Rotator cuff disorders: a survey of current (2016) UK physiotherapy practice

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Abstract

Background: Shoulder pain is a common musculoskeletal presentation, with disorders of the rotator cuff (RC) regarded as the most frequent cause. Conservative treatment is often the initial management; however, findings from a previous survey showed considerable variations in clinical practice, including the use of modalities that are not supported in the literature, suggesting that research is not impacting on practice. The present study aimed to survey current UK physiotherapy practice for the management of RC disorders and to determine whether this has changed over the 5-year period since the last survey was conducted.

Methods: A cross-sectional online survey of UK physiotherapists was conducted.

Results: One hundred and ninety-one respondents completed the survey which showed that advice/education and some form of exercise therapy are most commonly used as a management strategy for RC disorders. There is a lack of agreement however regarding exercise prescription. The survey suggests less use of passive modalities, indicating that practice has advanced over the last 5 years in line with the current evidence.

Conclusions: The present study has highlighted that the clinical practice of the survey respondents was in line with current recommendations from research. Hence, in contrast to the survey conducted 5 years previously, research appears to be impacting on practice, which is a positive finding.

Keywords

knowledge mobilization, physiotherapy, rotator cuff, shoulder pain, survey

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Introduction

Shoulder pain is one of the most common musculoskeletal disorders¹ with prevalence in the range of 7% to 26%.² The rotator cuff (RC) is implicated as the cause in approximately 70% of patients.^{3,4} Subsequent pain and functional difficulties can impact on daily activities, including the ability to work and engage with leisure and sporting activities.^{2,5} For a significant proportion of patients, this is not a self-limiting or short-lasting problem, with over 40% of people reporting on-going or recurrent symptoms 12 months after onset.^{3,6,7}

Conservative treatment, including physiotherapy, is widely accepted as a first-line management approach, although there is considerable variation in physiotherapy practice for this disorder.^{4,8–11}

A survey of UK physiotherapy practice for the management of RC disorders was conducted in 2011.¹² The study highlighted great variability in how

physiotherapists managed this condition, including the use of interventions not supported by research evidence. Overall, the survey highlighted a translational gap between research evidence and practice emphasizing a lack of effective knowledge mobilization.

In the last 5 years, subsequent to the previous survey, there has been a proliferation of research in

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this area and hence a greater evidence-base on which to establish best practice.^{9,13–16} Therefore, the present study aimed to repeat the survey to establish current UK physiotherapy practice for the management of RC disorders and to identify whether practice has changed in response to current evidence.

Materials and Methods

Study design

A cross-sectional online survey was developed by adapting the original survey utilized in 2011.¹² To replicate the previous survey, a clinical scenario was used to describe a typical patient with signs and symptoms of a RC disorder^{12,17} on which survey responses were based. The use of a vignette has previously been shown to be a valid tool for eliciting information on clinical practice and increasing the chance of a reflective response;^{18,19} this is shown in Box 1.

The survey was piloted by three clinicians, resulting in minor amendments, before the full version was disseminated (available as Supplementary material).

Sampling and recruitment

The inclusion criteria were UK physiotherapists who treat RC disorders. Potential participants were invited to complete the survey through a range of sources: the interactive Chartered Society of Physiotherapy (iCSP) website (an online discussion forum open to UK chartered physiotherapists); Frontline magazine (available to chartered physiotherapists registered with the CSP); as well as Twitter and e-mail using the

researcher's professional contacts. Informed consent was implied through voluntary completion and submission of the survey and therefore written consent was not requested.

Sample size

An appropriate sample size was established from the previous survey of 110 participants, in which a comparative number of responses were considered to be acceptable.

Data collection

The survey was available via survey monkey for a 1-month period during March 2016. Littlewood et al.¹² previously reported this as a reasonable period of time for data collection because no further requests to complete the survey were apparent after this time.

Statistical analysis

Descriptive statistics were created by survey monkey and downloaded into Excel 2010 (Microsoft Corp. Redmond, WA, USA); these were separated into those who considered themselves as having a special interest (SI) in RC disorders and those who had no special interest (NSI). Chi-squared tests were completed using SPSS, version 24 (IBM Corp., Armonk, NY, USA) to investigate any differences in these SI and NSI responses.

Any further comments made after a closed question are summarized as narrative text. Qualitative data generated from the open-ended questions were analyzed using a thematic approach and coded into categories/subcategories.

Box 1. Clinical scenario of a typical patient with a RC disorder.

A 54-year-old man presents to you with a 9-month history of right shoulder pain of gradual, insidious onset. The pain is located over the anterolateral aspect of his shoulder, with no radiation of symptoms. He describes the pain as intermittent, made worse by reaching up, lifting, reaching behind his back and lying on this side. Symptoms ease with rest. He has had no previous treatment or investigations for this problem so far and is otherwise in good general health. His occupation as a warehouse operative involves some heavy lifting onto shelves, which he is continuing to do. On examination, observation is unremarkable. Cervical spine range of movement is full and pain-free. Active shoulder movements are full, but with a painful arc on active abduction between 60° and 120°. Passive shoulder movements are largely maintained. Isometric muscle testing produced pain on abduction and lateral rotation, with a power of 4/5 noted for both.

Results

Overall, 314 physiotherapists accessed the survey. The majority accessed this through Twitter (65%; $n = 205$), followed by email contact (21%; $n = 66$) and the iCSP website or Frontline magazine advert (14%; $n = 43$). Six surveys were excluded on the basis that they were non-UK physiotherapists and a further 117 were excluded as only the demographic details had been completed. The remaining 191 surveys were used in the data analysis.

Table 1 shows the respondents had a wide range of experience and practice settings, although with the majority in a NHS band 6 role, which is comparable to the original survey. There was a balanced representation of those with a special interest versus no special interest in RC disorders.

Table 1. Respondents experience, practice settings and level of interest.

	SI (n)	NSI (n)	Total (%)	Total (n)
Years qualified (n = 191)				
<5 years	19	22	21.5%	41
5 years to 10 years	15	31	24.1%	46
10 years to 15 years	18	24	22.0%	42
15 years to 20 years	13	15	14.7%	28
>20 years	14	20	17.8%	34
Role/practice setting (n = 191)				
NHS Band 5	6	10	8.4%	16
NHS Band 6	20	41	31.9%	61
NHS Band 7	16	16	16.8%	32
NHS Band 8a and above	14	15	15.2%	29
Private practice	15	23	19.9%	38
Independent hospital	2	1	1.6%	3
Sports club	1	1	1.0%	2
Education/research	2	1	1.6%	3
Other	3	4	3.7%	7
Special interest in RC disorders (n = 191)				
Yes			41.4%	79
No			58.6%	112

NHS, National Health Service; RC, rotator cuff; SI, respondents who stated a special interest in rotator cuff disorders; NSI, respondents who stated no special interest in rotator cuff disorders.

Would you request any further information or undertake any further clinical tests?

This results of this question are displayed in Fig. 1, which shows that the 67% (121/180; 41 SI, 80 NSI) of UK physiotherapists would carry out further physical examination tests, 53% (96/180; 47 SI, 49 NSI) would undertake further rehabilitation classification [e.g. the shoulder symptom modification procedure (SSMP)] and 51% (92/180; 44 SI, 48 NSI) would require more subjective information. Only 9% (16/180; 10 SI, 6 NSI), would request further investigation at this point.

The difference between the responses of those grouped as SI and NSI who would undertake further physical examination tests was statistically significant

(chi-squared = 8.753, $p = 0.033$), with those with greater experience less likely to undertake further testing.

One hundred and forty-one respondents qualified their answers. Those who would request further subjective information most commonly referred to more detail concerning: hobbies & sports; lifestyle (risk factors for degenerative cuff disease); lifting/work activities (amount & frequency of load); pain characteristics; onset (any changes in activity, trauma, life events); management so far; previous problems with the shoulder, neck or tendons generally; past medical history for red flags; psychosocial information for prognostic confounders; expectations of physiotherapy; and their beliefs in relation to the problem.

Further physical examination tests that would be carried out included assessment of other joints such

Figure 1 Would you request any further information or undertake any further clinical tests? SI, respondents who stated a special interest in rotator cuff disorders; NSI, respondents who stated no special interest in rotator cuff disorders; SSMP, Shoulder Symptom Modification Procedure; MDT, Mechanical Diagnosis & Therapy.

Figure 2 Which management strategies would you typically recommend for this patient? SI, respondents who stated a special interest in rotator cuff disorders; NSI, respondents who stated no special interest in rotator cuff disorders; CCS, corticosteroid.

as the cervical and/or thoracic spine; specific muscle tests, including loading capacity; special tests, including cuff integrity, instability and impingement tests; scapular assessment; capsular and muscle length tests; palpation; neural dynamics; and functional assessments, including balance, kinetic chain and core stability.

Only a few comments were made in relation to further investigation, which included carrying out an ultrasound scan; X-ray to rule out malignancy, osteoarthritis or calcification; and a magnetic resonance imaging scan.

Rehabilitation classification was qualified further by the use of SSMP or improvement tests.

Which management strategies would you typically recommend for this patient?

Figure 2 shows that multiple treatments are used by UK physiotherapists, although with most opting for advice/education (173/191; 91%; 73 SI, 100 NSI), and some form of exercise therapy. Within the types of exercises 67% (128/191; 58 SI, 70 NSI) would use isotonic exercises, 53% (102/191; 42 SI, 60 NSI) would prescribe isometric exercises, 50% (96/191; 50 SI, 46 NSI) would incorporate a global exercise approach and lastly 50% (95/191; 31 SI, 64 NSI) would include scapular exercises. A greater proportion of those classified as SI

would use a global exercise approach, and a greater proportion of NSI would use scapular exercises. This was not found to be statistically significant (chi-squared = 16.436, $p = 0.562$).

All other modalities were much less frequently used. A corticosteroid (CCS) injection was less frequently recommended than advice and exercise, with 16% (31/191; 14 SI, 17 NSI) suggesting this and only 9% (17/191; 8 SI, 9 NSI) would suggest referral on for further investigation/opinion.

When prescribing exercises, what instructions do you generally give to the patient?

This was an open-ended question. In relation to pain, the vast majority of UK physiotherapists would expect some level of pain during exercise but the level of this varied, ranging from what is acceptable to the patient (34/188; 18%; 13 SI, 11 NSI) to below a certain value on a numerical pain rating scale (45/188; 24%; 19 SI, 26 NSI), to the post-exercise response (53/188; 28%; 20 SI, 33 NSI). Exercising in the pain-free range was expressed by 20% (37/188; 12 SI, 25 NSI) of the respondents, of which a higher proportion were those with a NSI. A minority (4/188; 2%; 3 SI, 1 NSI) mentioned they would specifically work into pain.

In relation to the load, a common view amongst the respondents was the use of a low load/level of resistance for exercises (40/182; 22%; 12 SI, 28 NSI), but largely guided by pain (57/182; 31%; 30 SI, 27 NSI), whereas a smaller proportion mentioned using a heavy load (9/182; 5%; 2 SI, 7 NSI) or alternating between a heavy and low load (3/182; 2%; 2 SI, 1 NSI).

In relation to repetitions, up to 10 (47/186; 25%; 15 SI, 32 NSI) or 15 repetitions (42/186; 23%; 13 SI, 29 NSI) and up to three sets (29/186; 16%; 10 SI, 19 NSI) were the predominant themes when prescribing exercises. This was largely guided by fatigue (49/186; 26%; 30 SI, 19 NSI).

In relation to frequency, a common view amongst the respondents was to prescribe exercises to be completed up to two (40/184; 22%; 12 SI, 28 NSI) or three (35/184; 19%; 12 SI, 23 NSI) times a day, on a daily basis (48/184; 26%; 20 SI, 28 NSI). Some respondents would suggest every other day for completing exercises (22/184; 12%; 6 SI, 16 NSI).

In relation to position, some answered in terms of the range or movement of the shoulder and others answered in terms of the body position. Most respondents suggested they would prescribe exercises in a neutral (15/178; 8%; 3 SI, 12 NSI) and/or most comfortable position (20/178; 11%; 12 SI, 8 NSI) with a 'good posture' (21/178; 12%; 5 SI, 16 NSI). In terms of body position, standing was the most common theme (55/178; 31%; 21 SI, 34 NSI). Only a small

number of respondents reported using the movement of most discomfort (6/178; 3%; 1 SI, 5 NSI).

In relation to quality of movement, largely, this was answered as slow, controlled and/or smooth (65/168; 39%; 26 SI, 39 NSI). The importance of this was recognized by many respondents and only a small minority of respondents did not instruct on this or think it was important (9/168; 5%; 2 SI, 7 NSI).

In relation to fatigue, four broad themes were identified, with the largest proportion of respondents encouraging exercises to fatigue (80/160; 50%; 35 SI, 45 NSI) but, for some, this would still be guided by pain (17/160; 11%; 4 SI, 13 NSI) or quality of the movement (10/160; 6%; 5 SI, 5 NSI).

In relation to the progression of exercises, for most, it was answered that exercises would be progressed as pain allows (31/172; 18%; 11 SI, 20 NSI) and this would largely be achieved by increasing the load (71/172; 41%; 34 SI, 37 NSI) or the repetitions (47/172; 27%; 19 SI, 28 NSI).

In relation to the regression of exercises, the majority of respondents expressed that they would regress the exercises if the symptoms flared-up or were worsening (67/165; 41%; 30 SI, 37 NSI); this would be achieved in the same way as reported for the progression of exercises by reducing either the load (40/165; 24%; 15 SI, 25 NSI) or the repetitions (41/165; 25%; 17 SI, 24 NSI).

What advice would you typically offer this patient?

In response to this question, UK physiotherapists would give a combination of advice about a range of topics (Fig. 3). The use of written advice was less prevalent. In the 'other' category, further comments were made that included the use of web resources; reasons for and against surgery; self-progression/regression; lifestyle; pathology; and likely timescales for improvement.

Table 2 shows how the respondents would typically deliver treatment for the patient detailed in the clinical scenario. The majority would use a combination of face-to-face appointments and a home-based programme, seeing this patient up to three or four times and over a 3-month period.

Would you expect this person to recover with the prescribed physiotherapy?

In response to this question, 44% (82/188; 32 SI, 50 NSI) considered that this person would recover within 3 months and 43% (80/188; 36 SI, 44 NSI) considered recovery would be achieved within 6 months, which made up the majority of responses. Two respondents with a SI (2/188; 1%) considered that they would not

Figure 3 What advice would you typically offer this patient? SI, respondents who stated a special interest in rotator cuff disorders; NSI, respondents who stated no special interest in rotator cuff disorders; HEP, home exercise programme.

Table 2. Treatment delivery.

	SI (n)	NSI (n)	Total (%)	Total (n)
Treatment setting (n = 190)				
Face-to-face appointments	21	35	29.5%	56
Home-based programme	4	6	5.3%	10
Face-to-face and home-based programme	69	86	81.6%	155
Group class(es)	18	9	14.2%	27
Other	4	2	3.2%	6
Number of times typically seen (n = 189)				
Once	0	1	0.5%	1
Twice	1	3	2.1%	4
3 or 4 times	46	69	60.8%	115
5 or 6 times	27	35	32.8%	62
7 or 8 times	2	2	2.1%	4
9 or 10 times	2	1	1.6%	3
More than 10 times	0	0	0.0%	0
Typical duration of treatment (n = 190)				
Up to 3 weeks	0	2	1.1%	2

(continued)

Table 2. Continued

	SI (n)	NSI (n)	Total (%)	Total (n)
Up to 6 weeks	3	13	8.4%	16
Up to 8 weeks	15	30	23.7%	45
Up to 3 months	48	47	50.0%	95
Up to 6 months	6	15	11.1%	21
Up to 12 months	2	0	1.1%	2
Other	4	5	4.7%	9

SI, respondents who stated a special interest in rotator cuff disorders; NSI, respondents who stated no special interest in rotator cuff disorders.

Figure 4 Would you expect this person to recover with the prescribed physiotherapy? SI, respondents who stated a special interest in rotator cuff disorders; NSI, respondents who stated no special interest in rotator cuff disorders.

improve with physiotherapy. These results are displayed in Fig. 4.

What would be your main treatment goals for this patient?

This was an open-ended question. One hundred and eighty-six (77 SI; 109 NSI) respondents provided at least one treatment goal for this patient. The most commonly reported themes were a reduction in pain/symptoms; an increase in the pain-free range or reduction of the painful arc; increased strength; and pain-free function.

Would you consider referring this patient for a surgical opinion and if so, when?

This was another open-ended question. A common theme was that most would consider referral on for a

surgical opinion, and several subthemes emerged such as only following a specified period of conservative treatment first or with certain stipulations. A quarter of the respondents (47/186; 25%; 21 SI; 26 NSI) expressed they would not refer this patient for a surgical opinion at any stage.

Do you think that research could benefit your practice with regard to rotator cuff disorders?

The vast majority of respondents (174/189; 92%; 77 SI, 97 NSI) considered that further research could benefit their practice and 8% (15/189; 2 SI, 13 NSI) considered that it would not.

One hundred and thirty-three respondents suggested areas for further research. Predominantly, the comments were focused around exercise prescription and the optimal parameters of this, particularly with

regards to pain. Several respondents commented on the effectiveness of eccentric exercises with tendon pathology in other areas of the body and why this is different from the shoulder. Another recurring suggestion was the development of subgroups with prognostic factors to predict outcomes.

Discussion

Summary of findings

The results of the present survey suggest that UK physiotherapists use a broad selection of interventions but, principally, advice and some form of exercise therapy. The parameters around which exercise was prescribed were less clear, particularly in relation to the subject of pain.

In this survey, with reference to the clinical examination, 67% of respondents considered that they would carry out further physical tests to help with the management of this patient. Although the further comments related to this question included items such as examination of the cervical/thoracic spine, neural dynamics and functional assessment, one-third of respondents specifically mentioned that they would want to perform some kind of orthopaedic/special tests. This is contrary to the evidence regarding the value of including these in the assessment process. Several systematic reviews summarize the poor diagnostic accuracy and reliability of these tests.^{20–22} Despite the findings in the present survey, reassuringly, this is significantly lower compared to the figure of 82% reported by Littlewood et al.¹² The difference in these findings may be explained by the emerging evidence over the last 5 years regarding the limited use of these tests and, consequently, may signify that UK physiotherapists are relying less on these in the decision-making process. Interestingly, more physiotherapists with a NSI would undertake these. This may demonstrate that those with a SI place less value on these special tests as part of their examination, in line with current evidence.

Just over half of the physiotherapists (53%) would incorporate a rehabilitation classification approach as part of their clinical examination; this apparent shift is interesting and might reflect recognition of the aforementioned limitations of tests and procedures undertaken within the pathoanatomic framework. Nonetheless, the rehabilitation classification systems reported still require evaluation to establish their clinical utility.^{23,24}

Undoubtedly, a notable finding in this survey was that only 9% of respondents would request further investigations to support the clinical examination.

This is a significant contrast to Littlewood et al.¹² in which 30% of respondents considered that this was required. It is plausible to propose that this difference in findings is in recognition to current evidence that disputes the relevance of imaging to inform both diagnosis and treatment. It has become more uncertain in the literature that structural findings from imaging studies direct us to the source of the pain; this is in light of consistent results across several studies of abnormal pathology in individuals without any pain.^{25–30}

In terms of the management strategies used by UK physiotherapists, advice/education and exercise therapy in some form was most commonly used. This is in keeping with the findings by Littlewood et al.¹² and remains the essence of treatment; underpinned by the evidence demonstrating the effectiveness of exercise.^{21,31–35}

However, there was a clear decline in the use of all other modalities in comparison to the findings from Littlewood et al.¹² This was most notable for acupuncture (18% versus 6%), electrotherapy (16% versus 3%), CCS injection (35% versus 16%), mobilization (35% versus 23%) and massage (38% versus 18%). These findings reflect current research evidence in relation to the lack of clinical effectiveness of these modalities.

It is apparent from these findings that there is uncertainty regarding the optimal parameters of exercise, which reflects the paucity of evidence in this area. It is also not surprising, given the lack of detailed instructions regarding exercise dosage in many studies.³⁵ This increases our awareness of the lack of guidance in this area and the need for further research.

Limitations

This survey was limited to UK physiotherapists, which might limit generalizability beyond the UK. One strength of the present study, however, was the use of a range of sources to recruit participants reflected in the wide range of roles/settings, experience, and a mix of those with a SI versus a NSI; which may increase the representativeness of the sample.

The majority (65%) of responses came from Twitter users; which was not used as a method for recruiting participants in the previous survey. As a forum for disseminating research findings and discussing best practice, it may be questioned whether these physiotherapists are more likely to transfer knowledge into clinical practice and therefore be unrepresentative of the sample population. However, this method of data collection was considered to be justified to reflect the increasing use of social media by professional communities and to capitalize on the accessibility of these groups.

Conclusions

The present study found that advice and exercise were the main strategies used by UK physiotherapists for treating RC disorders, reflecting the current literature, although there was a lack of consensus on exercise prescription. By repeating this survey, we have highlighted that practice has changed subsequent to the previous survey being conducted.

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Supplementary Material

Supplementary survey is available at: <http://journals.sagepub.com/doi/suppl/10.1177/1758573217717103>.

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Ethical Review and Patient Consent

School of Health and Related Research (ScHARR) ethics committee (Ref. 007057).

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