A combination of systematic review and clinicians' beliefs in interventions for subacromial pain

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SUMMARY

The aim of the study is to determine which treatments for patients with subacromial pain are trusted by general practitioners (GPs) and physiotherapists, and to compare trusted treatments with evidence from a systematic critical review of the scientific literature. A two-step process was used: a questionnaire (written case simulation) and a systematic critical review. The questionnaire was mailed to 188 GPs and 71 physiotherapists in Sweden. The total response rate was 72% (186/259). The following treatments were trusted: ergonomics/adjustments at work, corticosteroids, non-steroidal anti-inflammatory drugs, movement exercises, acupuncture, ultrasound therapy, strengthening exercises, stretching, transcutaneous electric nerve stimulation, and superficial heat or ice therapy. The review, including efficacy studies for the treatments found to be trusted, was conducted using the CINAHL, EMBASE and MEDLINE databases. Evidence for efficacy was recorded in relation to methodological quality and to diagnostic criteria that labelled participants as having subacromial pain or a non-specific shoulder disorder.

Forty studies were included. The methodological quality varied and only one treatment had definitive evidence for efficacy for non-specific patients, namely injection of corticosteroids. The trust in corticosteroids, injected in the subacromial bursa, was supported by definitive evidence for short-term efficacy. Acupuncture had tentative evidence for short-term efficacy in patients with subacromial pain. Ultrasound therapy was ineffective for subacromial pain. This is supported by tentative evidence and, together with earlier reviews, this questions both the trust in the treatment and its use. The clinicians' trust in treatments had a weak association with available scientific evidence.

Keywords: *subacromial pain; physiotherapy; rotator cuff; shoulder; systematic review.*

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Introduction

THE term 'evidence-based medicine' is in increasing use and has been defined by Davidoff *et al* in five areas:

1. The clinician's decisions should be based on the best available evidence.
2. The clinical problem should determine the type of evidence to be sought.
3. Identifying the best evidence means using epidemiological and biostatistical ways of thinking.
4. Conclusions derived from identifying and critically appraising evidence are useful only if put into action in managing patients or making health care decisions.
5. Performance should be constantly evaluated.[1]

In a previous study on attitudes toward management of patients with subacromial pain, we concluded that, in Swedish primary care, general practitioners (GPs) and physiotherapists considered most common treatments as possible choices. Owing to uncertainty about which treatments were most effective, few treatments were ruled out.[2]

Earlier reviews of treatment of shoulder pain raised the problem of heterogeneity as a consequence of poor diagnostic criteria for different shoulder disorders.[3,4] One review can be questioned for lacking a systematic review method[5] and another for concluding on treatment efficacy for non-specific soft tissue shoulder disorders.[6] This raised the need for a systematic review related to a more specific diagnosis, which would be easier to implement in clinical practice.[7]

Clinical decisions should integrate the individual clinician's expertise with information from the best external evidence.[8] Therefore, our objectives were to study which treatments for patients with subacromial pain are trusted by GPs and physiotherapists and to compare trusted treatments with available evidence from a systematic critical review of the scientific literature.

Method

A two-step process was used: a study of GPs' and physiotherapists' trust in existing treatments and a systematic critical review of the efficacy of these treatments.

A study of GPs' and physiotherapists' trust in existing treatments

A questionnaire study was performed during the autumn of 1996 to describe attitudes among GPs and physiotherapists toward the diagnostic approach and management of patients with a common shoulder disorder. The question-

HOW THIS FITS IN

What do we know?

Earlier systematic reviews of treatment of shoulder problems found no evidence of efficacy for corticosteroids and inconclusive evidence for different physiotherapy treatments. They raised the problem of heterogeneity and the lack of diagnostic criteria for different shoulder disorders, pointing at the need for a systematic review related to a more specified diagnosis, which should be easier to implement in clinical practice.

What does this paper add?

Most common treatments for subacromial pain were trusted by both GPs and by physiotherapists. This systematic review established definitive evidence for corticosteroid injection in the subacromial bursa and tentative evidence for acupuncture. Ultrasound therapy had tentative evidence for lack of efficacy for patients with subacromial pain, questioning its use. GPs' and physiotherapists' trust in treatments had a weak association with available scientific evidence. This study helps clinicians to choose between treatments for subacromial pain and makes them aware of whether their choice is based on evidence or experience, or a combination.

naire was posted to all GPs ($n = 188$) and physiotherapists ($n = 71$) working at or near primary health care centres in the Swedish county of Östergötland. The response rate was 72%.

The questions were based on a written case, as follows:

Eric is a 45-year-old dentist. During the past few weeks he has suffered from pain in his right shoulder. Diffuse pain, especially ventral and lateral. No pain at rest, but he experiences pains down the deltoid area during activities.

The majority of the responders diagnosed the case as having pain originating from subacromial structures. A total of 96% considered either rotator cuff tendinitis or subacromial bursitis as a possible diagnosis.[2]

The first part of the questionnaire resulted in choice of treatment for the chosen diagnosis and was presented in an earlier study.[2] In the second part, used in the present study, the GPs and physiotherapists reported their trust in the efficacy of available treatments. Using a five-point scale with endpoints defined as 'no effect' and 'good effect', the responders were asked to mark their level of trust in different treatments for the chosen diagnosis. There was also a 'don't know' option.

The treatments were defined as trusted when a majority (>50%) of any profession reported scores of 3, 4 or 5, compared with 1 or 2 on the scale. Complete results from the question about trust are presented in Table 1. The following treatments were stated as trusted; ergonomics/adjustments at work, corticosteroids, non-steroidal anti-inflammatory drugs (NSAIDs), movement exercises, acupuncture, ultra-

sound therapy, strengthening exercises, stretching, transcutaneous electronic nerve stimulation (TENS), and superficial heat or ice therapy. Differences in trust between the professions were statistically analysed with a continuity corrected χ^2 test. The treatments where at least one profession presented trust were included in the literature search. The number of responders choosing the 'don't know' option is shown in Table 1.

Systematic critical review

A search for papers was conducted in the computerised bibliographic databases MEDLINE and CINAHL using the OVID search engine, and also the EMBASE database using the Silver Platter search engine. The search was conducted for studies published between January 1984 and December 1999 (for EMBASE, January 1986 to December 1999).

The following medical subject headings and text words were used alone or in combination: 'shoulder', 'rotator cuff', 'subacromial', 'impingement syndrome', 'pain', 'therapeutics', 'therapy', 'physiotherapy', 'physical therapy', 'rehabilitation', 'acupuncture', 'ergonomic', 'exercise', 'non anti-inflammatory drugs/NSAIDs', 'steroids', 'corticosteroid injection', 'heat', 'movement', 'stretching', 'strength', 'transcutaneous electric nerve stimulation (TENS)', 'ultrasonic therapy' and 'ultrasound'.

All abstracts comprising an evaluation of efficacy for any of the trusted treatments for shoulder disorders were reviewed. Studies published as full reports in Scandinavian, English, French, and German languages, and judged as dealing with symptoms originating from subacromial structures, were included.

In the present study, the term 'subacromial pain' is used, defined as pain originating from subacromial structures, including rotator cuff tendinitis/tendinopathy and subacromial bursitis. A diagnostic labelling of patients in the retrieved studies was performed. The label 'subacromial pain' was used when the authors described at least one of the following inclusion criteria: a positive Neer's impingement sign or test,[9,10] the Hawkins and Kennedy impingement test[11] or equal manoeuvres to test the subacromial structures, and positive findings by ultrasonographic or radiographic examination that indicated disturbance of rotator cuff muscles and/or the subacromial bursa. The manoeuvres are described in Box 1. Studies not fulfilling these inclusion criteria, but where the authors either stated a diagnosis of pain originating from subacromial structures or studies properly excluding adhesive capsulitis/frozen shoulder, neck disorder, osteoarthritis or rheumatoid arthritis, were labelled as non-specific. This group was judged as probably including patients with subacromial pain. Studies dealing with other shoulder diagnoses (for example, rotator cuff ruptures) or single case reports, were excluded.

According to these inclusion criteria, 40 studies (one study with two papers) were included and labelled.[12-52] The study designs resulted in a level of evidence (level I-V) and grade of recommendation for each treatment according to Sackett[53]: grade A (definitive evidence), including at least two level I studies; grade B (tentative evidence) and at least one level II study; and grade C (suggestive evidence) supported only by level III-V studies.[53] The definition of a

Neer's impingement sign

Forced passive forward elevation of the arm (somewhere between flexion and abduction) with the scapular rotation prevented by the examiner. The manoeuvre should reproduce the pain originating from subacromial structures.

Neer's impingement test

A positive impingement sign should be eliminated or relieved by an injection of 10 cc of 1.0% lignocaine injected into the subacromial space.

Hawkins and Kennedy's impingement test

Forward flexion of the humerus to 90° and forcibly internally rotating the shoulder. The manoeuvre should reproduce the pain originating from subacromial structures.

Box 1. Tests for subacromial pain.

level I study is 'a randomised trial with low false-positive (alpha) and low false-negative (beta) errors (high power)' — the former meaning a statistically significant benefit of a treatment; the latter that, although no effect was found, the sample size was sufficient to avoid missing an effect of clinical importance. Level II studies are defined as 'a randomised trial with high false-positive (alpha) and high false-negative (beta) errors (low power) — the former meaning a trial with an interesting positive trend that is not statistically significant; the latter meaning that, although no effect was found, because of the small sample size an effect of clinical importance can not be ruled out. Levels III–V consisted of non-randomised concurrent and historical cohorts and case series.

In the next step, methodological quality was assessed to ascertain whether the grade of recommendation was supported or not. All 40 studies were assessed using the guideline and checklist published by Fowkes *et al*,[54] complemented by validation of statistics. The names of the authors, title, source, and year of publication were blinded for the two reviewers (KJ and LA) who assessed the papers independently. The reviewers had trained beforehand in the use of the guidelines and checklist. They both made an overall

judgement on a scale from 1 to 5 to state whether or not the methodology was sufficient to support the grade of recommendation (A to C). This resulted in one of three summary categories: 'yes', meaning that the grade of recommendation was methodologically supported (representing 4 or 5 on the scale), 'yes, with reservation', (representing a score of 3 on the scale), and the final category 'no' (representing 1 or 2 on the scale), meaning that the methodology was insufficient to support the grade of evidence. In other words, a 'yes' represented solid research where bias, confounding, and chance are under control. The reviewers also came to conclusions regarding the evidence for efficacy for the different treatments.

Effect size was calculated for treatments where the reviewers stated some evidence for efficacy and when the studies fulfilled the following criteria:

- design of evidence level I or II;
- satisfactory methodology (appraised as 4 or 5);
- standard deviation was reported or could be calculated.

The choice of outcome was an overall clinical change that always included the variable pain as well as movement and/or functional limitation.

The effect size was calculated by subtracting the mean change score for the placebo/control group from the mean change for the treatment group and than dividing by the standard deviation of the placebo/control group at baseline.[55]

If there were more than two groups then the figures for the placebo group were used. Cohen's guidelines for the magnitude of the effect size were used, interpreting an effect size of 0.2 as small, one of 0.50 as moderate, and one of 0.80 or greater as large.[56]

Results

The treatments found to be trusted are presented in Table 1. The review resulted in 17 studies labelled as subacromial pain and 23 as non-specific. A total of 27 studies represented evidence on a level I or on level II basis (Table 2). The

Table 1. Proportions of GPs (n = 129) and physiotherapists (n = 57) who have trust in different treatments, indicated by scores of 3, 4 or 5 on a five-point scale, representing most (5) to least (1) trusted; and proportions of responders who choose the 'don't know' option. Differences analysed with continuity-corrected χ^2 test.

	Total (%)	Proportion of physiotherapists (%)	Proportion of GPs (%)	Difference: GPs/ Physiotherapists	Proportion of 'don't knows' (%)
Ergonomics/adjustments at work[a]	98	100	97	$P = 0.60$	2
Corticosteroids	94	89	96	$P = 0.13$	1
Non-steroidal anti-inflammatory drugs	92	88	94	$P = 0.33$	2
Movement exercise/mobilisation[a]	90	95	88	$P = 0.29$	1
Acupuncture[a]	73	90	64	$P = 0.004$	24
Ultrasound therapy[a]	71	80	76	$P = 0.11$	9
Strengthening exercise[a]	67	79	62	$P = 0.047$	9
Stretching[a]	64	70	60	$P = 0.29$	10
Transcutaneous electric nerve stimulation[a]	64	68	62	$P = 0.60$	11
Superficial heat/ice therapy[a]	56	59	55	$P = 0.74$	2
Expectance without treatment	36	17	45	$P < 0.001$	1
Surgery	29	32	27	$P = 0.73$	15
Massage	30	30	29	$P > 0.99$	3
Aid/appliance	24	24	25	$P > 0.99$	8
Counselling	0	0	0	$P = 0.26$	6

[a]Included in the literature search.

Table 2. Number of included studies (n = 40) in relation to subacromial pain or non-specific diagnosis for different levels of evidence according to Sackett.[53]

Level of evidence	Numbers of studies with subacromial pain	References	Numbers of studies with non-specific diagnosis	References
Level I: Randomised controlled trials with low false-positive (alpha) and low false-negative (beta) errors (high power)	6	12–17	9	18–26[a]
Level II: Randomised controlled trials with high false-positive (alpha) and/or high false-negative (beta) errors (low power)	4	27–30	8	31–39[a]
Level III: Non-randomised concurrent cohort comparisons	–	–	1	40
Level IV: Non-randomised historical cohort comparisons	–	–	–	–
Level V: Case series without controls	7	41–47	5	48–52
Total number of studies:	17		23	

[a]Two papers by Winters *et al*[25,38] counted as one study.

results from the best available studies for each treatment are presented; conclusions from studies of lower levels are not presented where there are better studies available. Trusted treatments and available external evidence are summarised in Table 3 and calculated effect sizes in Table 4.

Ergonomics

There were no studies evaluating the most trusted treatment, ergonomics.

Corticosteroids

A majority of the responders (94%) trusted corticosteroids and the systematic critical review resulted in definitive evidence for short-term efficacy (Table 3), supported by large effect sizes (Table 4).

Twelve studies evaluated corticosteroid injection.[13,19-21,23,25,30,31,37-40,49] Five had evidence level I[13,19-21,23] and most of the others had evidence level II. Four of the level I studies were labelled as non-specific[19-21,23] and one as specific for subacromial pain.[13] They reached a positive conclusion regarding its short-term efficacy when injected subacromially. 'Short-term' was defined as follow-up within six weeks of treatment. The outcomes were decreased pain, increased abduction and improved function. All four were methodologically well performed; the reviewers supported the concluded efficacy (Table 3).

Some studies compared corticosteroid injection with other treatments,[31,37,39] such as physiotherapy,[31] injection of lignocaine[37] or saline[39] for non-specific patients and found them all equally effective. All three were level II studies and with insufficient methodology.

Two studies with longer follow-up seemed to support a probable efficacy,[13,23] especially the level I study by Blair *et al*,[13] which was methodologically well performed and specific. This resulted in tentative evidence for corticosteroid injections in the long term.

Non-steroidal anti-inflammatory drugs (NSAIDs)

Treatment with NSAIDs was trusted by 89% of the clinicians and the systematic critical review resulted in tentative evidence for short-term efficacy (Table 3) and large effect sizes (Table 4). A total of nine studies were found and distributed

over evidence level I, II, and level V.[20-22,26,30,34-36,52] Two of the four level I studies had a methodological quality providing grade A with support. The studies by Petri *et al*[20] and by Adebajo *et al*[21] found NSAIDs to be better than placebo in decreasing pain, as well as improving function. Of the level II studies, only one was specified as subacromial pain and, in general, all concluded that the treatments were not efficacious.[30] In conclusion, the methodology supported grade A but, since the results were drawn from a non-specific group, this evidence is of less clinical use. Therefore the appraised support for methodology resulted in tentative evidence for short-term efficacy in the reviewers' conclusion (Table 3).

Movement exercise

No evidence for efficacy was found for movement exercise or mobilisation but the treatment was trusted by 90% of the clinicians. Two studies were found on evidence level II and V, respectively. Conroy *et al* reported that joint mobilisation resulted in a decrease of 24-hour pain, evaluated one to three days after the final treatment.[27] In the other study, no effect was seen of movements with the arm suspended in a sling.[46] Since both had methodological deficiencies their conclusions could not be supported.

Acupuncture

The physiotherapists had the greatest trust in acupuncture (Table 1) and the review resulted in tentative evidence for short-term efficacy (Table 3), supported by a rather large effect size (Table 4). Four studies were found, one with evidence level I[19] and three with evidence level V.[48,50,51] Kleinhenz *et al* evaluated patients with subacromial pain after four weeks of treatment using manual needle stimulation.[15] They found decreased pain and restored function in comparison with placebo. The other three studies suggested results in agreement with this.

Ultrasound therapy and transcutaneous electric nerve stimulation

Ultrasound treatment was trusted by 71% but the systematic review resulted in tentative evidence for lack of efficacy (Table 3) provided by five studies with evidence level I or II

Table 3. Reviewers' conclusions about evidence for trusted treatments and the proposed efficacy in relation to grade of evidence and methodological quality. (Note: Four studies deal with more than one treatment, mixed treatments excluded).

	Trusted by GPs and physiotherapists (%)	Number of studies	Grade of evidence[a]	Grade supported by methodological quality	Authors' conclusion	Reviewers' conclusions about evidence
Ergonomics/adjustments at work	98	0	–	–	–	–
Corticosteroids	94	12[b]	A	Yes	Short-term efficacy, probable long-term efficacy	Definitive evidence for short-term efficacy, tentative for long-term efficacy
Non-steroidal anti-inflammatory drugs (NSAIDs)	92	9	A	Yes	NSAIDs better than placebo or as good as corticosteroids in the acute phase	Tentative evidence for short-term efficacy
Movement exercise/mobilisation	90	2	B	No	Decreased 24-hour pain and no effect	No evidence for efficacy
Acupuncture	73	4	B	Yes	Acupuncture better than placebo. Acupuncture combined with Cyriax-based orthopaedic medicine results in better outcomes	Tentative evidence for short-term efficacy
Ultrasound therapy	71	6	A	Yes	No difference between true ultrasound and placebo. Probable short term efficacy	Tentative evidence for lack of efficacy
Strengthening exercise	67	1	B	Yes	Physiotherapy aimed at restoring muscle function produces better outcome than no treatment	Tentative evidence for short-term efficacy
Stretching	64	0	–	–	–	–
Transcutaneous electric nerve stimulation (TENS)	64	1	B	No	TENS and ultrasound equally effective	No evidence for efficacy
Superficial heat/ice therapy	56	0	–	–	–	–

[a]Grade of evidence based on design: A = at least two large randomised controlled trials, B = at least one small randomised controlled trial, C = study of other designs. [b]One study with two papers.[25,38]

(Table 2).[14,16,24,32,33] Studies of pulsed ultrasound by Nykänen[16] labelled as subacromial pain, and by van der Heijden et al[24] labelled as non-specific diagnosis, concluded no efficacy for the outcome variables of pain, range of motion, and function in activities of daily living, neither directly after treatment nor after 12 months' follow-up. Downing and Weinstein[32] concluded the same directly after treatment with continuous ultrasound for non-specific diagnosis.[32] Contrary to the tentative evidence for lack of efficacy, one level I-study of pulsed ultrasound found short-term improvements with decreased pain, higher quality of life, and improved shoulder score in patients with subacromial pain.[14]

All except one[33] of the five studies were of high quality. The exception used therapeutic packages and compared continuous ultrasound with high frequency TENS, finding them equally effective in decreasing pain and improving range of movement. Since the reviewers could not support their conclusion and this study was the only one to evaluate TENS, there is no available evidence for efficacy of TENS for patients with subacromial pain.

A sixth level II study evaluated continuous ultrasound in combination with acetic acid iontophoresis, and found no differences, compared with a control group without treatment.[28]

Strengthening exercise

In a level I study by Ginn et al physiotherapy aimed at restoring muscle function produced a better outcome than no treatment for patients with non-specific diagnosis.[18] The outcomes were decreased pain, increased abduction, flexion and inward rotation, and less functional disability. A solid methodology provided tentative evidence supported by the reviewers, but for a non-specific diagnosis (Table 3).

Stretching

No studies were found.

Superficial heat/ice therapy

No studies were found.

Mixed treatments

There were nine studies with mixed treatments which did not specify which of the treatments had rendered the outcome.[12,17,29,41-45,47] Brox et al had a level I design for a comparison of surgery and supervised exercises for subacromial pain.[12] They concluded that both treatments were better than placebo but there were no differences between treatments. This efficacy for supervised exercises could support the tentative evidence for strengthening exercise and provide evidence for movement exercise, but the methodology was too weak. One level I study compared surgery with physiotherapy, mainly movement exercises as well as strengthening exercises.[17] They favoured surgery for patients who have had symptoms for at least one year. The level II study by Peters and Kohn compared surgery with a mix of different physiotherapy treatments combined with NSAIDs and injection of corticosteroids.[29] They found that both alternatives led to decreased pain and improved range

Table 4. The outcome and effect size for all studies with at least evidence level II and with high methodological quality.

Treatment	Author(s)	Outcome	Effect size (follow-up)
Corticosteroid injection	Adebajo et al, 1990[21]	Overall pain Limitation of function	4.74 (short-term) 0.77 (short-term)
	Itzkowitch et al, 1996[19]	Clinical index (pain, active movement)	1.4 (short-term)
	Petri et al, 1989[20]	Clinical index (pain, limitation of function)	1.03[a] (short-term)
NSAIDs	Adebajo et al, 1990[21]	Overall pain Limitation of function	2.96 (short-term) 0.77(short-term)
	Petri et al, 1989[20]	Clinical index (pain, limitation of function)	0.81[a] (short-term)
Acupuncture	Kleinhenz et al, 1999[15]	Constant–Murley shoulder assessment (pain, limitation of function, active movement, strength)	0.77 (short-term)

[a]The mean of two short-term effect sizes.

of movement over a four-year follow-up. This study was judged to support earlier definitive evidence about efficacy for corticosteroids and probably also the tentative short-term efficacy for NSAIDs. The remainder of the nine studies were of evidence level V and the results of the methodological assessment are not presented.

Discussion

Some methodological considerations should be discussed before interpretation of the results. A written case simulation had been employed in earlier research[57,58] and was used in this study to evaluate which treatments were trusted by GPs and physiotherapists. The method could be limited in the extent to which it agreed or predicted responses to actual clinical encounters, but is appropriate for measuring attitudes.[59] Although details of the case probably have influenced the reported level of trust, we do not believe that this would substantially change the overall pattern of trust.

The strategy of defining trust as a majority score rating of 3 to 5 for either profession seemed appropriate, to decrease the risk of missing treatments which were only partly trusted.

The search strategy used in this review may have disregarded some relevant studies that were unpublished, were incompletely reported, had publication bias, or were not included in the computerised bibliographic databases.

The period of 15 years was regarded as relevant, since it decreases the risk for bias from a time-dependent culture of diagnosing.

According to Mulrow, a good methodology is needed when performing medical reviews to avoid biased conclusions.[60] In the present study, a systematic search was combined with the assessment of Sackett's level of evidence and grades of recommendation,[53] as well as with methodological appraisal, to justify this review's conclusion. However, one should bear in mind that the reviewers based the assessment on a qualitative judgement.

Jüni et al[61] showed that the type of instrument used to assess methodological quality influenced the conclusion. They highlighted methodological aspects that needed to be individually assessed conforming to the guidelines used in this study. Other researchers have stated that only level I or II studies (randomised controlled trials) can provide satisfactory evidence.[62,63] In this review all studies were included in the critical appraisal to receive an overall view of the evidence for treatment of subacromial pain.

Earlier reviews highlighted the problem of heterogeneity caused by insufficient classification of diagnosis. The criteria used in this study for labelling subacromial pain and non-specific diagnosis are the most broadly accepted and used. This would make the results easier to implement in clinical practice. The non-specific group was judged to be of value in this study since they probably included patients with subacromial pain.

Effect sizes were calculated to determine the extent to which a treatment works, since a change that is statistically significant is not always of clinical importance. Therefore, this was only calculated for studies providing evidence for efficacy. The overall clinical outcome was chosen, since it was shared by most of the studies and included variables relevant to patients with subacromial pain. Since these studies were few and their outcome measurements differed, we chose not to do a pooled analysis of the effect sizes.

This review provides knowledge of which of the trusted treatments for subacromial pain are supported by available evidence and which are not. This does not mean that the latter are ineffective, but that they cannot be regarded as scientifically supported.

The treatments with a significant difference in trust between the professions showed a stronger trust in the responder's own treatments (Table 1). Both professions had a strong trust in drug treatments and the largest number of studies that evaluated efficacy was found for these treatments.

No studies were found in the field of ergonomics, yet responders trusted it most of all. This is an area needing further study.

There was only one treatment with definitive evidence for efficacy: injection of corticosteroids in the subacromial bursa. Noticeably, these studies concerned non-specific diagnosis, but since the injection was given locally into the subacromial bursa, it is most likely that the origin of pain was subacromial. The large effect sizes support the conclusion that the differences are clinically relevant. An earlier review by Green et al[3] concluded that corticosteroid injection might be superior to placebo for patients with shoulder disorders; another by Van der Heijden et al found the evidence to be scanty.[4]

The physiotherapists showed trust in acupuncture and this review found tentative evidence for its efficacy for patients with subacromial pain. Until recently there have been no valid studies of acupuncture for shoulder pain and the efficacy of acupuncture for chronic pain have been

doubted[64] — an uncertainty shared by one out of four responders who chose the 'I don't know' option. The existing trust in acupuncture could be a consequence of clinical experience and the randomised clinical trial by Kleinhenz *et al* is the first to provide some evidence to support this trust.[15]

This review found tentative evidence for short-term efficacy of NSAIDs for subacromial pain, which is similar to the results of two earlier reviews for non-specific diagnosis.[3,65]

Most included studies of ultrasound found no evidence of its efficacy. On the contrary, there was tentative evidence for lack of efficacy in patients defined as having subacromial pain. Two meta-analyses also found no evidence for efficacy.[6,66] A recent systematic review concluded that there is evidence that ultrasound therapy is not effective for shoulder disorders.[67] It is time to question the trust in ultrasound and its use for patients with subacromial pain.

One interesting aspect is the trust shown in several physiotherapy treatments, despite the low methodological quality and few existing studies. The trust seen among GPs might be a consequence of transference of experience between the professions. The large number of studies with mixed treatments reflects a therapy tradition.

Further research is needed to rule out or support some of the trusted treatments. An interesting question is the amount of evidence that is needed, both to engender trust in a treatment and to reverse it.

Since this study began with clinicians' trust and evaluated the efficacy related to subacromial pain or non-specific diagnosis, these results should be clinically transferable. This is an important issue in the debate on the implementation of research findings.[67]

We hope that our results can help clinicians to choose between treatments for subacromial pain and make them aware whether their choice is based on evidence or experience, or a combination of both.

Conclusions

Clinicians' trust in corticosteroids injected into the subacromial bursa is supported by definitive evidence for short-term efficacy. Acupuncture is a trusted treatment for subacromial pain and supported by tentative evidence for efficacy. The tentative evidence for ultrasound therapy as being ineffective in patients with subacromial pain, together with evidence from earlier reviews, leads us to question both the trust in this therapy and its use in practice.

This study has demonstrated very little congruence between the trust that primary care clinicians demonstrate for specific therapies and the available scientific evidence for their efficacy.

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