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RESEARCH ARTICLE

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A UK survey evaluation of First Contact Practitioners' and musculoskeletal physiotherapists' confidence, recognition, and referral of suspected axial spondyloarthritis

Eliza Steen[1,2] | Carol McCrum[3] | Melinda Cairns[2]

[1]Manchester Local Care Organisation, Manchester, UK

[2]University of Hertfordshire, Hatfield, UK

[3]University of Brighton, Brighton, UK

Correspondence
Eliza Steen, Manchester Local Care Organisation, Tier-2 Musculoskeletal Service, 526-528 Stockport Road, Longsight, Manchester, M13, UK.
Email: eliza.steen@nhs.net

Abstract

Background: Axial Spondyloarthritis is an inflammatory disease associated with significant diagnostic delays. Steen et al. (2021) found inadequate consideration of axial Spondyloarthritis (axSpA) in physiotherapists back pain assessments. Since the previous survey, increased professional education on axSpA has occurred and First Contact Practitioners (FCPs), now widely established in General Practice, are key in supporting earlier recognition.

Objectives: (1) To re-evaluate physiotherapists' and evaluate FCPs' awareness, knowledge, and confidence in screening for and recognising features of axSpA and criteria prompting referral to rheumatology. (2) To compare these results to previous research (Steen et al., 2021).

Design: As per Steen et al. (2021), an online survey was undertaken combining back pain vignettes (reflecting axSpA, non-specific low back pain [NSLBP] and radicular syndrome) and questioning on features of suspected axSpA.

Results: 165 surveys were analysed. Only 73% (n = 120/165) of respondents recognised the axSpA vignette compared to NSLBP 91% (n = 80/88) and radicular syndrome 88% (n = 68/77). An improvement in axSpA recognition was demonstrated compared with previous data. FCPs performed slightly better with 77% (n = 67/87) of respondents recognising the axSpA vignette. Adequate awareness of national referral guidance was evident in only 55% of 'clinical reasoning' and 6% of 'further subjective screening' responses. There was still misplaced confidence in recognising clinical features of axSpA compared to knowledge levels shown, including high importance given to inflammatory markers.

Conclusion(s): Musculoskeletal physiotherapists demonstrate some improved knowledge and awareness of axSpA compared with previous study findings. Consideration of axSpA is still not universal in musculoskeletal physiotherapists' or FCPs' approaches to persistent back pain assessments and awareness of national referral guidance remains limited. This study highlights the continued need for professional education. Enhanced knowledge of screening and referral criteria

in musculoskeletal clinical practice would support earlier diagnosis and better outcomes.

KEYWORDS
back pain, first contact practitioners, musculoskeletal, screening, spondyloarthritis

1 | INTRODUCTION

Axial Spondyloarthritis (axSpA) may underly up to 5% of chronic low back pain (LBP) presentations (McKenna, 2010) and is known to be often mistaken for the more common non-specific low back pain (NSLBP) (Hay et al., 2022; Steen et al., 2021). Early diagnosis relies on appropriate screening, prompt recognition, and timely referral to rheumatology in individuals suspected of axSpA, and is associated with better outcomes (Seo et al., 2015; Sieper & Poddubnyy, 2017). However, diagnosis of axSpA is associated with significant delays (Hay et al., 2022), which suggests that opportunities for earlier diagnosis are being missed in clinical practice. In the United Kingdom, this delay is commonly over 8 years (Derakhshan et al., 2018) and is the most significant diagnostic delay seen in any inflammatory joint condition (Adizie et al., 2018).

Musculoskeletal physiotherapists are key in skilled assessment and diagnostic triage of LBP identifying non-mechanical or serious causes, such as axSpA, and ensuring appropriate and timely onward referral (Maher et al., 2017; National Institute for Health and Care Excellence (NICE), 2016). An inflammatory back pain (IBP) presentation is the cardinal feature found in 89% of axSpA cases (Rudwaleit et al., 2009), along with other signs and associated risk factors that are common features and should prompt rheumatology referral (NHS England, 2017; NICE, 2017). Awareness of these features is vital for physiotherapists to question for and recognise in their LBP assessments.

Screening for IBP and when to suspect and refer for possible axSpA by musculoskeletal physiotherapists was evaluated in 2018 (Steen et al., 2021). The evaluation found that consideration of axSpA in LBP assessments and knowledge of signs, symptoms, risk factors and of referral guidance had not yet adequately filtered into clinical practice (Steen et al., 2021).

Since the previous evaluation there has been increased professional profiling of clinical guidance, professional education strategies, conference presentations, social media and UK advocacy campaigns across professional areas to support greater awareness, recognition and referral of suspected axSpA (Barnett et al., 2020; Kiltz et al., 2020; MacMillan et al., 2021; National Axial Spondyloarthritis Society [NASS], (2020); van der Heijde et al., 2017; Webb et al., 2020).

In addition, First Contact Practitioner (FCP) physiotherapist roles have now become widely established in UK General Practice (GP) (Chartered Society of Physiotherapists [CSP], 2021a). This model of care involved placing specialist physiotherapists directly into GP practices to assess patients with musculoskeletal problems, at first point of contact (NHS England and NHS Improvement, 2019). It is essential that physiotherapists in these FCP roles can recognise suspected axSpA and know when to refer to rheumatology to ensure early diagnosis and treatment.

The aims of this study are to re-evaluate musculoskeletal physiotherapists' and evaluate FCPs' confidence and ability to differentiate IBP and axSpA from other back pain presentations since the increased efforts with awareness raising and professional education. This includes evaluating levels of awareness of clinical guidance on back pain and spondyloarthritis, clinical reasoning, assessment knowledge and management decisions on presentations of persisting LBP, including those with features of axSpA, to compare with the previous evaluation findings (Steen et al., 2021).

2 | METHODS

This research study replicates the approach and survey used by Steen et al. (2021).

2.1 | Ethics

Ethical approval was granted from the University of Hertfordshire, Health and Human Sciences Ethics Committee LMS/SF/UH/04576(1).

2.2 | Research design

A cross-sectional online survey of musculoskeletal physiotherapists and physiotherapists in FCP roles working in the UK was undertaken from June to October 2021.

2.2.1 | Survey design

Back pain vignettes (reflecting axSpA, NSLBP and radicular syndrome) were combined with questioning on features of suspected axSpA. The vignettes were constructed using the NICE (2017) guideline recommendations and referral criteria on axSpA and all vignettes featured back pain persisting for longer than 3 months with onset before 45 years of age. The axSpA vignettes contain pertinent features drawn from previously published referral criteria: Assessment of Spondyloarthritis International Society (ASAS) (Rudwaleit et al., 2009; Sieper, van der Heijde et al., 2009), European Spondyloarthropathy Study Group (ESSG) (Dougados et al., 1991), NICE (2017) and Berlin criteria for IBP (Rudwaleit et al., 2006) (see Table 1).

TABLE 1 Vignette analysis: Coding strategy applied to free text 'clinical reasoning' and 'further subjective screening' responses

Category and sub-category	Features of suspected axSpA (as per NICE guidance referral criteria)—a priori codes	Code
Awareness of NICE (2017) guidance on axSpA: Baseline referral criteria	Back pain persisting longer than 3 months	1
	Onset before 45 years of age	2
Awareness of NICE (2017) guidance on axSpA: Additional criteria • Full awareness = All features are identified in vignette (5/5) • Good awareness = Most features are identified in vignette (3–4/5) • Poor awareness = Some features are identified in vignette (1–2/5) • No awareness = No features identified in vignette (0/5)	Back pain before the age of 35 years	3
	Waking during 2nd half of night	4
	Improvement with movement	5
	[a]Current or past arthritis	6
	[a]Current or past enthesitis	6
	Buttock pain	7
	Improvement within 48 h with NSAIDs	8
	Family history of spondyloarthri or psoriasis	9
	Current or past psoriasis	10
Category	**Emergent features of suspected axSpA**	
Additional previously published criteria[b] (which should raise suspicion of inflammatory disease/axSpA)	Not relieved/worse with rest	11
	Early morning stiffness	12
	Investigations (e.g., CRP, HLA-B27)	13
	Insidious onset	14
	Other extra-articular conditions—uveitis, inflammatory bowel disease	15
	Other peripheral signs/symptoms (e.g., dactylitis, synovitis)	16
	24-h pattern (e.g., general night pain)	17
	SCREENED'EM	18

Abbreviations: axSpA, axial spondyloarthritis; CRP, c-reactive protein; HLA-B27, human leucocyte antigen B27; NICE, National Institute for Health and Care Excellence (NICE, 2017); NSAIDs, non-steroidal anti-inflammatory drugs; SCREENED'EM, skin, colitis/Crohn's, relatives, eyes, early morning stiffness, nails, dactylitis, enthesitis, movement and medication effects (Kirwan et al., 2019); SpA, spondyloarthritis.

[a]Arthritis and Enthesitis both coded the same as the vignette content could have been interpreted as either.

[b]Assessment of Spondyloarthritis International Society (ASAS) criteria (Rudwaleit et al., 2009; Sieper, van der Heijde et al., 2009), European Spondyloarthropathy Study Group (ESSG) (Dougados et al., 1991) and Berlin criteria for inflammatory back pain (Rudwaleit et al., 2006).

2.3 | Data analysis

Conceptual content analysis and descriptive statistics were used as with Steen et al., (2021). The content of the free-text responses was analysed by the main researcher (ES) for a priori features and emergent features, assigned into categories and subcategories where applicable and then assigned numerical codes (see Table 1).

Descriptive statistics were used to analyse the frequency of the numerical codes within and across responses. The number of codes within responses were used to reflect levels of awareness of the signs, symptoms, and risk factors of axSpA and were graded; full awareness, good awareness, poor awareness, or no awareness (see Table 1).

3 | RESULTS

One hundred and sixty-six responses were received with 165 useable data sets (one duplicate data set was removed). Respondents' demographics are presented in Table 2. Data relating to all respondents is compared with Steen et al. (2021) and to FCP only respondents. Where completely new data is discussed, no comparison is made.

3.1 | Knowledge of axSpA delayed diagnosis

Most respondents, 56% (n = 92/164), correctly stated that the average length of time from symptom onset to diagnosis for axSpA was 5–10 years, 36% (n = 59/164) less than 5-year and 8% stated more than 10 years (n = 13/164). One data set was removed from analysis due to a coding error.

FCP respondents showed more awareness of the average delay to diagnosis with 68% choosing 5–10 years.

3.2 | Guideline awareness

Respondents showed reduced awareness of NICE guidelines, specifically designed to improve knowledge and awareness, for axSpA compared with LBP and radicular pain.

TABLE 2 Respondent demographics

Demographics (n = 165)	Variable	Median	IQR
Years qualified		18	13–24
		Number	**Percentage**
Gender	Female	117	71%
	Male	44	27%
	Prefer not to say	4	2%
Professional banding	B5	8	5%
	B6	19	12%
	B7	60	36%
	B8a	61	37%
	B8b	6	4%
	Not applicable	11	7%
Clinical interest in rheumatology	YES	25	15%
	NO	140	85%
FCP role	YES	87	53%
	NO	78	47%
Musculoskeletal experience	<1 year	7	4%
	1–3 years	7	4%
	>3–5 years	10	6%
	>5–10 years	38	23%
	>10 years	103	62%
Low back pain caseload numbers	<30%	15	9%
	30%	22	13%
	40%	26	16%
	50%	27	16%
	60%	36	22%
	70%	18	11%
	>70%	21	13%
Clinical setting[a]	NHS	134	81%
	Primary	78	58%
	Secondary	26	19%
	Mixed	30	22%
	Private	45	27%
	H&SC NI	0	0%
	Higher education	3	2%
	Military	2	1%
	Research	2	1%
	Sports	3	2%
	Others	4	2%
Referral source[a]	Consultant referral	70	16%
	GP referral	139	33%
	Referral from other physiotherapists/AHP colleagues	93	22%

TABLE 2 (Continued)

Demographics (n = 165)	Variable	Median	IQR
	Self-referral/direct access	113	26%
	Other	12	3%
Region of UK	Northern Ireland	1	1%
	Wales	3	2%
	Scotland	21	13%
	England	140	85%
LBP training	YES	143	87%
	NO	22	13%
SpA training	YES	108	76%
	NO	35	24%
Participation in previous survey (2018 data collection)	YES	6	4%
	NO	159	96%

Abbreviations: AHP, allied health professional; FCP, first contact practitioner; GP, general practitioner; H&SC NI, Health, and Social Care Northern Ireland; IQR, inter-quartile range; LBP, low back pain; NHS, National Health Service; SpA, spondyloarthritis.

[a]Respondents could indicate multiple responses.

TABLE 3 Guideline awareness

Guideline awareness	All respondent awareness (n = 165) % (n)	FCP respondent awareness (n = 87) % (n)
NICE low back pain and sciatica (2016)	94% (155)	98% (85)
NICE spondyloarthritis (2017)	67% (110)	79% (69)
NICE quality standard low back pain and sciatica (2017)	76% (125)	82% (71)
NICE quality standard spondyloarthritis (2018)	55% (90)	59% (51)
National low back and radicular pain pathway (2017)	75% (123)	84% (73)

There was more awareness of all guidelines amongst FCPs (see Table 3).

3.3 | Section 1: Vignettes

3.3.1 | Vignette 1: Screening of persistent back pain presentations for serious pathology and other differential diagnoses

Inflammatory conditions were the most documented serious pathology in all respondents including FCPs (see Table 4). Previous data was comparable, with an increase in screening of inflammatory conditions by 9%.

3.3.2 | Vignette 2 (NSLBP or radicular syndrome) and Vignette 3 (axSpA): Recognition of diagnosis of back pain case presentations

Only 73% (n = 120/165) of respondents correctly identified the axSpA vignette at primary diagnosis compared with 91% (n = 80/88) for NSLBP and 88% (n = 68/77) for radicular syndrome. In comparison to previous data, the overall results show an improving trend, with higher recognition of the axSpA vignette at primary diagnosis (+13%) and reduced non-recognition (−10%) (see Figure 1). FCPs demonstrated slightly higher recognition of the axSpA vignette at primary diagnosis (77%, n = 67/87).

Failure to recognise the case presentation at primary diagnosis was highest for the axSpA vignette, where 80% (n = 36/45) misattributed the presentation to NSLBP. There was a 14% reduction in misattribution compared with previous data.

More accurate responses for the axSpA vignette were associated with; familiarity with NICE guidance on spondyloarthritis (2017) and the National Low Back and Radicular Pain Pathway (NHS England, 2017), continuing professional development (CPD) on LBP and spondyloarthritis, working for the National Health Service (NHS), FCP role, caseloads of ≥60% LBP, receiving GP referrals and higher professional banding (levels 7 and 8a) (see Table 5). Non-recognition of the axSpA vignette was associated with being lower professional banding or stating, 'not applicable'. In those 'not applicable' responses, 82% (n = 9/11) worked privately in musculoskeletal care.

TABLE 4 Screening of persistent back pain presentations

Identified serious pathologies and differential diagnoses requiring screening	All respondent awareness (n = 165) % (n)	FCP respondent awareness (n = 87) % (n)
Inflammatory pathology	75% (123)	85% (74)
Cancer	65% (107)	71% (62)
Cauda equina syndrome	44% (72)	43% (37)
Infection	43% (71)	45% (39)
Neurological causes	24% (39)	25% (22)
Visceral pathology	24% (39)	31% (27)
Fracture	27% (44)	23% (20)
Red flags (expressed in various formats)	60% (99)	56% (49)

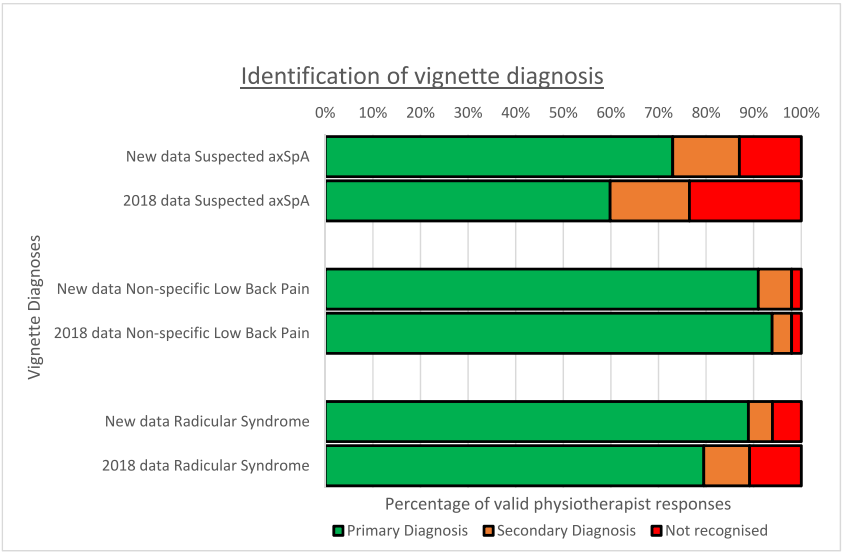

FIGURE 1 Comparison with identification of vignette diagnosis

3.3.3 | AxSpA vignette: Evaluation of 'clinical reasoning' and direction of 'further subjective screening'

Applying the content analysis codes (Table 1), only 7% (n = 10/143) correctly identifying the axSpA vignette mentioned the NICE guidance 'baseline referral criteria' in their 'clinical reasoning' responses. Varying levels of features from the NICE (2017) guideline 'additional criteria' were included in 94% (n = 134/143) of the 'clinical reasoning' and 52% (n = 74/143) of 'further subjective screening' responses. Other features under 'additional previously published criteria' were mentioned in 84% (n = 120/143) and 88% (n = 126/143) of 'clinical reasoning' and 'further subjective screening' responses, respectively.

There was a small positive trend (+3%) of mention of the NICE guidance 'baseline referral criteria' compared with previous data. There was a negative trend in including NICE (2017) guideline 'additional criteria' within the 'clinical reasoning' (−2%) and 'further subjective screening' (−34%). Mention of 'additional previously published criteria' improved for 'clinical reasoning' (+5%) and 'further subjective screening' (+3%).

Overall, FCPs showed higher awareness mentioning NICE (2017) 'additional criteria' in their 'clinical reasoning' (97%, n = 75/77) and 'further subjective screening' and (53%, n = 41/77) responses. 'Additional previously published criteria' were mentioned in 86% (n = 66/77) and 91% (n = 70/77) of 'clinical reasoning' and 'further subjective screening' responses respectively which represents an overall better response rate compared with all respondents.

3.4 | Clinical reasoning

Only 55% (n = 78/143) of respondents correctly suspecting axSpA as a primary or secondary diagnosis showed 'full awareness' or 'good awareness' of the spondyloarthritis guideline recommendations within 'clinically reasoning' responses (see Table 1). For respondents familiar with the NICE guidelines, 'full awareness' or 'good awareness' was only demonstrated by 59% (n = 58/98) compared to 44% (n = 20/45) of those not familiar (see Figure 2). Levels of awareness were better in those with previous spondyloarthritis training with 60% (n = 55/92) of respondents showing 'full awareness' or 'good awareness'.

TABLE 5 Association between individual respondent's demographics and their responses to the vignettes

		Suspected axial spondyloarthritis vignette - respondents diagnosis (n = 165)		
Respondent demographics		**Primary % (n)**	**Secondary % (n)**	**Not recognised % (n)**
All data (n = 165)		73% (120)	14% (23)	13% (22)
SpA NICE guideline awareness	NICE aware (n = 110)	80% (88)	9% (10)	11% (12)
	Not NICE aware (n = 55)	58% (32)	24% (13)	18% (10)
LBP training	Yes (n = 143)	74% (106)	12% (17)	14% (20)
	No (n = 22)	64% (14)	27% (6)	9% (2)
SpA training	Yes (n = 108)	79% (85)	6% (7)	15% (16)
	No (n = 35)	60% (21)	29% (10)	11% (4)
Musculoskeletal experience (years)	<1 (n = 7)	57% (4)	29% (2)	14% (1)
	>1–3 (n = 7)	86% (6)	0% (0)	14% (1)
	>3–5 (n = 10)	70% (7)	10% (1)	20% (2)
	>5–10 (n = 38)	63% (24)	26% (10)	11% (4)
	>10 (n = 103)	77% (79)	10% (10)	14% (14)
Low back pain caseload numbers	<30% (n = 15)	60% (9)	27% (4)	13% (2)
	30% (n = 22)	77% (17)	18% (4)	5% (1)
	40% (n = 26)	65% (17)	12% (3)	23% (6)
	50% (n = 27)	63% (17)	19% (5)	19% (5)
	60% (n = 36)	81% (29)	14% (5)	6% (2)
	70% (n = 18)	83% (15)	0% (0)	17% (3)
	>70% (n = 21)	76% (16)	10% (2)	14% (3)
NHS employed	Yes (n = 134)	78% (104)	13% (17)	10% (13)
	No (n = 31)	52% (16)	19% (6)	29% (9)
Professional banding	B5 (n = 8)	63% (5)	13% (1)	25% (2)
	B6 (n = 19)	68% (13)	21% (4)	11% (2)
	B7 (n = 60)	73% (44)	18% (11)	8% (5)
	B8a (n = 61)	84% (51)	10% (6)	7% (4)
	B8b (n = 6)	50% (3)	17% (1)	33% (2)
	Not applicable (n = 11)	36% (4)	0% (0)	64% (7)
Referral source[a]	Consultant (n = 70)	70% (49)	16% (11)	14% (10)
	GP (n = 139)	75% (104)	14% (19)	12% (16)
	AHP (n = 93)	73% (68)	16% (15)	11% (10)
	Self-referral (n = 113)	68% (77)	16% (18)	16% (18)
FCP role	YES (n = 87)	77% (67)	11% (10)	11% (10)
	NO (n = 78)	68% (53)	17% (13)	15% (12)
Awareness of NLBRPP	YES (n = 123)	77% (92)	13% (16)	10% (12)
	NO (n = 42)	62% (28)	16% (7)	22% (10)

Abbreviations: AHP, allied health professional; FCP, first contact practitioner; LBP, low back pain; NHS, National Health Service; NICE; National Institute for Health and Care Excellence; NLBRPP, National Low Back and Radicular Pain Pathway; SpA, spondyloarthritis.

[a]Respondents could indicate multiple responses.

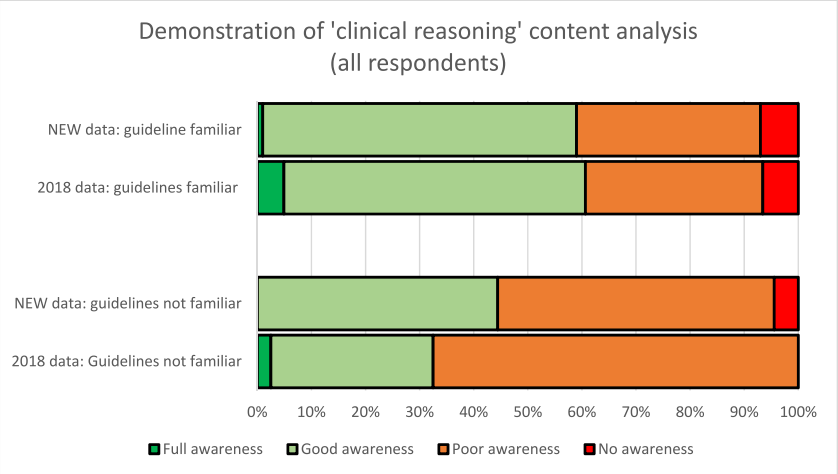

FIGURE 2 Association between familiarity with NICE (2017) guidelines on spondyloarthritis and awareness of features of suspected axial axSpA. axSpA, axial spondyloarthritis

In comparison to Steen et al. (2021) there was a 5% increase in responses demonstrating 'full awareness' or 'good awareness' for 'clinical reasoning' (see Figure 2). However, there was less of a distinction between those familiar and unfamiliar with the NICE (2017) guidelines.

FCPs demonstrated slightly better awareness with 'full awareness' or 'good awareness' of the spondyloarthritis guideline recommendations being demonstrated by 65% (n = 50/77) in 'clinical reasoning' responses.

3.5 | Further subjective screening

Only 6% (n = 8/143) of respondents correctly suspecting axSpA demonstrated 'full awareness' or 'good awareness' of the spondyloarthritis guideline recommendations within 'further subjective screening' responses. 'Full awareness' or 'good awareness' was demonstrated by only 8% (n = 8/98) of respondents familiar with the NICE guidelines, compared to 0% (n = 0/45) of those not familiar (see Figure 3).

In comparison to Steen et al. (2021) this was a reduction of 14% in those demonstrating 'full awareness' or 'good awareness' within 'further subjective screening' responses.

FCPs performed similarly with only 5% (n = 4/77) demonstrating 'full awareness' or 'good awareness' in their responses.

3.6 | Management decision for axSpA vignette

An appropriate management decision of referral for specialist opinion was chosen by 95% (n = 114/120) of respondents who correctly identified the axSpA vignette as their primary diagnosis, with 88% specifying referral to rheumatology. Only 9% (n = 2/23) of respondents who considered axSpA as a secondary diagnosis chose to refer for specialist opinion, with 87% (n = 20/23) choosing physiotherapy management and 4% (n = 1/23) choosing discharge.

These results show improvements from previous survey results with an increase of 3% choosing onward referral and increase in 27% mentioning rheumatology specifically. There was however a 14% reduction in those choosing to refer on when considering axSpA as a secondary diagnosis.

In FCPs, 97% (n = 65/67) of respondents who correctly identified the axSpA vignette as their primary diagnosis referred on for specialist opinion. For respondents who considered axSpA as a secondary diagnosis, only one chose to refer for specialist opinion (10%, n = 1/10), with 80% (n = 8/10) choosing physiotherapy and one (10%, n = 1/10) choosing discharge.

3.7 | Importance ratings of signs, symptoms, and risk factors for axSpA

Equally high importance (using a 1–10-point scale where 1 meant 'not at all important' and 10 meant 'very important') was given to: early morning stiffness, current or history of psoriasis or inflammatory bowel disease, family history of SpA, current or history of uveitis, dactylitis or synovitis, with the most common median 9 (interquartile range 8–10) (see Table 6). Other individual features were given slightly less importance with wider variability within ratings. Least importance and more variability were observed for male gender and buttock pain.

As with previous data, equally high importance was given to raised inflammatory markers and HLA-B27 positivity (median = 8). Improved importance (median = 9 from median = 8) was given to current or history of psoriasis; inflammatory bowel disease, enthesitis, dactylitis, synovitis and uveitis/iritis. Male gender was again given least importance but with an increase in the median rating of importance from 5 to 7.

Results for FCPs were comparable with less importance given to male gender and slightly more importance on buttock pain and non-steroidal anti-inflammatory drug response (see Table 6).

3.8 | Confidence in recognising features of suspected axSpA

Correctly identifying the axSpA vignette was associated with higher self-reported confidence (median, 8) (using a 1–10-point scale where 1 meant 'not at all confident' and 10 meant 'very confident') in

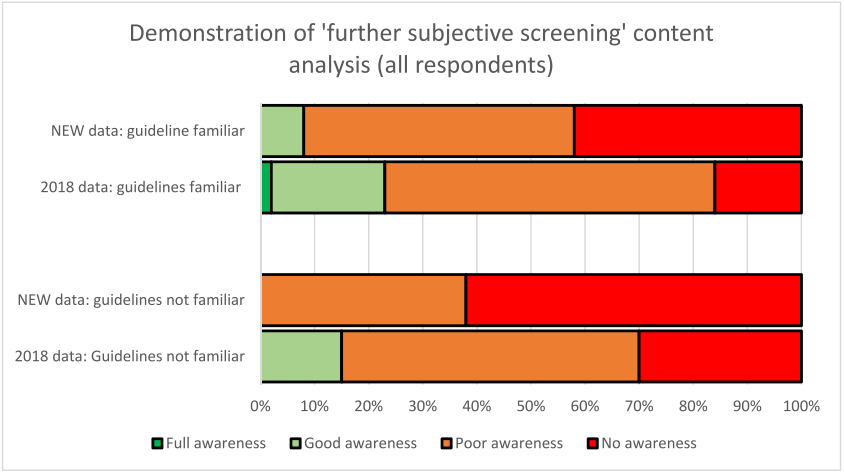

FIGURE 3 Association between familiarity with NICE (2017) guidelines on spondyloarthritis and awareness of features of suspected axSpA. axSpA, axial spondyloarthritis

TABLE 6 Importance ratings assigned to signs, symptoms and risk factors of axSpA

Signs, symptoms, and risk factors of axSpA	Importance level assigned by all respondents (n = 165) Median (IQR)	Importance level assigned by FCP respondents (n = 87) Median (IQR)
Male gender	7 (5–8)	6 (5–8)
Elevated inflammatory markers that is, CRP and ESR	8 (7–10)	8 (7–10)
A positive genetic marker—HLA B27	8 (7–10)	8 (7–10)
Early morning stiffness	9 (8–10)	9 (8–10)
Buttock pain	7 (6–9)	8 (6–9)
Response to NSAIDS	8 (7–9)	9 (8–10)
Current of history of psoriasis	9 (8–10)	9 (8–10)
Current or history of inflammatory bowel disease	9 (8–10)	9 (8–10)
Current or history of uveitis/iritis	9 (8–10)	9 (8–10)
Current or history of enthesitis	9 (7–10)	9 (8–10)
Current or history of dactylitis	9 (8–10)	9 (8–10)
Current or history of synovitis	9 (8–10)	9 (8–10)
Current or history of other musculoskeletal joint/tendon pain/swelling	8 (7–9)	8 (7–9)
Current or history of genitourinary/gut infection/sexually transmitted infection prior to the start of back pain symptoms	8 (6–10)	8 (6–10)
Family history of inflammatory arthritis	9 (8–10)	9 (8–10)
Family history of psoriasis	8 (7–10)	8 (7–10)
Family history of inflammatory eye conditions	8 (7–10)	8 (7–9)
Family history of inflammatory bowel disease	8 (8–10)	8 (7–9)

Abbreviations: CRP, c-reactive protein; ESR, erythrocyte sedimentation rate; HLA B27, Human leucocyte antigen B27; IQR, inter-quartile range; NSAIDS, Non-steroidal anti-inflammatory drugs.

knowledge of clinical features of IBP, the extra-articular and peripheral features associated with spondyloarthritis (see Figure 4). Self-reported confidence (≥5/10) was relatively high in many respondents (91%) who inaccurately diagnosed the axSpA vignette. Analysis found a median of 7 for knowledge of IBP, 6.5 for peripheral features and 6 for extra-articular feature, although the overall range in self-reported confidence was generally wider (see Figure 4).

In comparison to previous data, the overall median level of reported confidence was unchanged. However, there was greater mismatch with knowledge demonstrated in respondents who inaccurately diagnosed the axSpA vignette, where their self-reported confidence was higher.

For FCPs, the overall level of reported confidence was the same as all respondents, for all features of suspected axSpA. Self-reported

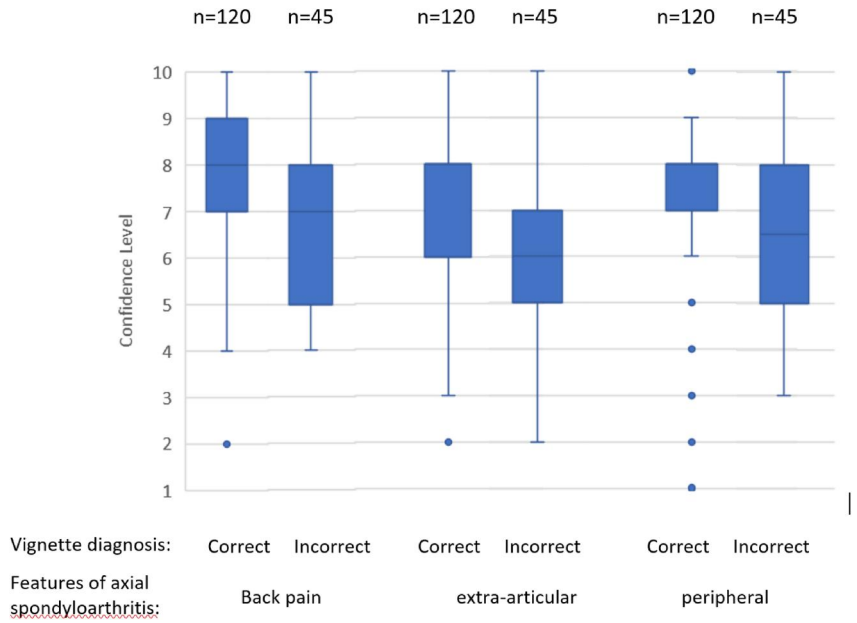

FIGURE 4 Confidence in recognising features of suspected axSpA. axSpA, axial spondyloarthritis

confidence was similar (90% reported ≥5/10 confidence levels) in those who inaccurately diagnosed the axSpA vignette. A median of 8 for knowledge of peripheral features, 7.5 for IBP and 7 for extra-articular features was observed, although the overall range was also generally wider.

3.9 | Knowledge of features of inflammatory back pain

Only 28% ($n = 46/165$) of respondents recognised all nine features of IBP based on a combination of ASAS (Rudwaleit et al., 2009; Sieper, van der Heijde et al., 2009), NICE (2017) and Berlin criteria (Rudwaleit et al., 2006) (see Table 7). The most recognised feature was early morning stiffness identified by 92% ($n = 151/156$). NICE guidance baseline criteria (2/2) (see Table 1) was identified by 79% of respondents. Only 51% identified all additional NICE (2017) referral criteria (4/4) and 82% identified three additional referral criteria (3/4), whereby HLA-B27 testing was then recommended.

Higher recognition of the features of IBP was strongly associated with working in the NHS, prior education on spondyloarthritis and treating GP referred patients. There was a smaller, but positive, association with prior LBP education, familiarity with the NICE (2017) guidance, treating self-referred patients and knowledge of the national low back and radicular pain pathway (NHS England, 2017) (see Table 7).

Results were comparable to previous data for recognising all features of IBP (9/9) with slightly higher recognition (+5%) of early morning stiffness as the most recognised feature. There was a 15% improvement in identifying both NICE guidance 'baseline referral criteria' (2/2), 7% improvement identifying all four additional NICE (2017) referral criteria (4/4) and 12% in those identifying three criteria.

Higher recognition of the features of IBP was similarly associated with familiarity with the NICE (2017) guidance, working in the NHS, prior education on spondyloarthritis and treating GP referred patients.

FCPs showed better recognition of all features of IBP, except chronic symptom duration (see Table 7).

4 | DISCUSSION

This UK survey re-evaluated musculoskeletal physiotherapists' awareness, knowledge, and confidence in recognising axial spondyloarthritis (Steen et al., 2021) following awareness and education campaigns on axSpA recognition and considering FCP roles now taking a shared role in musculoskeletal assessments in many GP practices. Analysis included evaluation of diagnostic clinical reasoning and management decisions on a range of LBP presentations, which included axSpA, NSLBP and radicular pain. Evaluation included levels of awareness of clinical guidance, knowledge of features of suspected axSpA, and associations with demographic characteristics.

The survey found misplaced confidence alongside limited knowledge and awareness of the features of IBP, associated extra-articular conditions and peripheral features important in suspecting axSpA. Results indicate that screening for axSpA is still not core knowledge in musculoskeletal clinical practice (Steen et al., 2021). The findings reflect Canadian physiotherapy research where ankylosing spondylitis was least recognised in an online survey examining recognition of new onset rheumatoid arthritis, osteoarthritis, ankylosing spondylitis and mechanical LBP (Feldman et al., 2020). Like the current study, referral to rheumatology was also suboptimal, with many respondents who correctly identified the ankylosing spondylitis presentation failing to refer on (Feldman et al., 2020).

TABLE 7 Proportion of respondents identifying features of inflammatory back pain and relationship to demographic variables

	Features of inflammatory back pain													
Respondents demographics	Insidious onset of back pain	Symptom duration >3 months	Age of onset <45	Nocturnal pain worse in the 2nd half of the night resulting in awakening	Pain relieved by exercise	Pain not improved with rest	Pain relieved by NSAID'S within 48 h	Presence of buttock pain	Morning back stiffness lasting >30 min	RF negative	Anti-CCP negative	ANA negative	HLAB27 positive	Inflammatory markers raised
All data (%/*n*) (*n* = 165)	76% (126)	82% (135)	87% (144)	84% (138)	84% (138)	71% (117)	79% (131)	63% (104)	92% (151)	12% (17)	14% (23)	3% (5)	90% (149)	84% (139)
NICE familiar (*n* = 110)	75% (83)	85% (93)	91% (100)	91% (100)	86% (95)	72% (79)	84% (92)	68% (75)	95% (104)	15% (17)	17% (19)	4% (4)	92% (101)	82% (90)
NICE not familiar (*n* = 55)	78% (43)	76% (42)	80% (44)	69% (38)	78% (43)	69% (38)	71% (39)	53% (29)	85% (47)	4% (2)	7% (4)	2% (1)	87% (48)	89% (49)
FCP (*n* = 87)	79% (69)	80% (70)	90% (78)	92% (80)	87% (76)	77% (67)	89% (77)	72% (63)	94% (82)	17% (15)	15% (13)	5% (4)	94% (82)	85% (74)
Not a FCP (*n* = 78)	73% (57)	83% (65)	85% (66)	74% (58)	79% (62)	64% (50)	69% (54)	53% (41)	88% (69)	5% (4)	13% (10)	1% (1)	86% (67)	83% (65)
LBP training (*n* = 143)	75% (107)	81% (116)	89% (127)	86% (123)	85% (122)	71% (102)	80% (114)	66% (95)	93% (133)	10% (15)	13% (18)	2% (3)	91% (130)	85% (122)
No LBP training (*n* = 22)	86% (19)	86% (19)	77% (17)	68% (15)	73% (16)	68% (15)	77% (17)	41% (9)	82% (18)	18% (4)	23% (5)	9% (2)	86% (19)	77% (17)
SpA training (*n* = 108)	75% (81)	81% (87)	93% (100)	90% (97)	89% (96)	71% (77)	86% (93)	69% (75)	94% (101)	11% (12)	13% (14)	3% (3)	94% (101)	90% (97)
No SpA training (*n* = 35)	74% (26)	83% (29)	77% (27)	74% (26)	74% (26)	71% (25)	60% (21)	57% (20)	91% (32)	9% (3)	11% (4)	0% (0)	83% (29)	49% (17)
NLBRPP aware (*n* = 123)	76% (93)	85% (105)	88% (108)	90% (111)	82% (101)	73% (90)	79% (97)	65% (80)	92% (113)	15% (18)	15% (18)	3% (4)	89% (110)	82% (101)
NLBRPP not aware (*n* = 42)	79% (33)	71% (30)	86% (36)	64% (27)	88% (37)	64% (27)	81% (34)	57% (24)	90% (38)	2% (1)	12% (5)	2% (1)	93% (39)	90% (38)
NHS	79% (106)	82% (110)	88% (118)	87% (116)	85% (114)	73% (98)	82% (110)	67% (90)	93% (125)	13% (17)	15% (20)	4% (5)	93% (125)	84% (113)
No NHS	65% (20)	81% (25)	84% (26)	71% (22)	77% (24)	61% (19)	68% (21)	45% (14)	84% (26)	6% (2)	10% (3)	0% (0)	77% (24)	84% (26)
GP referrals	77% (107)	83% (116)	88% (123)	85% (118)	85% (118)	71% (99)	82% (114)	62% (86)	91% (127)	12% (16)	15% (21)	4% (5)	93% (129)	87% (121)
No GP eferrals	73% (19)	73% (19)	81% (21)	77% (20)	77% (20)	69% (18)	65% (17)	69% (18)	92% (24)	12% (3)	8% (2)	0% (0)	77% (20)	69% (18)
Self-referrals	74% (84)	81% (91)	89% (101)	88% (99)	84% (95)	69% (78)	81% (91)	65% (73)	92% (104)	12% (14)	15% (17)	4% (5)	90% (102)	86% (97)
No self-referrals	81% (42)	85% (44)	83% (43)	75% (39)	83% (43)	75% (39)	77% (40)	60% (31)	90% (47)	10% (5)	12% (6)	0% (0)	90% (47)	81% (42)
Professional grade: B5	63% (5)	100% (8)	63% (5)	63% (5)	75% (6)	38% (3)	88% (7)	25% (2)	88% (7)	25% (2)	25% (2)	0% (0)	88% (7)	88% (7)

(Continues)

TABLE 7 (Continued)

Respondents demographics	Features of inflammatory back pain													
	Insidious onset of back pain	Symptom duration >3 months	Age of onset <45	Nocturnal pain worse in the 2nd half of the night resulting in awakening	Pain relieved by exercise	Pain not improved with rest	Pain relieved by NSAID'S within 48 h	Presence of buttock pain	Morning back stiffness lasting >30 min	RF negative	Anti-CCP negative	ANA negative	HLAB27 positive	Inflammatory markers raised
B6	89% (17)	84% (16)	79% (15)	79% (15)	84% (16)	74% (14)	84% (16)	63% (12)	89% (17)	0% (0)	5% (1)	5% (1)	89% (17)	89% (17)
B7	77% (46)	75% (45)	90% (54)	87% (52)	85% (51)	80% (48)	77% (46)	60% (36)	97% (58)	10% (6)	12% (7)	2% (1)	90% (54)	88% (53)
B8a	79% (48)	85% (52)	92% (56)	90% (55)	92% (56)	74% (45)	82% (50)	82% (50)	92% (56)	16% (10)	18% (11)	5% (3)	95% (58)	80% (49)
B8b	83% (5)	83% (5)	67% (4)	67% (4)	33% (2)	50% (3)	83% (5)	17% (1)	83% (5)	0% (0)	0% (0)	0% (0)	67% (4)	50% (3)
Other	45% (5)	82% (9)	91% (10)	64% (7)	64% (7)	36% (4)	64% (7)	27% (3)	73% (8)	9% (1)	18% (2)	0% (0)	82% (9)	91% (10)
# of back pain clients: <30%	73% (11)	87% (13)	87% (13)	67% (10)	73% (11)	67% (10)	80% (12)	47% (7)	73% (11)	0% (0)	7% (1)	7% (1)	100% (15)	87% (13)
30%	82% (18)	73% (16)	86% (19)	82% (18)	100% (22)	91% (20)	77% (17)	59% (13)	100% (22)	14% (3)	14% (3)	0% (0)	86% (19)	100% (22)
40%	73% (19)	77% (20)	88% (23)	88% (23)	77% (20)	54% (14)	73% (19)	58% (15)	85% (22)	19% (5)	23% (6)	12% (3)	88% (23)	73% (19)
50%	81% (22)	89% (24)	89% (24)	100% (27)	89% (24)	74% (20)	78% (21)	74% (20)	89% (24)	4% (1)	19% (5)	0% (0)	85% (23)	78% (21)
60%	72% (26)	86% (31)	86% (31)	89% (32)	78% (28)	64% (23)	81% (29)	78% (28)	94% (34)	19% (7)	19% (7)	3% (1)	92% (33)	81% (29)
70%	83% (15)	67% (12)	89% (16)	67% (12)	78% (14)	78% (14)	83% (15)	50% (9)	94% (17)	0% (0)	0% (0)	0% (0)	100% (18)	89% (16)
>70%	71% (15)	90% (19)	86% (18)	76% (16)	90% (19)	76% (16)	86% (18)	57% (12)	100% (21)	14% (3)	5% (1)	0% (0)	86% (18)	90% (19)
Years of experience: <1	71% (5)	100% (7)	71% (5)	43% (3)	71% (5)	57% (4)	100% (7)	14% (1)	71% (5)	14% (1)	14% (1)	0% (0)	86% (6)	86% (6)
>1–3	71% (5)	86% (6)	86% (6)	100% (7)	86% (6)	57% (4)	86% (6)	71% (5)	100% (7)	14% (1)	29% (2)	14% (1)	100% (7)	100% (7)
>3–5	90% (9)	90% (9)	90% (9)	80% (8)	90% (9)	80% (8)	100% (10)	50% (5)	100% (10)	10% (1)	10% (1)	10% (1)	90% (9)	100% (10)
>5–10	71% (27)	84% (32)	87% (33)	82% (31)	84% (32)	74% (28)	71% (27)	66% (25)	95% (36)	5% (2)	18% (7)	0% (0)	79% (30)	82% (31)
>10	78% (80)	79% (81)	88% (91)	86% (89)	83% (86)	71% (73)	79% (81)	66% (68)	90% (93)	14% (14)	12% (12)	3% (3)	94% (97)	83% (85)

Abbreviations: #, number; ANA, Antinuclear Antibodies; Anti-CCP, anti-cyclic citrullinated peptide; FCP, First Contact Practitioner; GP, general practitioner; LBP, low back pain; NHS, National Health Service; NICE, National Institute for Health and Care Excellence; NLBRPP, National Low Back and Radicular Pain Pathway; RF, Rheumatoid Factor; SpA, spondyloarthritis.

Diagnostic delays in axSpA are already significant (Hay et al., 2022) with substantial physical, psychological, and socioeconomic burdens on those affected (Strand & Singh, 2017). Webb et al. (2020) identified four key areas of concern: public awareness; recognition of the signs, symptoms, and risk factors of axSpA in community physiotherapy and primary care; referral processes in primary and secondary care; and diagnostic inconsistencies within rheumatology services. The current study and previous findings (Steen et al., 2021) support the view that musculoskeletal physiotherapists and FCPs are an important target for professional education on axSpA recognition and referral.

Presentations of axSpA are diverse and complex, requiring targeted history-taking and investigative clinical skills. Physiotherapists in FCP roles generally demonstrated better recognition of axSpA vignettes although there was still some lack of adequate knowledge and awareness of the key features and referral guidance. FCP roles appear likely to support earlier recognition, however, also indicate the need for targeted education on features, knowledge of appropriate investigations and better awareness of the referral decision algorithm provided by NICE guidance on spondyloarthritis (2017).

The continued inadequate ability to identify axSpA and limited awareness of IBP, associated extra-articular conditions and peripheral manifestations found by this study and previously by Steen et al. (2021) reflect similar findings within other key professions in primary and secondary care. Survey research found only 6% of GPs considered all peripheral and extra-articular features of axSpA in their history-taking (Jois et al., 2008). Tangrungruengkit et al. (2016) found only 5% of GPs and 9.4% of non-rheumatologists identified all features indicative of IBP. Similarly, limited confidence in the assessment and management of IBP by GPs has been reported (Adizie et al., 2018). A UK survey of osteopaths and chiropractors also highlighted a lack of awareness and confidence in aspects of screening fo axSpA (Yong et al., 2019).

As the cardinal feature of axSpA, failure to recognise features of IBP and the misattribution of axSpA presentations to persistent NSLBP found in this study reflect the difficulties that other healthcare professionals have with differentiating symptoms of IBP from NSLBP (Adizie et al., 2018; Mathieson et al., 2016). Van Onna et al. (2014) found that 40% of GPs were unfamiliar with IBP symptoms and differentiation from symptoms of NSLBP. Seo et al. (2015) found that 59% of axSpA patients had previously been misdiagnosed, where 62% were labelled as NSLBP. With FCPs increasingly sharing GP musculoskeletal caseloads, ensuring their diagnostic differentiation skills is essential. Recently published physiotherapy capabilities guidance for suspecting inflammatory conditions in musculoskeletal clinical practice (Chambers et al., 2021) and inclusion in Musculoskeletal Standards of Care (CSP, 2021b) quality statements also help support knowledge development and better recognition.

One factor influencing axSpA recognition may be the paradigm shift within back pain assessments to reduce over-medicalisation and unnecessary imaging (Hall et al., 2021) and the strong emphasis on a psychologically informed, biopsychosocial approach to persistent back pain problems (Foster et al., 2018). The current study found that there was still a lack of appropriate further subjective screening that would be expected of physiotherapists undertaking back pain assessments (Maher et al., 2017). Findings suggest that questioning to identify possible axSpA needs greater profiling in persistent LBP assessment literature which has been virtually non-existent until recently (McCrum, 2020).

Current results suggest there also remains a lack of awareness of when to refer to rheumatology. Many respondents who cited axSpA as a secondary diagnosis in the suspected axSpA vignette inappropriately chose physiotherapy treatment or self-management rather than onward referral to rheumatology in accordance with referral guidance (NICE, 2017). This finding was concerning given known diagnostic delays, campaigns to improve timely referral and the importance of early intervention.

Educational strategies directed at increasing awareness and referral of axSpA was supported by current findings that demonstrated that better recognition and onward referral of the suspected axSpA was associated with familiarity with guidelines (NICE, 2016, 2017) and previous professional education on spondyloarthritis. This association echoes previous research that demonstrates the value of professional education on spondyloarthritis screening and referral combined with an IBP pathway, to access specialist opinion on axSpA diagnosis, for reducing diagnostic delays (Adshead et al., 2015, 2020). Furthermore, improved axSpA history-taking, awareness and referral considerations in GP registrars following a series of educational interventions has been demonstrated (van Onna et al., 2017).

Current findings found reduced awareness of guidelines, specifically designed to improve knowledge and awareness of axSpA, and a poor application of guidance recommendations (NHS England, 2017; NICE, 2017). This suggested that the intentions for improved clinical practice through published guidance and various educational and awareness programs (NASS, 2020; Webb et al., 2020) on axSpA have not adequately filtered through to musculoskeletal practice and continued education is needed. Adshead et al. (2020) highlights the importance and value of local healthcare providers addressing education and awareness of axSpA, both in primary and secondary care settings, to improve referral.

In the current study, better diagnostic accuracy was also associated with GP referred caseloads, working within the NHS, and greater than 60% LBP caseloads. Diagnostic accuracy in the axSpA vignettes was also associated with more clinical experience, evident with physiotherapists in FCP and higher clinical professional grade roles (Band 7/8a). The findings suggest the importance of ensuring targeted educational campaigns and guideline awareness go beyond NHS settings, particularly to less experienced clinicians and those with lower caseloads of LBP.

Although respondents were confident in recognising the clinical features of spondyloarthritis, the results suggest that this confidence may be misplaced. A significant number of self-reported 'confident'

respondents failed to recognise the axSpA vignettes, with many demonstrating poor awareness and knowledge of the signs, symptoms, and risk factors for axSpA in their clinical reasoning responses. Some awareness of previously published classification strategies and IBP features was demonstrated. Nonetheless, the lack of application of these diagnostic criteria or of NICE (2017) referral criteria evident within the survey responses suggested that knowledge of these criteria are yet to penetrate adequately into musculoskeletal clinical practice. A paucity of journal articles on axSpA published in physiotherapy literature may provide some account for this issue (McCrum, 2020).

Respondents showed most confidence with IBP signs and symptoms compared with other associated features of spondyloarthritis. Most respondents identified at least three key clinical features of IBP yet showed limited awareness of the same features within the axSpA vignettes. IBP is considered the most recognisable aspect of axSpA, with a sensitivity of around 75% (Adizie et al., 2018) and forms a portion of the axSpA referral criteria (NICE, 2017; Sieper, Rudwaleit et al., 2009). However, IBP presentations were not being adequately recognised in the axSpA vignettes and indicates the need to give profile to an IBP presentation as a differential diagnosis in LBP patients.

Identification of the associated extra-articular and peripheral features of axSpA were also poorly demonstrated in the axSpA vignettes despite high respondent confidence in screening and recognition. This provides further support for the concerns raised by Webb et al. (2020), and it is vital that musculoskeletal physiotherapists are skilled in assessing for peripheral and extra-articular features that can occur with axSpA.

In the 'direct' test of knowledge, respondents demonstrated good ability to recognise certain features of IBP and axSpA when they were embedded in a list for selection despite poor applied knowledge in the vignettes. Results found prolonged morning stiffness, as a sign of inflammatory disease, was well embedded in physiotherapy screening practice as did a recent survey of GPs (Adizie et al., 2018). High importance was given to pathology investigations, including elevated inflammatory markers and HLA B27 positivity. Raised inflammatory markers are important for suspicion of axSpA, but they lack sensitivity and specificity (Almodóvar et al., 2014) with 50%–60% of people with axSpA having normal results (Rudwaleit et al., 2009). Raised inflammatory markers have become synonymous with inflammatory disease despite often not being a feature of spondyloarthritis and an issue that may delay diagnosis (NICE, 2017).

Similarly, the high importance given to HLA-B27 positivity by respondents may indicate its profile in some diagnostic criteria (Sieper, Rudwaleit et al., 2009; Sieper, van der Heijde et al., 2009). Although a known risk factor for axSpA, HLA-B27 positivity has a low specificity (Almodóvar et al., 2014) and is present in the healthy general population, with 8% positivity in Europeans (Sieper & Poddubnyy, 2017) and many people with axSpA testing negative. This has led to Barnett et al. (2020) discussing a 'lost tribe' of undiagnosed axSpA patients with normal inflammatory markers and HLA B27 negativity. NICE (2017) highlighted the importance of not ruling in or out possible axSpA based on inflammatory marker results and HLA-B27 positivity or negativity. There is also concern to debunk myths that have meant people were dismissed as having axSpA because of negative blood tests or female gender (NICE, 2017). Our current results highlight this issue in physiotherapists' clinical thinking and indicates a need for continuing education on understanding the role and interpretation of inflammatory marker results, risk factors such as HLA-B27 positivity and gender and how they influence suspicion and referral of axSpA presentations.

FCPs demonstrated more awareness and knowledge on recognition and referral of axSpA than other musculoskeletal physiotherapists. Reasons may include the training and continued professional development required of FCPs (Mercer & Hensmen-Crook, 2022). FCPs had undertaken more spondyloarthritis training, were more aware of all spondyloarthritis guidance, had more professional experience and higher professional banding levels. This finding highlighted the importance and value of professional education on axSpA. Findings also suggested that FCP roles may reduce diagnostic delays. Nevertheless, FCPs are still an important target along with other healthcare professionals to support earlier diagnosis of axSpA.

4.1 | Limitations

As with the original survey (Steen et al., 2021) there were limitations to consider. The sample remained one of convenience and self-selection which can introduce respondent bias. Respondent numbers remained low compared to the number of practicing physiotherapists assessing back pain presentations. A response rate of 165 physiotherapists, including 87 FCPs, is not expected to be representative of all UK musculoskeletal physiotherapists or FCPs. Respondents again tended to have more specialised musculoskeletal experience which may be explained through the targeted recruitment strategy. Respondents were generally of higher banding (Band 7/8a) and more experienced due to active targeting of FCPs. Analysis considered people with a special interest in rheumatology and those who had previously undertaken the survey in 2018.

Regardless of these limitations, the re-evaluation has highlighted the ongoing need for raising awareness of axSpA, and the responsibility that musculoskeletal clinicians must know how to screen, and when to refer suspected axSpA to ensure timely specialist assessment and better outcomes (McCrum, 2019).

5 | CONCLUSIONS

This repeat study, with an additional focus on FCP roles, shows that screening for axSpA and knowing when to refer is still not yet core knowledge in musculoskeletal clinical practice. Overall physiotherapists, and to a lesser degree those in FCP roles, continue to show a

lack of awareness and knowledge of features and risk factors of axSpA and some misplaced confidence in screening and knowledge levels. This impacts diagnostic delays and mismanagement as NSLBP. Continued awareness campaigns and professional education to make screening for axSpA and when to refer to rheumatology a universal capability in musculoskeletal practice is essential.

AUTHOR CONTRIBUTIONS

Eliza Steen: Conceptualisation and research implementation; literature search; data extraction; data analysis; manuscript presentation. **Melinda Cairns**: Conceptualisation; ethics process; analysis integrity and interpretation; manuscript preparation. **Carol McCrum**: Conceptualisation; analysis integrity and interpretation; manuscript preparation.

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CONFLICT OF INTEREST

The authors declare that they have no competing interests.

DATA AVAILABILITY STATEMENT

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

ETHICS STATEMENT

Ethical approval was granted from the University of Hertfordshire, Health and Human Sciences Ethics Committee LMS/SF/UH/04576 (1).

CONSENT FOR PARTICIPATION

Participation was self-selected and anonymous. After being directed to the participant information sheet, informed consent was assumed through completion of the survey.

ORCID

Eliza Steen https://orcid.org/0000-0003-4120-8388

REFERENCES

Adizie, T., Elamanchi, S., Prabu, A., Pace, A. V., Laxminarayan, R., & Barkham, N. (2018). Knowledge of features of inflammatory back pain in primary care in the West Midlands: A cross-sectional survey in the United Kingdom. *Rheumatology International*, *38*(10), 1859–1863. https://doi.org/10.1007/s00296-018-4058-5

Adshead, R., Donnelly, S., Knight, P., & Tahir, H. (2020). Axial spondyloarthritis: Overcoming the barriers to early diagnosis—An early inflammatory back pain service. *Current Rheumatology Reports*, *22*(10), 1–8. https://doi.org/10.1007/s11926-020-00923-6

Adshead, R., Tahir, H., & Donnelly, S. (2015). A UK best practice model for diagnosis and treatment of axial spondyloarthritis. *European Medical Journal Rheumatology*, *2*(1), 103–110. Retrieved August 29, 2022, from https://www.emjreviews.com/rheumatology/article/a-uk-best-practice-model-for-diagnosis-and-treatment-of-axial-spondyloarthritis/

Almodóvar, R., Ríos, V., Ocaña, S., Gobbo, M., Casas, M.-L., Zarco-Montejo, P., & Juanola, X. (2014). Association of biomarkers of inflammation, cartilage and bone turnover with gender, disease activity, radiological damage and sacroiliitis by magnetic resonance imaging in patients with early spondyloarthritis. *Clinical Rheumatology*, *33*(2), 237–241. https://doi.org/10.1007/s10067-013-2349-5

Barnett, R., Ingram, T., & Sengupta, R. (2020). Axial spondyloarthritis 10 years on: Still looking for the lost tribe. *Rheumatology (Oxford)*, *59*(1), 25–37. https://doi.org/10.1093/rheumatology/keaa749

Chambers, H., Gregory, W., & McCrum, C. (2021). Rheumatology physiotherapy capabilities framework: Screening, assessment and specialist management. Retrieved August 29, 2022, from https://www.macpweb.org/write/MediaUploads/CIGs/Rheumatology/Rheumatology_Physiotherapy_Capabilities_Framework_vFINAL_Interactive.pdf

Chartered Society of Physiotherapy. (2021a). First contact physiotherapy. Principles of effective and sustainable First Contact Physiotherapy services. Retrieved August 29, 2022, from https://www.csp.org.uk/publications/principles-first-contact-physiotherapy-resource-support-service-evaluation

Chartered Society of Physiotherapy. (2021b). Musculoskeletal physiotherapy service standards. Retrieved August 29, 2022, from https://www.csp.org.uk/system/files/publication_files/001900_MSK%20service%20standards_A4_Final4.pdf

Derakhshan, M. H., Pathak, H., Cook, D., Dickinson, S., Siebert, S., & Gaffney, K. (2018). Services for spondyloarthritis: A survey of patients and rheumatologists. *Rheumatology*, *57*(6), 987–996. https://doi.org/10.1093/rheumatology/kex518

Dougados, M., Linden, S. V. D., Juhlin, R., Huitfeldt, B., Amor, B., Calin, A., Cats, A., Dijkmans, B., Olivieri, I., Pasero, G., Veys, E., & Zeidler, H. (1991). The European Spondyloarthropathy Study Group preliminary criteria for the classification of spondyloarthropathy. *Arthritis & Rheumatism*, *34*(10), 1218–1227. https://doi.org/10.1002/art.1780341003

Feldman, D. E., Bernatsky, S., Orozco, T., El-Khoury, J., Desmeules, F., Laliberte, M., Perreault, K., Grad, R., Zummer, M. & Woodhouse, L. (2020). Physical therapists' ability to distinguish between inflammatory and noninflammatory arthritis and to appropriately refer patients to a rheumatologist. *Arthritis Care and Research*, *72*(2), 1747–1754. https://doi.org/10.1002/acr.24081

Foster, N. E., Anema, J. R., Cherkin, D., Chou, R., Cohen, S. P., Gross, D. P., Ferreira, P. H., Fritz, J. M., Koes, B. W., Peul, W., Turner, J. A., Buchbinder, R., Hartvigsen, J., Foster, N. E., Underwood, M., van Tulder, M., & Maher, C. G. (2018). Prevention and treatment of low back pain: Evidence, challenges, and promising directions. *The Lancet*, *391*(10137), 2368–2383. https://doi.org/10.1016/S0140-6736(18)30489-6

Hall, A. M., Aubrey-Bassler, K., Thorne, B., & Maher, C. G. (2021). Do not routinely offer imaging for uncomplicated low back pain. *British Medical Journal*, *372*(291), 1–7. https://doi.org/10.1136/bmj.n291

Hay, C. A., Packham, J., Ryan, S., Mallen, C. D., Chatzixenitidis, A., & Prior, J. A. (2022). Diagnostic delay in axial spondyloarthritis: A systemic review. *Clinical Rheumatology*, *41*(7), 1939–1950. https://doi.org/10.1007/s10067-022-06100-7

Jois, R. N., Macgregor, A. J., & Gaffney, K. (2008). Recognition of inflammatory back pain and ankylosing spondylitis in primary care. *Rheumatology*, *47*(9), 1364–1366. https://doi.org/10.1093/rheumatology/ken224

Kiltz, U., Landewe, R. B. M., van der Heijde, D., Rudwaleit, M., Weisman, M. H., Akkoc, N., Boonen, A., Brandt, J., Carron, P., Dougados, M., Gossec, L., Jongkees, M., Machado, P. M., Marzo-Ortega, H., Molto, A., Navarro-Compan, V., Niederman, K., Sampaio-Barros, P. D., Slobodin, G., …, & Braun, J. (2020). Development of ASAS quality standards to improve the quality of health and care services for patients with axial spondyloarthritis. *Annals of the Rheumatic Diseases*, *79*(2), 193–201. https://doi.org/10.1136/annrheumdis-2019-216034

Kirwan, P., March, J., & Duffy, T. (2019). D18: SCREEND'EM before you TREAT'EM a clinical tool to help identify spondyloarthropathy in patients with tendinopathy. Retrieved August 29, 2022, from https://www.researchgate.net/publication/332275130_D18_SCREEND%27EM_BEFORE_YOU_TREAT%27EM_A_CLINICAL_TOOL_TO_HELP_IDENTIFY_SPONDYLOARTHROPATHY_IN_PATIENTS_WITH_TENDINOPATHY?enrichId=rgreq-0e6f071dc4eb1c45241ba07bf9516c60-XXX%26enrichSource=Y292ZXJQYWdlOzMzMjI3NTEzMDtBUzo3NDU0MTMzMDQ5MTgwMTZAMTU1NDczMTc4OTA2OQ%3D%3D%26el=1_x_2%26_esc=publicationCoverPdf

MacMillan, A., Croser, A., Clark, Z., McCrum, C., & Gaffney, K. (2021). Masterclass: Axial spondyloarthritis for osteopaths and manual therapists. *International Journal of Osteopathic Medicine*, *41*, 45–56. https://doi.org/10.1016/j.ijosm.2021.03.005

Maher, C., Underwood, M., & Buchbinder, R. (2017). Non-specific low back pain. *The Lancet*, *389*(10070), 736–747. https://doi.org/10.1016/S0140-6736(16)30970-9

Mathieson, H. R., Merashili, M., Gaffney, K., & Marzo-Ortega, H. (2016). Poor awareness of inflammatory back pain and axial spondyloarthritis among secondary care specialists. *Clinical Rheumatology*, *35*(10), 2627–2628. https://doi.org/10.1007/s10067-016-3305-y

McCrum, C. (2019). When to suspect spondyloarthritis: A core skill in musculoskeletal clinical practice. *Musculoskeletal Science and Practice*, *44*, 102079. https://doi.org/10.1016/j.msksp.2019.102079

McCrum, C. (2020). Delaying diagnosis: Inflammatory back pain and other features of suspected spondyloarthritis have been rarely featured in musculoskeletal health professions literature. *British Society of Rheumatology*, *59*(2). https://doi.org/10.1093/rheumatology/keaa109.041

McKenna, F. (2010). Spondyloarthritis. Retrieved July 11, 2018, from https://www.arthritisresearchuk.org/health-professionals-and-students/reports/hands-on/hands-on-spring-2010.aspx

Mercer, C., & Hensmen-Crook, A. (2022). Editorial: First contact practitioners – New opportunities for musculoskeletal expertise in primary care. *Musculoskeletal Science and Practice*, *62*, 102623. https://doi.org/10.1016/j.msksp.2022.102623

National Axial Spondyloarthritis Society. (2020). Axial spondyloarthritis services in England. A national inquiry. Retrieved August 29, 2022, from https://nass.co.uk/wp-content/uploads/2020/01/Axial-Spondyloarthritis-Services-in-England-FINAL.pdf

National Institute for Health and Care Excellence. (2016). Low back pain and sciatica in over 16s: Assessment and management (NG 59). Retrieved December 07, 2020, from https://www.nice.org.uk/guidance/ng59

National Institute for Health and Care Excellence. (2017). Spondyloarthritis in over 16's: Recognition, diagnosis and management (NG65). Retrieved December 07, 2020, from https://www.nice.org.uk/guidance/ng65

NHS England. (2017). National back and radicular pain pathway. Retrieved December 07, 2020, from https://ba17bc65-2f2f4a2f9427cd68a3685f52.filesusr.com/ugd/dd7c8a_caf17c305a5f4321a6fca249dea75ebe.pdf

NHS England and NHS Improvement. (2019). Elective care high impact interventions: First contact practitioner for MSK services. Retrieved August 29, 2022, from https://www.england.nhs.uk/wp-content/uploads/2019/05/elective-care-high-impact-interventions-first-contact-practitioner-msk-services-specification.pdf

Rudwaleit, M., Feldtkeller, E., & Sieper, J. (2006). Easy assessment of axial spondyloarthritis (early ankylosing spondylitis) at the bedside. *Annals of the Rheumatic Diseases*, *65*(9), 1251–1252. https://doi.org/10.1136/ard.2005.051045

Rudwaleit, M., van der Heijde, D., Landewé, R., Listing, J., Akkoc, N., Brandt, J., Braun, J., Chou, C. T., Collantes-Estevez, E., Dougados, M., Huang, F., Gu, J., Khan, M. A., Kirazli, Y., Maksymowych, W. P., Mielants, H., Sorensen, I. J., Ozgocmen, S., Roussou, E., … Siper, J. (2009). The development of Assessment of Spondyloarthritis International Society classification criteria for axial spondyloarthritis (part II): Validation and final selection. *Annals of the Rheumatic Diseases*, *68*(6), 777–783. https://doi.org/10.1136/ard.2009.108233

Seo, M. R., Baek, H. L., Yoon, H. H., Ryu, H. J., Choi, H.-J., Baek, H. J., & Ko, K.-P. (2015). Delayed diagnosis is linked to worse outcomes and unfavourable treatment responses in patients with axial spondyloarthritis. *Clinical Rheumatology*, *34*(8), 1397–1405. https://doi.org/10.1007/s10067-014-2768-y

Sieper, J., & Poddubnyy, D. (2017). Axial spondyloarthritis. *The Lancet*, *390*(10089), 73–84. https://doi.org/10.1016/S0140-6736(16)31591-4

Sieper, J., Rudwaleit, M., Baraliakos, X., Brandt, J., Braun, J., Burgos-Vargas, R., Dougados, M., Hermann, K. G., Landewe, R., Maksymowych, W., & van der Heijde, D. (2009a). The Assessment of SpondyloArthritis International Society (ASAS) handbook: A guide to assess spondyloarthritis. *Annals of the Rheumatic Diseases*, *68*(2), ii1–ii44. https://doi.org/10.1136/ard.2008.104018

Sieper, J., van der Heijde, D., Landewé, R., Brandt, J., Burgos-Vagas, R., Collantes-Estevez, E., Dijkmans, B., Dougados, M., Khan, M. A., Leirisalo-Repo, M., van der Linden, S., Maksymowych, W. P., Mielants, H., Olivieri, I., & Rudwaleit, M. (2009b). New criteria for inflammatory back pain in patients with chronic back pain: A real patient exercise by experts from the Assessment of SpondyloArthritis International Society (ASAS). *Annals of the Rheumatic Diseases*, *68*(6), 784–788. https://doi.org/10.1136/ard.2008.101501

Steen, E., McCrum, C., & Cairns, M. (2021). Physiotherapists' awareness, knowledge and confidence in screening and referral of suspected axial spondyloarthritis: A survey of UK clinical practice. *Musculoskeletal Care*, *19*(3), 306–318. https://doi.org/10.1002/msc.1537

Strand, V., & Singh, J. A. (2017). Evaluation and management of the patient with suspected inflammatory spine disease. *Mayo Clinic Proceedings*, *92*(4), 555–564. https://doi.org/10.1016/j.mayocp.2016.12.008

Tangrungruengkit, M., Srinonprasert, V., & Chiowchanwisawakit, P. (2016). Survey of Thai physicians regarding recognition and management of inflammatory back pain and spondyloarthritis. *Journal of the Medical Association of Thailand*, *99*(1), 40–50.

Van der Heijde, D., Ramiro, S., Landewé, R., Baraliakos, X., Van den Bosch, F., Sepriano, A., Regel, A., Ciurea, A., Dagfinrud, H., Dougados, M., van Gaalen, F., Geher, P., van der Horst-Bruinsma, I., Inman, R. D., Jongkees, M., Kiltz, U., Kvien, T. K., Machado, P. M., Marzo-Ortega, H., & Braun, J. (2017). 2016 update of the ASAS-EULAR management recommendations for axial spondyloarthritis. *Annals of the Rheumatic Diseases*, *76*(6), 978–991. https://doi.org/10.1136/annrheumdis2016-210770

Van Onna, M., Gorter, S., Maiburg, B., Waagenaar, G., & van Tubergen, A. (2017). GPs' patterns of clinical assessment when faced with a patient suspected for spondyloarthritis: A prospective educational intervention study. *BJGP Open*, *1*(1), 1. https://doi.org/10.3399/bjgpopen17X100689

Van Onna, M., Gorter, S., van Meerendonk, A., & van Tubergen, A. (2014). General practitioners' perceptions of their ability to identify and refer patients with suspected axial spondyloarthritis: A qualitative study. *Journal of Rheumatology*, *41*(5), 897–901. https://doi.org/10.3899/jrheum.131293

Webb, D., Zhao, S., Whalley, S., Hamisloton, J., Sengupta, R., & Gaffney, K. (2020). A gold standard time to diagnosis in axial spondyloarthritis:

Consultation document. Retrieved August 29, 2022, from https://nass.co.uk/wp-content/uploads/2020/07/200730-Gold-Standard-Consulation-Document-FINAL-JB_final.pdf

Yong, C. Y., Hamilton, J., Benepal, J., Griffiths, K., Clark, Z. E., Rush, A., Sengupta, R., Martindale, J., & Gaffney, K. (2019). Awareness of axial spondyloarthritis among chiropractors and osteopaths: Findings from a UK web-based survey. *Rheumatology Advances in Practice*, *3*(2), rkz034. https://doi.org/10.1093/rap/rkz034

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