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Physiotherapists' use of suprascapular nerve blocks: an online survey

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Abstract

Background There is some evidence to support the use of suprascapular nerve blocks (SSNBs) to manage shoulder pain. Although many patients with shoulder pain are referred to physiotherapy, there are no data describing whether physiotherapists currently use SSNBs for these patients.

Objective To explore if physiotherapists who manage musculoskeletal shoulder pain are using SSNBs and identify, of those who responded to an online questionnaire, how commonplace this practice is in the United Kingdom (UK)

Design An online, cross-sectional, questionnaire survey was developed for physiotherapists involved in the management of patients with shoulder pain.

Methods A snowball sampling method was used to invite physiotherapists to complete the online survey, using email, research advertisements in a professional magazine and via social media. The questionnaire captured respondents' demographic and professional practice characteristics, their knowledge and use of SSNBs and their views and experiences regarding SSNBs as a treatment for shoulder pain.

Results In total, there were 529 responders to the survey. Of these, 492 were eligible and formed the sample for analyses. The majority of responders (290/474; 61%) were from the UK. Of these, the majority (259/282; 92%) were familiar with SSNBs as a method of treatment for shoulder pain, although few (9/149; 6%) reported regularly using SSNBs in their clinical practice. Only 8 of 287 responders from the UK (3%) reported delivering SSNBs to patients.

Conclusions This survey provides preliminary evidence that the use and delivery of SSNBs by UK physiotherapists is uncommon. Future research is required to investigate the potential value of physiotherapists using this treatment option for their patients with shoulder pain.

Keywords: Physiotherapy; Suprascapular nerve block; Survey; Shoulder pain; Musculoskeletal

Introduction

Shoulder pain is common, affecting between 4 and 26% of the UK population each year [1] and up to 50% of those seek health care [2]. The causes of shoulder pain are multiple, with pain sources in the joints, nerves and soft tissue structures, in addition to referred pain from the cervical spine [3,4]. Health professionals seek to diagnose the cause of the shoulder pain to target interventions, yet many physical diagnostic tests have limited accuracy for diagnosing shoulder conditions [5–7]. Despite this, most treatment pathways for patients with shoulder pain are tailored to specific diagnoses such as adhesive capsulitis or rotator cuff tendinopathy. The most common treatments are oral analgesic medications, exercise and corticosteroid injections [8–10].

The suprascapular nerve innervates some of the structures that may cause shoulder pain, for example; the supraspinatus and infraspinatus muscles of the rotator cuff, the glenohumeral and acromioclavicular joints, the subacromial bursa and coracoclavicular ligament [11,12]. In situations where differential diagnosis is less clear and/or pain is thought to

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be derived from more than one structure, a suprascapular nerve block (SSNB) might be a helpful treatment option. A SSNB is an injection of a corticosteroid and anaesthetic to the suprascapular nerve to temporarily inhibit afferent input to the central nervous system [13]. This could offer a window of pain relief to help patients commence an exercise programme. There is moderate evidence from two systematic reviews that SSNBs are effective in reducing shoulder pain in the short-term (up to 12 weeks) [14,15]. Historically, these injections have been delivered by medical practitioners including pain physicians and anaesthetists.

Physiotherapy is often considered the first line of management for patients with shoulder pain [10,16]. Suitably qualified physiotherapists have been able to use injections for musculoskeletal pain since 1997 in the UK, but it is not known whether physiotherapists are currently using SSNBs as part of their management for patients with shoulder pain. This descriptive survey was therefore conducted to explore if physiotherapists who manage musculoskeletal shoulder pain are using SSNBs and identify, of those who responded to an online questionnaire, how commonplace this practice is in the United Kingdom (UK). The primary analyses focused on the practice of UK physiotherapists given the incorporation of injections within the scope of physiotherapy practice for 20 years in the UK.

Methods

Design

The design was an online, cross-sectional, descriptive questionnaire survey. The study was peer reviewed for scientific merit by three subject experts from across the UK and Europe. Ethical approval for the study was provided by Keele University (Ref. ERP1301). Written consent for use of the survey data was not sought from participants, but an information leaflet was available to those interested in the survey, and informed consent was assumed if physiotherapists completed and submitted their completed survey online. Responses were anonymous. The survey was available for a period of six weeks to access online via the internet, from September to October 2016.

Survey sample and invitation

The eligibility criteria for survey participants were:

- Self-reported as qualified, registered physiotherapists
- Had an interest in musculoskeletal shoulder pain management.
- Managed at least one patient with musculoskeletal shoulder pain within the previous six months.

In the UK there is no sampling frame available of qualified physiotherapists involved in the treatment of patients with shoulder pain. Recent figures report that there are approximately 60,000 UK physiotherapists with approximately 28,000 actively practicing in the UK [17], however there are no figures (published or unpublished) to identify how many UK physiotherapists specialise in musculoskeletal shoulder pain. Therefore a simple random sample from an existing sampling frame was not possible. Instead, a multimodal recruitment strategy that previously achieved an international and multi disciplinary sample of this population [18] was employed. This multi modal recruitment strategy involved inviting survey responders to share the survey link with other colleagues in their professional networks using snowball methods [19].

Invitations to access and complete the online survey were sent through professional contacts. Emails were sent to networks of physiotherapists and appropriate interest groups including the British Elbow and Shoulder Society (BESS), the Chartered Society of Physiotherapy (CSP), the European Society for Shoulder and Elbow Rehabilitation (EUSSER) and Chartered Physiotherapists with an extended scope of Practice (ESPPN). Emails were also sent to course tutors for musculoskeletal injection therapy training for physiotherapists in the UK. The study was advertised in the Chartered Society of Physiotherapy's magazine (Frontline), via social media (Twitter, Facebook, Linked In, PhysioSpot (an online physiotherapy professional resource website) and iCSP (the Chartered Society of Physiotherapy's professional electronic information exchange)). Flyers were distributed at one European physiotherapy conference. It is possible that physiotherapists who belonged to more than one professional network could have received the survey link more than once.

This method of sampling has been used in previous similar online surveys that also used social media to identify and invite responders [20–24]. The use of social media and a snowball method of sampling meant that it was not possible to limit the invitations to only UK physiotherapists. Given the exploratory nature of this survey we did not conduct a formal sample size calculation.

Survey questionnaire

The survey's primary aims were to explore if registered, clinically active physiotherapists with a specialist interest in shoulder pain: (a) are aware of SSNBs in the management of shoulder pain; (b) use SSNBs (where the term 'use' includes delivering the SSNB themselves or arranging/recommending for someone else to deliver the SSNB to their patients); (c) deliver SSNBs (the term 'deliver' means they are trained to administer a SSNB); (d) have views and experiences regarding SSNBs for shoulder pain. Further exploratory questions into methods and techniques of delivering SSNBs were also included.

The survey included demographic (including country where practicing) and clinical practice characteristics, as well as questions relating to awareness, use, delivery of and views about SSNBs. The draft survey was piloted with 10 physiotherapists, all of whom had a clinical interest in

shoulder pain and were working in NHS and/or private settings in the UK. Following the pilot, amendments were made: the question on awareness of SSNBs was re-phrased to aid interpretation and additional response options were included to questions on shoulder conditions and stage of management. The amended questionnaire was transposed on to access online via the survey site SurveyMonkey TM (https://www.surveymonkey.net). A copy of the survey is available as an online supplement.

The participant invitation and information sheet was available via an internet web link on the first page of the online survey. This invitation and information sheet included the purpose of the survey, the anticipated length of time it would take to complete the survey (10 minutes) and the type of questions a participant could expect to be asked.

Statistical analyses

Descriptive statistics were used to analyse the data from eligible respondents using the Statistical Package for the Social Sciences (SPSS – version 24) software (http://share.uoa.gr/public/Software/SPSS/SPSS24/Manuals/IBM%20SPSS%20Statistics%20Base.pdf). Summary statistics for demographic and clinical practice characteristics are presented separately for UK and non-UK respondents. This survey was not designed to test for differences in practice between UK and non-UK respondents, and no such analyses were performed. We present descriptive data on the proportions of physiotherapists who reported being aware of SSNBs, using and delivering SSNBs, with a focus on UK respondents. Responses to the open questions in the survey were analysed thematically to summarise the views and experience of physiotherapists on the basis of their use and understanding of SSNBs.

Results

Response: given the snowball sampling method used for this online survey, it is not possible to estimate the denominator sample size of physiotherapists who received the invitation to complete the survey. In the six weeks that the survey was accessible online, there were 529 responders, of which 93% (492/529) met the eligibility criteria. The majority of respondents (290/474; 61%) were from the UK (Fig. 1).

The majority of respondents (316/408, 77%) reported to have been invited to complete the survey through social media, with Twitter the most commonly reported source of the invitation (276/316; 87%).

The demographic and clinical practice characteristics of the respondents are presented in Table 1. The majority of respondents were male, had 10 years or more experience in clinical practice, previous postgraduate training specific to shoulder pain and regularly treated patients with shoulder pain. Approximately half of the respondents had a Masters degree (46%). Respondents from the UK worked in a variety of NHS and non-NHS settings across primary and secondary care. 'Other' work places included academic institutions, sports institutes and the armed forces. Approximately 60% of UK respondents working in the NHS were at Agenda for Change[1] band 7 or higher.

Awareness and usage of SSNBs

Respondents were asked to indicate how familiar they were with using SSNBs for shoulder pain. The majority of UK respondents (259/282; 92%) stated that they were familiar with SSNBs for shoulder pain management and knew they could be used in clinical practice. Eighty one per cent of UK respondents (121/149) reported that they would use SSNBs with their shoulder pain patients, however few (9/149; 6%) reported they would consider these as a routine treatment option (defined as 40% of the time or more). Reasons for not using SSNBs included the view that other treatment options were more effective, and uncertainty about the long-term effectiveness and risks of SSNBs. The majority of physiotherapists who reported using SSNBs as part of their practice (121/149 81%) worked in the NHS (84/121; 69%), in secondary care (32/51; 64%), were qualified for over 10 years (81/120; 68%), were working at Agenda for Change band 7 or above (79/114; 69%), and reported seeing more than 10 patients with shoulder pain each month (86/149; 71%). The majority of UK respondents reported the use of one SSNB per episode of care (58/95; 61%). An episode of care was defined as being initiated by a referral and ended by a discharge. Approximately one quarter reported that they usually (defined as more than 70% of the time) provide a course of therapeutic exercise alongside a SSNB (27/99; 27%).

Despite a third of the UK physiotherapists reporting having previously been trained to inject the shoulder (104/287; 36%), very few (8/287; 3%) reported that they delivered the SSNBs themselves. All 8 physiotherapists who delivered SSNBs themselves were working in the NHS. Reasons for not delivering the SSNBs included limitations related to workplace (for example, 'my work place does not support this intervention' and 'it is not part of the care pathway for shoulder pain patients'), ability to refer to other professionals and services for this intervention, and the omission of SSNBs in injection training courses.

Shoulder pain managed with SSNBs

When asked about which patients with shoulder pain SSNBs were used for, the most frequently chosen category was patients with 'chronic pain' (74/218; 34%) (defined as more than three months duration of shoulder pain), whereas SSNBs were least frequently suggested for 'patients with acute pain' (9/218; 4%) (less than three months duration). Choices were similar for physiotherapists working in different practice settings. For physiotherapists who regularly

[1] Agenda for Change is the current UK NHS grading and pay system.

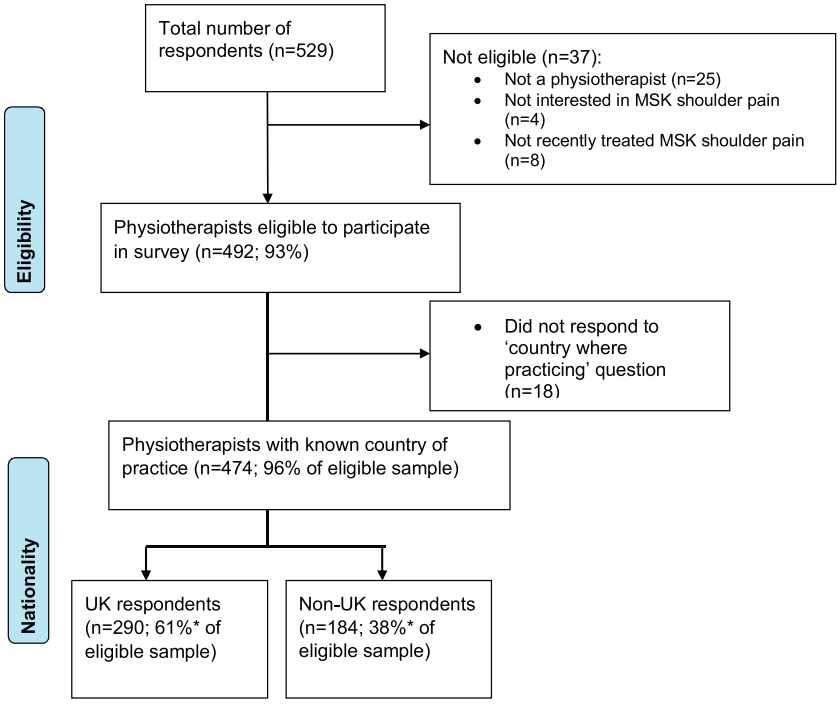

Fig. 1. Flow diagram of physiotherapists involved in survey.
*Percentages expressed after adjusting for missing data on 'country of practice'

considered using SSNBs for their patients with shoulder pain, the most frequently selected option was if pain was limiting a patient's lifestyle e.g. sleep and daily activities (7/9; 78%). Some respondents (24/314; 7%) chose to use an SSNB to help differentiate shoulder pain from referred pain e.g. from the cervical spine.

The survey asked physiotherapists for which shoulder diagnoses they would consider using an SSNB to treat and Fig. 2 summarises the results. Rotator cuff tear arthropathy (glenohumeral joint osteoarthritis associated with cuff tears) was the most consistently selected condition, followed by glenohumeral joint osteoarthritis and multiple components causing shoulder pain e.g. acromioclavicular joint osteoarthritis with sub-acromial syndrome. Biceps tendinopathy was not selected as an option, most probably because the suprascapular nerve does not innervate the biceps. Two respondents commented that they would consider using SSNBs for neurogenic shoulder pain such as suprascapular nerve entrapment.

Approximately one quarter of respondents reported to be more likely to use a SSNB if the patient was ineligible for or did not want shoulder surgery (79/290; 27%) or the patient had failed to respond to other shoulder injections or previous physiotherapy (62/290; 21% and 60/290; 21%, respectively).

From this survey, the most common factors that were deemed important for the respondents to consider SSNBs in patients with shoulder pain were: chronic pain (defined as duration of current episode three months or longer), presenting with rotator cuff arthropathy, for whom shoulder surgery was not an option.

Delivery of SSNBs by Physiotherapists

Six of eight physiotherapists who delivered SSNBs reported to use a palpation-guided approach whilst one used nerve stimulator guidance and the other did not specify. None reported using ultrasound guided injection for the SSNB. Most reported to use Lidocaine as an anaesthetic ($n = 5$) in a dose of 100 mg; 5–10 ml and Triamcinolone (Kenalog) as the corticosteroid ($n = 5$) in a dose of 20–40 mg; 0.5–1 ml. Seven of eight physiotherapists (86%) advised the patient to rest for a few days following the injection and five of six (83%) reported to evaluate the effectiveness of their outcomes using patient reported outcome measures, in the form of pain visual analogue scales or numerical rating scales (4/4; 100%).

Non-UK respondents

There were 184/474 (38%) non-UK respondents from 36 different counties. The majority were from the United States of America (33 of 474; 7%). Collectively, non-UK respondents reported lower awareness (144/176; 81%) and less use (52/70; 74%) of SSNBs compared to UK respondents, and none reported to deliver SSNBs themselves (0/32; 100%).

Main survey findings

Our findings indicate that although the majority of UK physiotherapists who responded to the survey were aware of SSNBs as an intervention for shoulder pain, few use them and even fewer deliver these injections themselves. The majority

Table 1
Demographic and clinical practice characteristics of survey respondents.

	UK respondents		Non-UK respondents	
	Number[a]	%	Number[a]	%
Gender	(*n* = 290)		(*n* = 83)	
Male	154	53	58	68
Years qualified	(*n* = 288)		(*n* = 183)	
Up to 3 years	28	9	38	21
3–6 years	43	15	23	13
6–10 years	68	24	21	11
>10 years	150	52	101	55
Qualifications[b]	(*n* = 288)		(*n* = 183)	
Graduate diploma	41	14	32	18
Bachelors	213	74	84	46
Masters	102	35	71	39
Doctorate	6	2	36	20
Received post graduate training (specific to shoulder pain)	(*n* = 290)		(*n* = 183)	
Yes	225	78	132	72
New patients with shoulder pain per month (*n* = 466)	(*n* = 286)		(*n* = 180)	
<3	12	4	16	9
3–5	46	16	60	34
6–10	68	24	63	35
>10	161	56	40	22
Work place setting[b]	(*n* = 273)		(*n* = 169)	
Public sector (NHS)	185	68	29	17
Primary care	41	15	32	19
Secondary care	41	15	19	11
Private sector	128	47	129	77
Other	17	6	15	9
UK NHS agenda for change band	(*n* = 208)		N/A	
Band 5 (junior)	22	11		
Band 6 (senior)	59	28		
Band 7 (team leader/AP/specialist)	61	29		
Band 8a (MSK lead)	60	29		
Band 8b or higher (consultant/manager)	6	3		

AP = advanced practitioner; MSK = Musculoskeletal; NHS = National Health Service; UK = United Kingdom.
[a] Denominator varies according to number of valid responses because of varying missing data or non-applicable cases.
[b] Proportions add up to more than 100% as respondents were able to indicate multiple responses.

of UK physiotherapy respondents who were familiar with SSNBs infrequently consider using them in clinical practice. Reasons for this include uncertainty about benefits compared to other physiotherapist-led interventions, and uncertainty about long-term effectiveness and risks.

It is perhaps not surprising that from our results, few UK physiotherapists consider SSNBs as one of several routine treatment options. Historically, SSNBs have not been cited in best practice clinical guidelines for shoulder pain [25–29]. In recent guidance [10], Kulkarni *et al.* reported that SSNBs may be beneficial for patients with sub-acromial shoulder pain. There is some evidence from a recent systematic review that SSNBs might provide better pain relief for 12 weeks compared with physiotherapy and placebo injections but the effect was not superior to intra-articular injections [15]. Respondents to our survey reported uncertainty about the long-term effectiveness of SSNBs and such uncertainty seems reasonable given the lack of long-term data to date. It is clear that further research about the short and long-term effects and the risks of SSNBs is needed.

One of the respondents commented that they did not wish to pursue SSNBs due to the risk of harm. There is limited evidence about harms from SSNBs, and current estimates come from case reports only. In most reported instances, harms have been minor and temporary, and are not exclusive to SSNB injections. Serious complications more specific to SSNBs such as pneumothorax and inadvertent neurovascular injury have been described [30], but appear to have very low incidence rates (e.g. <0.02% [31]). Some authors advocate the use of image-guided procedures to reduce risks, however from the limited data available, there is little to substantiate the notion that image-guided procedures reduce risk compared to landmark or palpation-guided techniques [32–34].

Respondents to our survey reported that they were most likely to consider SSNBs in patients with persistent pain, who they clinically diagnosed with rotator cuff arthropathy and for whom shoulder surgery was not an option. Rotator cuff arthropathy was defined as gleno-humeral osteoarthritis with associated cuff tears, which is in itself a multi component cause of shoulder pain. Experienced physiotherapists working in the NHS in secondary care were more likely to

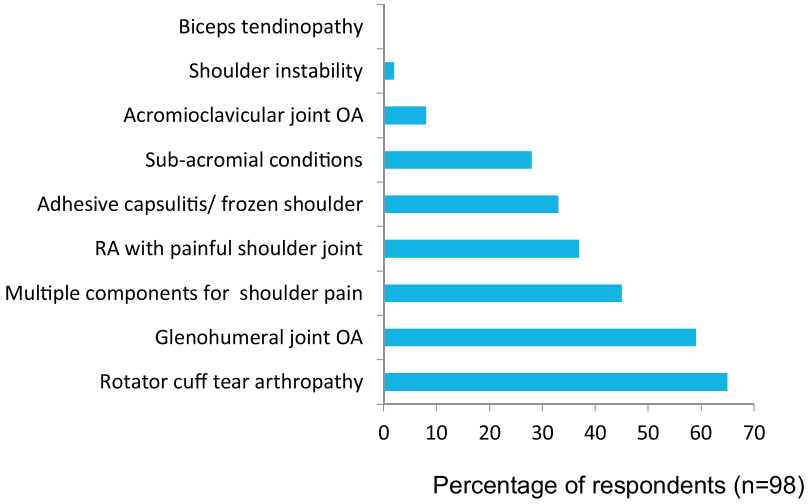

Fig. 2. Proportion of respondents who considered an SSNB for each shoulder diagnosis.
OA = osteoarthritis; RA = rheumatoid arthritis

report using SSNBs as part of their practice. Arguably, this group of physiotherapists are more likely to see patients with persistent, complex multi component pain presentations who have failed to respond to more commonly used interventions and therefore need to consider alternative conservative interventions, particularly if a patient does not want or is not able to have shoulder surgery [35]. Approximately three quarters of the respondents who considered using SSNBs reported that they provide them in conjunction with exercise. Interestingly, there is limited evidence that exercise after SSNB is beneficial in improving clinical outcomes [36,37].

Despite one third of UK respondents being trained to provide injection therapy to the shoulder, very few ($n = 8$; 3%) delivered SSNBs themselves. It is possible that many physiotherapists do not yet consider nerve block interventional procedures to be within their scope of practice. However, with rising healthcare costs and shortages of medical practitioners coupled with musculoskeletal physiotherapists being well placed to provide more complex interventions [38], there is potential for physiotherapy practitioners to consider expanding their practice to deliver interventions that have traditionally been provided by other professional groups [39].

Strengths and limitations

To the authors' knowledge this survey is the first to provide information about the use of SSNBs by physiotherapists for patients with shoulder pain. Using a multi modal recruitment strategy that included social media and a snowball sampling approach resulted in many responses over a short period of time, with over 500 responses to the survey in 6 weeks. The limitation of using this approach to recruitment is that the denominator sample size (source population) remains unknown; we are therefore unable to calculate a response rate or to determine the degree of selection or response bias in our survey results. It is possible that response bias has led to over-estimation of the percentage of physiotherapists who are aware of, and use SSNBs. Such bias may also be present in surveys using a known sampling frame (e.g. professional registry of physiotherapists), but the potential presence and extent of bias is more difficult to estimate when the source population is unknown. It is possible that some of the responders may not have been physiotherapists as reliance was on self-identification of professional status. We recognise there is a risk of bias when using the internet and social media to recruit survey participants; however in the context of an unknown target population (physiotherapists involved in the management of shoulder conditions), unobservable bias can be considered an accepted limitation of a cross-sectional survey. The demographics of respondents appear to be similar to other recent studies on shoulder physiotherapists [22–24,40] which strengthen our confidence that this sample is likely to be representative of the source population of physiotherapists. One unexpected finding was the greater proportion was male respondents. In the UK, 21% of the physiotherapy profession are male [41], yet more than half of the respondents in this survey were male. This could indicate that males are more likely to engage with social media, or more likely to specialise in musculoskeletal physiotherapy generally or shoulder pain specifically. Other UK surveys of physiotherapists' knowledge of shoulder management have been completed; however no gender information about responders is available for comparison [42,43], making it difficult to assess the risk of selection bias in our survey.

Conclusion

This survey provides preliminary evidence on a sample of UK physiotherapists' use and delivery of SSNBs for patients with shoulder pain, indicating limited use of this treatment

option. Patients with persistent, complex and multi component shoulder pain for whom shoulder surgery was either not an option or not preferred were considered to be suitable for SSNBs. Future research is required to investigate the potential value of physiotherapists using this treatment option for patients with shoulder pain.

Key messages

- This study adds insight into UK physiotherapists use of suprascapular nerve blocks for shoulder pain.
- The survey identifies that, from a sample of UK physiotherapists, few are administering suprascapular nerve blocks.

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Conflict of interest: None declared.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.physio.2019.01.003.

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