive greater challenges to adopting a solely self-managed exercise approach, with some expressing the view that patients would be less receptive or dissatisfied with this approach. There is little conclusive evidence supporting the superiority of prescribing a solely self-managed exercise programme over usual physiotherapy for shoulder pain [31], of exercises that induce pain having a superior therapeutic effect compared to those that are pain-free [69], or the superiority of early versus delayed post-surgical mobilisation [63,64], potentially explaining the hesitancy of some HCPs to shift from their habitual approach. However, the hesitation some HCPs expressed towards exercise-induced pain and early post-surgical rehabilitation suggests a degree of fear avoidance. As evident from similar research into other MSK conditions, the elevated fear avoidance beliefs of some HCPs, leading to a more cautionary and passive approach to treatment, often stem from a strong biomechanical bias and may result in reduced adherence to guidelines [25,29].

Lastly, a key theme identified within this review emphasized the importance of getting buy-in to treatment, with many HCPs acknowledging their role in selling and facilitating engagement with treatment. Although many HCPs acknowledged the importance of patient education, only one reported they evaluated patient understanding [45]. Research studies have emphasized the need to improve patient understanding and education, and the importance of evaluating its impact on behaviour change [70]. Many HCPs described exercise therapy as challenging to ‘sell’, especially if treatment involved a solely self-managed exercise programme. Similar challenges have been documented in relation to chronic low back pain, with suggestions that this may be due to a lack of patient understanding as to the relevance and benefits associated with exercise [71]. Clearly, failure to effectively communicate such benefits and adequately alleviate patient fears in relation to exercise and early post-surgical rehabilitation is likely to result in continued apprehension and a reluctance to ‘buy-in’ to this treatment.

**Strengths and limitations**

To enhance transparency and reduce risk of bias, the protocol for this review was published prior to commencing eligibility assessment [36]. One thesis was included [51], providing rich unpublished data. Included studies explored the perspective of HCP’s from a wide range of disciplines. Most included studies broadly explored HCP experiences relating to treatment, with only one focusing specifically on decision-making [50]. The use of qualitative interviews to access HCP experiences of clinical decision-making has its limitations, given that HCPs sometimes struggle to articulate and describe these complex processes [72]. Although the search strategy was comprehensive, it is possible that relevant studies were missed due to human error and difficulties associated with searching for qualitative studies [73]. Only studies accessible in the English language were included which may well have resulted in the exclusion of potentially relevant studies [74].

A degree of bias may have been introduced to this review given that two of the authors are Physiotherapists (CM, KM). To offset this risk, the team were reflexive during analysis and the third author (KR), who is an Occupational Therapist, was involved in in the study selection, analysis and interpretation.

**Research implications**

To the knowledge of the authors, this is the first qualitative evidence synthesis of HCP experiences of managing shoulder pain. Findings indicate a continued biomechanical orientation towards shoulder pain management influencing the beliefs and attitudes of HCPs. Given the known association between HCPs beliefs and those of their patients [67], further research exploring approaches to changing HCP and patient beliefs is warranted. An evidence – practice gap was identified in the reports of some practitioners cited in this review. Previous attempts to apply knowledge translation strategies to improve the implementation of evidence-based recommendations for common MSK conditions have failed to demonstrate consistent long-term changes in clinical practice [21]. One avenue to improve the adoption of such recommendations has been the development of decision-aid tools [75,76]. Further exploration of what factors influence HCP decision-making when managing shoulder pain may help to inform the development of such tools. Future research studies incorporating the perspectives of all key stakeholders, as equal partners, may further help to facilitate the development of more meaningful and accessible interventions to improve the implementation of evidence-based interventions for shoulder pain [77,78].

**Clinical implications**

The findings of this review suggest the need for improved adoption of evidence-based recommendations. HCPs would likely benefit from inter-professional consensus guidelines to help reduce uncertainty and variation in approaches adopted. This could be further facilitated through the development of inter-professional peer-mentorship programmes, providing a valuable opportunity to improve inter-professional communication and learning [79]. In addition to this, HCPs would benefit from improved support to overcome perceived challenges to changing their ‘usual’ ways of practice, employing strategies to help support HCPs to adopt and apply best-practice research recommendations. HCPs across these studies also outlined various strategies to facilitate improved patient ‘buy-in’ to treatment. Enhancing the consistency in which such strategies are employed within clinical practice should be a priority across each stakeholder group, with
processes in place to evaluate their success and the impact this has on improving treatment outcomes.

Conclusion
This review of qualitative studies found HCPs working with people with shoulder pain struggle at the intersection of evidence-based recommendations that frequently conflict with their past clinical experience, beliefs about shoulder pain and patient expectations and preferences. The findings of this review help explain the continued lack of consensus on how best to manage shoulder pain in clinical practice and illuminates the work that HCP’s enact trying to ‘sell’ exercise as a treatment option through strategies such as patient education and the development of therapeutic alliance.

Author contributions
The IRC had no role in conducting or publishing this review. KM is responsible for the conception of the review. All authors contributed to the study design and search strategy. CM conducted the search and the screening of titles and abstracts for eligibility. CM and KR assessed all full-text articles for eligibility, with disagreements reviewed by KM. CM and KR appraised the quality of included studies. CM performed data coding and thematic analysis, with contributions from KR and KM. CM wrote the first draft of the article, with KM and KR contributing to each revised version. All authors approved the final submitted article.

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