

Conceptions of practice and back pain beliefs among osteopaths in the United Kingdom: a national survey using the Osteo-TAQ and ABS-mp

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Abstract

Background Variation in clinicians' approaches to musculoskeletal care may reflect broader practice orientations that shape clinical reasoning, therapeutic interaction and how care is conceptualised and delivered. The Osteopaths' Therapeutic Approaches Questionnaire (Osteo-TAQ) was developed to measure practitioners' conceptions of practice, yet little is known about how these relate to clinicians' beliefs about back pain. This study aimed to describe the conceptions of practice among UK osteopaths and examine their associations with attitudes and beliefs about back pain.

Methods A national cross-sectional online survey of osteopaths registered and practising in the United Kingdom (UK) was conducted. Participants completed the Osteo-TAQ, comprising two subscales representing Professional Artistry (PA) and Technical Rationality (TR), and the Attitudes to Back Pain Scale for Musculoskeletal Practitioners (ABS-mp). Descriptive statistics were calculated for subscale scores. Internal consistency was assessed using McDonald's omega. Associations between Osteo-TAQ and ABS-mp scores were examined using Pearson's correlation coefficients with 95% confidence intervals.

Results Of 730 survey records generated, 701 represented eligible consenting respondents, of whom 558 provided complete Osteo-TAQ data and were included in the analysis. Participants commonly endorsed both PA (mean 3.24 ± 0.38) and TR (mean 3.05 ± 0.48), indicating frequent endorsement of both constructs at group level. Internal consistency was acceptable (PA $\omega = 0.88$; TR $\omega = 0.85$). The two-factor model was theoretically interpretable; however, parallel analysis supported eight factors and CFA fit indices fell outside conventional thresholds, leaving its structural validity uncertain. TR demonstrated moderate to strong positive associations with biomedical back pain beliefs ($r = 0.61$, 95% CI 0.52 to 0.68), while PA showed smaller inverse associations ($r = -0.17$, 95% CI -0.25 to -0.09) and weak positive associations with psychological dimensions.

Conclusions This national study provides the first large-scale description of UK osteopaths' conceptions of practice. Osteopathic care is characterised by an integration of relational and biomechanical approaches. Conceptions of practice are distinct from, but meaningfully associated with, clinicians' beliefs about back pain and may help explain variation in how osteopathic care is conceptualised, reasoned through and reported. These findings have

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implications for workforce development, professional education, and the organisation of primary care musculoskeletal services.

Keywords Osteopathy · Conceptions of practice · Osteo-TAQ · ABS-mp · Clinical decision-making · Attitude of health personnel · Low back pain · Health workforce · Psychometrics

Introduction

Osteopathy is a statutorily regulated healthcare profession in the United Kingdom (UK) and, in England, is recognised as one of the 14 Allied Health Professions (AHPs) [1]. To practise legally, osteopaths must be registered with the General Osteopathic Council (GOsC), which requires completion of an accredited qualification, engagement in mandatory Continuing Professional Development (CPD), and maintenance of appropriate professional indemnity insurance [2]. As of September 2025, 5,456 practising osteopaths are registered with the GOsC [3]. In the UK, osteopaths predominantly practise in private, community-based primary care settings, where they primarily manage musculoskeletal (MSK) conditions, with low back pain representing the most common reason for consultation [4, 5]. Osteopathic care typically encompasses a combination of manual therapy techniques, exercise and patient education [5]. Patients report high levels of satisfaction with osteopathic care [6]. Outcomes for common MSK conditions are comparable to other conservative treatment options, and adverse events are typically mild and transient in nature [7, 8].

National surveys have described the demographic profile, service characteristics, and employment patterns of UK osteopaths [4, 5, 9]. However, considerably less is known about the practice orientations and therapeutic approaches that underpin how osteopaths conceptualise and deliver their day-to-day osteopathic care. Qualitative research [10, 11] and international survey [12, 13] findings suggest that osteopaths may differ in how they conceptualise their work, prioritise clinical information and enact decision-making in practice. While variation in musculoskeletal care delivery has been described [14], existing workforce surveys provide limited insight into the professional conceptions and self-reported practice orientations that may shape clinical reasoning, therapeutic interaction and care delivery.

Understanding how osteopaths conceptualise and deliver care is increasingly relevant within UK health policy. The 10 Year Health Plan for England promotes a shift toward community-based, preventative care and expanded access to musculoskeletal (MSK) expertise outside hospital settings [15], with workforce expansion in primary care identified as key to reducing demand on general practice and secondary services [16]. The Allied Health Professions Strategy for England highlights the need to optimise AHP deployment across primary and community care, strengthen integration within Integrated Care Systems, and prioritise high-burden conditions such as MSK disorders [17]. Analyses of the UK AHP workforce suggest that successful integration depends not only on workforce growth but on how professional roles are conceptualised and enacted within multidisciplinary teams [18]. MSK conditions are leading causes of disability and healthcare utilisation in England and globally [19, 20]. Although most UK osteopaths practise outside the NHS, profession-specific evidence describing real-world practice is essential for informing workforce planning and integration within MSK care pathways. The Osteopaths' Therapeutic Approaches Questionnaire (Osteo-TAQ) provides a theoretically grounded framework for identifying conceptions of practice to support these aims [15, 16].

Recently, a large international stakeholder investigation identified the process of care and healthcare management as the highest research priorities for the osteopathic profession [21]. These domains reflect the need for a clearer understanding of how osteopathic care is delivered, how practitioners reason and make decisions, and how osteopathy integrates within contemporary healthcare systems [21]. Despite this, there remains limited empirical evidence describing practitioner behaviour, and limited systematic research into how osteopaths conceptualise and deliver care. Generating robust national data on osteopaths' conceptions of practice and clinical attitudes is

therefore essential for addressing these priority areas and informing future service development, workforce planning, and policy engagement.

The Osteo-TAQ measures clinicians' conceptions of practice, derived from grounded theory research [10, 11]. Conception of practice refers to how practitioners understand their knowledge, skills, decision-making, and therapeutic role [10]. This work identified a continuum from Technical Rationality (TR) to Professional Artistry (PA), representing different orientations toward knowledge, uncertainty, and clinical judgement. TR reflects a practitioner-led, biomechanical approach emphasising diagnosis and technical expertise, whereas PA reflects a relational, context-sensitive orientation integrating patient perspectives and psychosocial factors. These conceptions are not mutually exclusive; clinicians typically draw on both to varying degrees depending on context [10, 11]. The Osteo-TAQ underwent qualitative validation, including cognitive interviewing and international expert review, to support content relevance and interpretability [22–24].

Evidence from Australian [12] and French [13] Osteo-TAQ studies suggests that these conceptions represent stable and transferable dimensions of osteopathic practice across healthcare systems. Beyond osteopathy, research in musculoskeletal and primary care settings indicates that clinicians' underlying orientations influence clinical reasoning, communication, and treatment choices. For example, physiotherapists' beliefs and attitudes about pain and treatment orientation have been shown to affect clinical management choices in chronic low back pain [25] and are significantly associated with the selection of interventions for musculoskeletal conditions [26]. Furthermore, attitudes related to low back pain influence decision-making and advice given to patients in a primary care physiotherapy setting [27].

Measuring conception of practice provides insight into how care is understood and enacted, beyond the specific interventions used, with implications for clinical decision-making, workforce development, and integration within primary care musculoskeletal services. The Osteo-TAQ may be used as a descriptive measure of practice orientation rather than a diagnostic tool for judging individual practitioners. At group level, it may inform professional education, CPD, workforce planning and policy discussions by describing variation in osteopathic practice beyond demographic or service-use data alone.

The primary aim of this study was to describe the conceptions of practice of UK osteopaths, conceptualised in terms of Professional Artistry and Technical Rationality, using the Osteo-TAQ. Secondary aims were to examine the internal structure and reliability of the Osteo-TAQ in a national UK sample and to explore associations between conception of practice and clinicians' attitudes and beliefs about back pain, using the Attitudes to Back Pain Scale for Musculoskeletal Practitioners (ABS-mp).

Methods

Study design

This study used a cross-sectional survey design and is reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines [28] and the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) [29]. The survey was administered online via Qualtrics.

Patient and public involvement

Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Setting and participants

Participants were registered osteopaths practising in the UK at the time of data collection. Inclusion criteria required respondents to be currently practising and included all modes of practice (e.g., sole practitioners, associates, clinic owners, multidisciplinary teams). Non-practising registrants and registrants not practising in the UK were excluded. There were no additional exclusion criteria.

Sample size

No formal a priori sample-size calculation or fixed recruitment target was specified; recruitment aimed to maximise participation among practising UK-registered osteopaths. The achieved sample ($n=558$; 15.5 participants per item) exceeded COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) ‘very good’ criterion for factor analysis (≥ 7 participants per item and ≥ 100 overall) [30].

Sampling and recruitment

The researchers could not directly contact all UK-registered osteopaths because data-protection restrictions prevented access to their email addresses. Recruitment therefore used several national dissemination channels. The survey was distributed through the General Osteopathic Council (GOsC) research mailing list; this mailing list comprised 2,947 osteopaths who had opted to receive research invitations. The initial invitation was sent to 2,927 email addresses; 38 emails were returned as undeliverable, leaving 2,889 non-bounced emails. Reminder emails were sent on 21st October and 18th November 2025. Additional recruitment occurred through the NCOR Research Network, regional osteopathic groups and professional social media networks. Because the reach of these additional, potentially overlapping channels could not be quantified, an overall recruitment denominator and response rate could not be calculated. These strategies aimed to maximise geographical and demographic coverage across the UK. The survey was open from 13th October to 8th December 2025. Participation was voluntary, responses were anonymous and no incentives were offered.

Online survey administration

Before launch, the electronic questionnaire and survey flow were tested. This was a targeted open e-survey accessed through email-distributed links or an anonymous link/QR code; no login or password was required. Before providing electronic consent and completing the eligibility screening, participants received information about the study purpose, investigators, data handling and estimated completion time (10 min). Questions were presented in a fixed order across five pages: consent and eligibility (two items), demographics (10 items), Osteo-TAQ items 1–15, an attention check and Osteo-TAQ items 16–36, and the ABS-mp (19 items). Display logic was used for eligibility and two demographic follow-up questions. Four demographic questions used force-response validation; Osteo-TAQ and ABS-mp items were optional. Respondents could review and amend earlier responses.

Survey instruments

Osteopaths’ Therapeutic Approaches Questionnaire (Osteo-TAQ)

The Osteo-TAQ contains 36 items rated on a four-point Likert-type scale (never, sometimes, often, always). The Osteo-TAQ was developed from grounded theory research exploring how UK osteopaths understand and enact clinical practice [10, 11] which identified distinct but related orientations towards Professional Artistry and Technical Rationality. Content validity has been established through international expert review and content validity indexing [24] and response process validity was examined using cognitive interviewing in the UK [23] and

international samples [13, 22]. Structural validity and internal consistency have been examined in Australian [12] and French [13] national studies, demonstrating a stable two-factor structure with acceptable internal consistency. The version used in this UK study is provided in Supplementary Material 1.

Cognitive interviews

For the present UK national survey, we used the most recent English-language version of the instrument, the Australian-adapted version of the Osteo-TAQ. Additional cognitive interviews with practising UK osteopaths were conducted to confirm clarity, relevance and interpretability within the UK context. While this is reported in detail elsewhere [23], no substantive modifications to item content were required following cognitive interviews. The interview guide used in this study is provided in Supplementary Material 2. Development and evaluation of the Osteo-TAQ were informed by the COSMIN framework for assessing structural validity, reliability and interpretability [30].

Attitudes to Back Pain Scale for Musculoskeletal Practitioners (ABS-mp)

The Attitudes to Back Pain Scale for Musculoskeletal Practitioners (ABS-mp) is a 19-item questionnaire developed to assess clinicians' attitudes and beliefs about back pain [31]. The ABS-mp was developed in response to accumulating evidence that practitioners' beliefs about low back pain shape clinical reasoning and management decisions, influence the way pain is communicated to patients, and contribute to patients' beliefs and behaviours, with important implications for outcomes in persistent and non-specific low back pain [32–34]. The instrument was originally conceptualised as measuring beliefs related to two broad orientations [31]: a biomedical orientation, reflecting beliefs that pain is primarily driven by anatomical or structural pathology, and a behavioural orientation, reflecting beliefs consistent with biopsychosocial models of back pain. The ABS-mp also includes six dimensions reported in the present study: limitations on sessions, psychological, connection to healthcare system, confidence and concern, re-activation, and biomedical. These dimensions reflect beliefs about treatment duration, psychological influences on back pain, healthcare use, practitioner confidence and concern, return to activity, and structural or pathological explanations for back pain, respectively [31].

The ABS-mp has been widely used in musculoskeletal research across professional groups, including physicians [35], physiotherapists [36], chiropractors, and osteopaths [34, 37] and has demonstrated evidence of internal consistency and construct validity in prior studies [32, 35, 38]. The ABS-mp was included in this study because back pain represents a central and highly prevalent component of routine osteopathic practice in the UK [4, 5]. Given the prominence of back pain within the osteopathic case-mix, examining clinicians' responses to belief-based statements about back pain provides a clinically relevant point of comparison for exploring how practice orientations relate to commonly encountered clinical presentations. The ABS-mp is a previously published instrument [31] and was used without modification in this study.

Demographic and professional variables

Participants provided demographic information and practice characteristics, including age, gender, region of practice, years in practice, training institution, number of hours in clinical practice per week, osteopathy-specific qualification(s) and other health professional qualifications. These variables were included to describe the sample and allow exploration of potential associations with Osteo-TAQ subscale scores.

Data management

Data were exported from Qualtrics into statistical software for cleaning and analysis. Qualtrics anonymisation was enabled, so IP addresses, location data and contact information were not recorded with responses. For

Table 1 Descriptive statistics for demographic variables of United Kingdom osteopaths who completed the Osteo-TAQ ($n=558$)

Age		
Mean (+/- SD)		50.8 (+/- 12.9) years
Median		53 years
Range		22–88 years
Gender		
Man		249 (44.6%)
Woman		303 (54.3%)
Non-binary/third gender		2 (0.4%)
Prefer not to say		4 (0.7%)
Years in clinical practice		
Mean (+/- SD)		20.1 (+/- 12.8) years
Median		19 years
Range		1–61 years
Hours in clinical practice per week		
1–9 h		29 (5.2%)
10–19 h		80 (14.4%)
20–29 h		189 (33.9%)
30–39 h		176 (31.5%)
40–49 h		66 (11.8%)
50 h or more		18 (3.2%)
Practice region[^]		
Northeast England		8 (1.4%)
Northwest England		30 (5.4%)
Yorkshire and the Humber		21 (3.8%)
East Midlands		26 (4.7%)
West Midlands		26 (4.7%)
East of England		40 (7.2%)
London		151 (27.0%)
Southeast England		171 (30.6%)
Southwest England		78 (14.0%)
Eastern Scotland		5 (0.9%)
Highlands and the Islands		6 (1.1%)
Northeastern Scotland		4 (0.7%)
Southern Scotland		3 (0.5%)
West Central Scotland		10 (1.8%)
West Wales and The Valleys		5 (0.9%)
East Wales		5 (0.9%)
Northern Ireland		2 (0.3%)
Qualification institution		
University College of Osteopathy ^{^^}		338 (60.5%)
London School of Osteopathy		42 (7.5%)
The College of Osteopaths		35 (6.3%)
European School of Osteopathy		75 (13.5%)
Leeds Metropolitan University		2 (0.3%)
Oxford Brookes University		22 (4.0%)
Plymouth Marjon University		3 (0.5%)
Surrey Institute of Osteopathic Medicine		7 (1.3%)
Swansea University		14 (2.5%)
Other		20 (3.5%)
Qualification[^]		
Diploma		187 (33.5%)
Bachelor's degree		273 (48.9%)
Post-graduate certificate		68 (12.2%)
Post-graduate diploma		44 (7.9%)

Table 1 (continued)

Pre-professional Master's	170 (30.5%)
Post-graduate Master's	73 (13.1%)
Master of Research	2 (0.3%)
Master of Philosophy	1 (0.2%)
Professional Doctorate	4 (0.7%)
Doctor of Philosophy	3 (0.5%)
Other health professional qualification	
Yes	139 (24.9%)
No	415 (74.4%)
Missing	4 (0.7%)

^respondents could select more than one option

^^formally The British School of Osteopathy and now Health Sciences University

anonymous-link respondents, Qualtrics used a browser cookie, set on survey submission and valid for six months, to prevent repeat submissions; 30-day browser/device duplicate detection and reCAPTCHA were also enabled. Records flagged by Qualtrics as potential duplicates were reviewed manually and removed only if confirmed as duplicate submissions (e.g. responses within the same short time period that would be less than expected completion time, same response pattern and demographic details). Partially completed records were included only when all Osteo-TAQ items were complete; records with missing Osteo-TAQ data were excluded without imputation. No responses were excluded solely on the basis of completion time, and no weighting was applied. The Osteo-TAQ was scored in line with previously published methodology [12]. The ABS-mp was scored as per the author instructions including negatively keyed items being reverse-scored [31].

Statistical analysis

All analyses were conducted using JASP version 0.19.3 [39]. Analyses proceeded in several stages. First, descriptive statistics were used to summarise demographic and professional characteristics. For the Osteo-TAQ, exploratory factor analysis was used to evaluate the factor structure of the data. Parallel analysis was used to identify the number of factors to retain [40]. Analyses used ordinal least squares with an oblimin rotation and based on the polychoric correlation matrix [41]. Items were retained where they loaded > 0.32 on a factor and did not cross-load [42]. Each solution was reviewed to ensure that the factors were interpretable based on the underlying construct described by Thomson et al. [10]. Confirmatory factor analysis (CFA) was conducted to evaluate structural validity, using a diagonally weighted least squares (DWLS) estimator appropriate for ordinal data [43]. Factorability was assessed using the Kaiser–Meyer–Olkin (KMO) measure and Bartlett's test of sphericity. Model fit was assessed using χ^2 , CFI, TLI, RMSEA, and SRMR indices [44] (Table 3). Reliability estimations for each subscale were assessed using McDonald's omega with 95% confidence intervals [45].

For the ABS-mp, descriptive statistics were calculated for the domain and dimension subscales [46]. Associations between Osteo-TAQ mean subscale scores and ABS-mp scores were explored using Pearson's r correlations with 95% confidence intervals. No a priori hypotheses concerning the expected direction or magnitude of these correlations were specified. Group differences (gender, other health professional qualification) were examined using the Kruskal–Wallis test with Dunn's post-hoc comparison, and independent samples t-test respectively. Associations with Osteo-TAQ mean subscale scores were evaluated using Pearson's r (age, years in practice) and Spearman's rho (patient care hours per week) with 95% confidence intervals reported as appropriate.

Results

Participants

A total of 730 survey records were generated, including three pre-launch test records; after excluding these records, 727 respondents accessed the live survey. Four declined consent, giving a consent rate among survey entrants of 99.4% (723/727); 22 consenting respondents were ineligible, leaving 701 eligible respondents. Of these, 558 (79.6%) completed the Osteo-TAQ and were included in the analyses, while 143 did not complete it; 542 (77.3%) completed the full survey. The CHERRIES full-survey completion rate was 75.0% (542/723). Among full-survey completers, the median completion time was 12.6 min (IQR 9.7–17.0). The 558 participants included in the analyses ranged in age from 22 to 88 years (mean $\approx$ 51 years) and had been in clinical practice for an average of approximately 20 years. Most respondents reported working between 20 and 39 h per week in clinical practice. Gender distribution was broadly balanced, with approximately 54% identifying as women, 45% as men, and a small proportion preferring not to disclose or identifying otherwise. Participant demographic and professional characteristics are presented in Table 1. The sample was broadly comparable descriptively with the UK registered osteopath population [3, 47] although statistically significant differences were observed in the distributions of gender (χ^2 [3] = 9.081, p = 0.002) and age (χ^2 [6] = 116.508, p < 0.001). Geographical distribution and qualification characteristics are also reported in Table 1.

Exploratory factor analysis

Exploratory factor analysis (EFA) was conducted on the full 36-item Osteo-TAQ to examine its underlying factor structure in the UK sample. Sampling adequacy was confirmed (KMO = 0.827), and Bartlett's test of sphericity was significant (χ^2 = 10666.323 (630), p < 0.001), supporting the suitability of the data for factor analysis. Parallel analysis supported extraction of eight factors. However, this solution was not interpretable due to multiple items cross-loading and factors containing only two items. Analysis of three and two factor solutions was subsequently undertaken, consistent with the theoretically derived constructs described in Thomson's theory [10, 11]. The three-factor solution was interpretable with the removal of items 5, 16, 22, 27, 32 and 35, with the remaining items loading at > 0.35 on factor with no cross-loading. The items retained in the three-factor solution were consistent with the Educator, Collaborator and Treater domains described by Thomson, and accounted for 43.3% of the variance. The two factor solution was interpretable with the removal of items 16 and 22. The remaining items loaded > 0.32 on their respective factor with no cross-loading (Table 2). The cumulative variance for this solution was 37.3% with a factor correlation of -0.07. The factors were consistent with the concepts of Professional Artistry (PA) and Technical Rationality (TR) identified in previous Australian [12] and French studies [13].

Confirmatory factor analysis

Confirmatory factor analysis (CFA) was conducted to test the fit of a two-factor model corresponding to the Professional Artistry and Technical Rationality constructs. The model specification followed the structure established in the French Osteo-TAQ study [13]. The Chi-square test was significant (χ^2 (349) = 1887.898 (349), p < 0.001), indicating departure from exact model fit as is expected with large samples and ordinal data. Modification indices suggested item 22 be moved to the Professional Artistry factor. Given that this was inconsistent with the underpinning theoretical model, and item 22 had been identified as a candidate for removal in both the three- and two-factor EFAs, item 22 was removed and the data reanalysed. The Chi-square test for the modified model was significant (χ^2 (323) = 1584.186, p < 0.001) and contained 27 items comprising 17 PA items and 10 TR items. Fit indices for the final model are presented in Table 3. Several indices fell outside the conventional thresholds specified a-priori (CFI = 0.858; TLI = 0.846; NFI = 0.829; RMSEA = 0.084, 90% CI 0.080 to 0.088; SRMR = 0.107), indicating that the two-factor CFA model provides limited support for exact model fit in the current sample. This

Table 2 Factor loadings for the two-factor exploratory factor analysis solution for the Osteopaths' Therapeutic Approaches Questionnaire (Osteo-TAQ)

Item	PA	TR	Uniqueness
19. I involve my patient in deciding what hands-on treatment I provide.	0.690		0.505
10. I ask my patients what treatment and management approaches they think would help them most of all.	0.682		0.527
23. I provide my patient an opportunity to decide the treatment they would like to receive.	0.677		0.496
15. I seek my patient's views about what treatment and management approaches they think might help them.	0.675		0.534
33. I educate my patients to support them to self-manage their presenting complaint.	0.673		0.547
35. I offer treatment and management options to my patients for them to choose from.	0.668		0.516
1. I collaborate with my patient (and their carer/guardian) to develop the most suitable treatment and management options for their presenting complaint.	0.652		0.548
17. I am led by my patient as to their preferred approach to treatment and management of their presenting complaint.	0.650		0.560
3. I provide my patients with a range of treatment and management options and let them choose.	0.634		0.599
28. I am led by my patient as to the treatment and management approaches they want.	0.577		0.645
9. I explain my clinical reasoning to my patient so they can make an informed treatment decision.	0.565		0.634
31. I spend a significant portion of the consultation time talking with my patient to understand how their presenting complaint impacts their life.	0.561		0.674
24. I combine information from different sources (i.e. clinical examination, my patient's expectations and the patient-practitioner relationship) to guide my clinical decisions.	0.540		0.707
14. I seek verbal feedback from the patient to understand how the hands-on treatment feels for them at the time.	0.535		0.697
2. I want my patients to self-manage their presenting complaints.	0.524		0.725
30. I encourage my patients to contact me should they require additional support or advice.	0.489		0.734
6. I provide the type of management and hands-on treatment that the patient says they would prefer (if not contraindicated).	0.475		0.771
5. I prioritise talking with my patient to understand their problem over hands-on treatment.	0.468		0.753
20. I discourage my patients from depending on me for frequent long-term treatment.	0.430		0.771
7. I tailor my clinical examination procedures to the individuality of my patient and their presenting complaint.	0.407		0.765
36. I focus on developing rapport with my patient during hands-on treatment.	0.329		0.841
29. I use palpation and joint assessment to direct treatment to address dysfunctions.		0.760	0.426
34. I rely on palpation to provide information about the health of the body's tissues.		0.733	0.451
12. I use observation of my patient's body to direct my treatment.		0.700	0.512
8. I base my practise on osteopathic theories, principles and philosophy.		0.677	0.543
11. I need to establish the specific anatomical structures associated with my patient's presenting complaint to provide effective treatment.		0.659	0.559
26. I rely on hands-on treatment to address my patient's presenting complaint.		0.640	0.507
18. I rely on my palpation skills as the primary diagnostic tools.		0.634	0.573
13. I tell my patients to follow my instructions so that I can perform my hands-on treatment effectively.		0.620	0.613
32. I decide the type of hands-on treatment that will be best for my patient.		0.609	0.548
4. I focus on finding the tissues causing symptoms during my examination of my patient.		0.540	0.697
27. I provide the management and hands-on treatment approaches that I think are most suitable to help my patient's presenting complaint.		0.530	0.720
25. I use the same clinical examination procedures with every patient.		0.398	0.820
21. I prioritise hands-on treatment of my patient over talking with them to understand their presenting complaint.		0.338	0.800

PA – Professional artistry; TR – Technical rational

pattern is consistent with the French Osteo-TAQ study [13], in which comparable fit statistics were observed (Table 3), and is likely to reflect the complexity of the 27-item structure, the use of a DWLS estimator with ordinal data, and the presence of residual covariance among conceptually related items. All items loaded significantly on their hypothesised latent factors ($p < 0.001$), with standardised factor loadings ranging from 0.467 to 0.772 for PA and 0.486 to 0.796 for TR (see Supplementary Material 3). Taken together, the two-factor model was theoretically interpretable; however, parallel analysis supported eight factors and the CFA did not achieve conventional fit thresholds, leaving its structural validity uncertain.

Table 3 Confirmatory factor analysis fit statistics for the two-factor models of the Osteopaths' Therapeutic Approaches Questionnaire (Osteo-TAQ)

Statistic	Reference value	French Osteo-TAQ 2-factor solution	27-item UK Osteo-TAQ 2-factor solution
Comparative Fit Index	> 0.96	0.831	0.858
Tucker-Lewis Index (TLI)	> 0.90	0.817	0.846
Bentler-Bonett Normed Fit Index (NFI)	> 0.95	0.801	0.829
Root mean square error of approximation (RMSEA)	< 0.08	0.089	0.084*
Standardised root mean square residual (SRMR)	< 0.08	0.113	0.107
Goodness of fit index (GFI)	> 0.95	0.936	0.946

*RMSEA 90% CI: 0.080–0.088

The correlation between the PA and TR latent factors was negative and small ($r = -0.151$, 95% CI [-0.232, -0.070], $p = < 0.001$), indicating that they represent related but distinct dimensions of osteopaths' conceptions of practice rather than opposite ends of a single continuum

Internal consistency

Reliability estimations for the final 27-item Osteo-TAQ were acceptable: Professional Artistry (17 items) was $\omega = 0.875$ (95%CI 0.859–0.890); and, Technical Rationality (10 items) was $\omega = 0.850$ (95%CI 0.831–0.869).

Descriptive statistics for Osteo-TAQ item and subscale scores

Mean scores were calculated for both subscales using the final 27-item structure. The Professional Artistry mean score was approximately 3.237 (+/- 0.377), indicating that respondents reported engaging in PA-related behaviours between “often” and “always.” The Technical Rationality mean score was approximately 3.049 (+/- 0.477), suggesting similarly frequent endorsement of TR-related practices. Score distributions are summarised in Table 4.

Associations between PA, TR, and practitioner characteristics

Correlation analyses indicated that Technical Rationality scores were weakly positively associated with practitioner age ($r = 0.235$, 95%CI 0.166–0.322, $p < 0.01$) and years in practice ($r = 0.218$, 95%CI 0.138–0.296, $p < 0.01$), and negligible for hours per week in clinical practice ($\rho = 0.042$, $p = 0.323$). For Professional Artistry, scores were negligible for practitioner age ($r = -0.069$, 95%CI -0.151–0.014, $p = 0.103$), years in practice ($r = -0.067$, 95%CI -0.149–0.016, $p = 0.116$), and hours per week in clinical practice ($\rho = -0.017$, $p = 0.697$). Osteo-TAQ mean PA subscale scores were not significantly different for gender ($p > 0.05$). Gender was significantly different for mean TR subscale scores ($p = 0.016$); however, Dunn's post-hoc test with Bonferroni adjustment indicated no significant difference. Osteo-TAQ mean subscale scores were not significantly different for additional health professional qualifications ($p > 0.05$).

Associations with ABS-mp domains

Attitudes to Back Pain Scale for Musculoskeletal Practitioners (ABS-mp) domain and subscale descriptive statistics are presented in Table 5. Associations between Osteo-TAQ subscales and ABS-mp domain and dimensions scores are presented in Table 6. Technical Rationality mean subscale scores demonstrated moderate associations with ABS-mp treatment orientation domain, in addition to the limitations on sessions and biomedical dimensions. For the Professional Artistry mean subscale, a small negative association was observed with the dimension of limitations on sessions.

In contrast, associations between PA and ABS-mp psychosocial domains were small to moderate and in the expected direction (Table 6). These findings suggest that while both Osteo-TAQ subscales relate to clinicians'

Table 4 Descriptive statistics for the osteopaths' therapeutic approaches questionnaire (Osteo-TAQ)

Item	Subscale	Median	Mean	Std. Deviation
1. I collaborate with my patient (and their carer/guardian) to develop the most suitable treatment and management options for their presenting complaint.	PA	4	3.754	0.507
2. I want my patients to self-manage their presenting complaints.	PA	3	3.394	0.644
3. I provide my patients with a range of treatment and management options and let them choose.	PA	3	3.116	0.781
5. I prioritise talking with my patient to understand their problem over hands-on treatment.	PA	3	2.884	0.781
6. I provide the type of management and hands-on treatment that my patient says they would prefer (if not contraindicated).	PA	3	3.222	0.668
8. I base my practice on osteopathic theories, principles and philosophy.	TR	3	3.262	0.746
9. I explain my clinical reasoning to my patient so they can make an informed treatment decision.	PA	4	3.738	0.486
10. I ask my patients what treatment and management approaches they think would help them most of all.	PA	3	2.703	0.763
11. I need to establish the specific anatomical structures associated with my patient's presenting complaint to provide effective treatment.	TR	3	2.993	0.731
12. I use observation of my patient's body to direct my treatment.	TR	3	2.968	0.767
13. I tell my patients to follow my instructions so that I can perform my hands-on treatment effectively.	TR	3	2.797	0.889
14. I seek verbal feedback from my patient to understand how the hands-on treatment feels for them at the time.	PA	4	3.715	0.475
15. I seek my patients' views about what treatment and management approaches they think might help them.	PA	3	3.014	0.748
17. I am led by my patient as to their preferred approach to treatment and management of their presenting complaint.	PA	3	2.760	0.736
18. I rely on my palpation skills as the primary diagnostic tools.	TR	3	2.667	0.797
19. I involve my patient in deciding what hands-on treatment I provide.	PA	3	3.090	0.731
23. I provide my patient an opportunity to decide the treatment they would like to receive.	PA	3	2.978	0.748
24. I combine information from different sources (i.e. clinical examination, my patient's expectations and the patient-practitioner relationship) to guide my clinical decisions.	PA	4	3.749	0.485
26. I rely on hands-on treatment to address my patients' presenting complaints.	TR	3	2.841	0.747
27. I provide the management and hands-on treatment approaches that I think are most suitable to help my patients' presenting complaints.	TR	4	3.652	0.537
28. I am led by my patient as to the treatment and management approaches they want.	PA	3	2.724	0.733
29. I use palpation and joint assessment to direct treatment to address dysfunctions.	TR	3	3.244	0.658
31. I spend a significant portion of the consultation time talking with my patient to understand how their presenting complaint impacts their life.	PA	3	3.375	0.660
32. I decide the type of hands-on treatment that will be best for my patient.	TR	3	3.309	0.647
33. I educate my patients to support them to self-manage their presenting complaints.	PA	4	3.726	0.474
34. I rely on palpation to provide information about the health of the body's tissues.	TR	3	3.025	0.812
35. I offer treatment and management options to my patients for them to choose from.	PA	3	3.091	0.712

PA – Professional artistry; TR – Technical rational

Table 5 Descriptive statistics for the Attitudes to Back Pain Scale for Musculoskeletal Practitioners (ABS-mp) domain and dimension scores ($n = 542$)

	Mean	Std. Deviation	Minimum	Maximum
Domains				
Personal interaction	60.577	6.184	37	79
Treatment orientation	24.319	4.981	6	36
Dimensions				
Limitations on sessions	16.352	4.335	4	27
Psychological	21.231	3.378	10	28
Connection to healthcare system	12.133	3.196	5	21
Confidence and concern	11.375	1.747	5	14
Re-activation	13.891	2.774	3	21
Biomedical	10.428	3.532	3	19

Table 6 Associations between the attitudes to back pain scale for musculo-skeletal practitioners (ABS-mp) domain and dimension scores and Osteo-TAQ mean subscale scores

Variable		PA mean subscale score	TR mean subscale score
Personal interaction domain	Pearson's r	-0.057	0.377
	p-value	0.188	<0.001
	Lower 95% CI	-0.140	0.303
	Upper 95% CI	0.028	0.447
Treatment orientation domain	Pearson's r	-0.127	0.574
	p-value	0.003	<0.001
	Lower 95% CI	-0.209	0.515
	Upper 95% CI	-0.043	0.628
Limitations on sessions	Pearson's r	-0.244	0.531
	p-value	<0.001	<0.001
	Lower 95% CI	-0.321	0.468
	Upper 95% CI	-0.163	0.589
Psychological	Pearson's r	0.148	-0.099
	p-value	<0.001	0.021
	Lower 95% CI	0.064	-0.182
	Upper 95% CI	0.229	-0.015
Connection to healthcare system	Pearson's r	0.157	0.026
	p-value	<0.001	0.553
	Lower 95% CI	0.074	-0.059
	Upper 95% CI	0.239	0.110
Confidence and concern	Pearson's r	0.157	0.067
	p-value	<0.001	0.117
	Lower 95% CI	0.074	-0.017
	Upper 95% CI	0.238	0.151
Reactivation	Pearson's r	-0.006	0.261
	p-value	0.890	<0.001
	Lower 95% CI	-0.090	0.181
	Upper 95% CI	0.078	0.338
Biomedical	Pearson's r	-0.174	0.605
	p-value	<0.001	<0.001
	Lower 95% CI	-0.254	0.549
	Upper 95% CI	-0.091	0.656

PA – Professional artistry; TR – Technical rational

Bold indicates correlations of $|r| \geq 0.20$

beliefs about back pain, TR is more closely aligned with biomedical belief structures, whereas PA captures a distinct, relational and contextual dimension of practice not fully reflected in belief-based measures.

Discussion

Principal findings

This study provides the first large national description of UK osteopaths' conceptions of practice using the Osteo-TAQ, complemented by their attitudes and beliefs about back pain measured with the ABS-mp. UK osteopaths typically integrate both relational, context-sensitive approaches (Professional Artistry) and biomechanical, practitioner-led approaches (Technical Rationality) in routine practice. The majority tend to hold both conceptions, suggesting that osteopathic care is characterised by a blended model rather than polarised adherence to a single conception of practice. The modest inverse correlation between conceptions highlights heterogeneity in practice emphasis, reflecting individual clinician preferences and experience. These findings are relevant to ongoing efforts to integrate MSK practitioners within primary care and community settings, where understanding variation in clinical reasoning and practice orientation may influence care pathways, patient experience, and service efficiency.

Measurement considerations and internal structure of the Osteo-TAQ

Most items demonstrated strong, conceptually coherent loadings on their respective factors. Items reflecting patient collaboration, shared decision-making, explanation of clinical reasoning, and attention to psychosocial factors loaded on Professional Artistry. Items emphasising biomechanical assessment, palpatory findings, and practitioner-led decision-making loaded on Technical Rationality. Item 22 (“I decide the treatment approach the patient requires due to their lack of understanding of osteopathy”) demonstrated poor psychometric performance and was removed, consistent with prior Australian [12] and French [13] Osteo-TAQ studies. The CFA fit indices for the final 27-item model fell outside several conventional thresholds (CFI=0.858; TLI=0.846; RMSEA=0.084, 90% CI 0.080–0.088; SRMR=0.107), indicating that the strict two-factor CFA model provides limited support for exact model fit. This pattern mirrors that observed in the French Osteo-TAQ study [13], in which comparable fit statistics were reported, and is likely to reflect the complexity of the item pool, the ordinal response format, and residual covariance among conceptually related items. Although the two-factor model was theoretically interpretable, parallel analysis supported eight factors and the CFA did not meet conventional fit thresholds; its structural validity therefore remains uncertain [10, 11].

Cross-cultural consistency of the Osteo-TAQ and practice conceptions

The two-conception structure identified in this UK sample mirrors findings from Australian [12] and French Osteo-TAQ studies [13], providing evidence of cross-cultural consistency in how osteopaths conceptualise practice. Notably, the CFA fit statistics observed in the present study are comparable to those reported in the French study [13], suggesting that the suboptimal fit reflects a shared feature of the instrument across contexts rather than a UK-specific limitation. Across all three national contexts, Professional Artistry and Technical Rationality are commonly endorsed and neither operates as a mutually exclusive model and this finding is aligned with the grounded theory from which the Osteo-TAQ was developed [10, 11]. This consistency across different jurisdictions is notable given differences in regulation, professional integration and service delivery across the UK [4], Australia [48] and France [49], with national workforce surveys from these nations describing variation in demographics, settings and clinical activity, yet across these contexts osteopaths predominantly manage musculoskeletal conditions in community-based practice. In each setting, Professional Artistry captures relational, collaborative, and context-responsive aspects, whilst Technical Rationality reflects biomechanical, practitioner-led reasoning. The recurrence across diverse contexts suggests these represent transferable features of osteopathic practice rather than artefacts of single regulatory environments. This supports the Osteo-TAQ as a robust framework for describing conceptions of practice beyond a single national context, with implications for comparative research, education, and workforce development.

Conceptions of practice and beliefs about back pain

Associations between Osteo-TAQ conceptions of practice and ABS-mp domains indicate that conception of practice is related to, but not reducible to, back-pain beliefs. In our sample, Technical Rationality aligned more closely with biomedical belief structures, whereas PA showed small associations with psychosocial domains, suggesting PA captures relational and contextual elements not fully reflected in belief-based measures. The stronger association between TR and the ABS-mp personal interaction domain was not anticipated from the domain label alone. However, this domain reflects beliefs about practitioner–patient interaction in the specific context of back-pain management, whereas PA captures a broader conception of collaborative, context-sensitive osteopathic practice. The finding therefore reinforces that ABS-mp domains and Osteo-TAQ conceptions are related but not equivalent constructs.

Previous UK research demonstrates heterogeneity in osteopaths’ pain beliefs, with variation across biomedical and biopsychosocial orientations and limited associations with demographic variables. Existing national research

has examined osteopaths' knowledge, attitudes, and beliefs about pain using belief-based instruments [38, 50, 51]. Earlier ABS-mp research, including Pincus et al. [34], provides useful historical context; however, direct conclusions about changes in osteopaths' back-pain beliefs over time should be made cautiously because the present study used the ABS-mp to explore associations with Osteo-TAQ scores, rather than as a standalone temporal comparison of back-pain attitudes. Other research demonstrates that clinician pain beliefs are associated with management recommendations and guideline concordance; however, such instruments focus on domain-specific beliefs rather than broader practice conceptions [37]. Together, this literature supports the added value of the Osteo-TAQ to enable an examination of how clinicians *enact* practice (reasoning, interactional work, decision-making) alongside beliefs, rather than inferring practice from attitude and belief measures alone.

Practice patterns and workforce insights

These results provide insight into patterns of osteopathic practice beyond what is captured by current workforce surveys [5] and practice-based research networks [4]. While these previous national studies have documented demographics, employment patterns, and service characteristics, the Osteo-TAQ captures how clinicians conceptualise and enact practice. The data suggest that relational, collaborative, and patient-centred behaviours are commonly integrated alongside structure-focused and biomechanical interventions. Technical Rationality showed small but consistent positive associations with age and years in practice, suggesting that more experienced osteopaths place slightly greater emphasis on technical and biomechanical aspects of care. This is consistent with recent UK workforce data indicating that osteopaths with longer time in practice are more likely to work as principals, practise alone, and adopt particular technical approaches, while being less likely to report frequent use of newer approaches such as pain science education [9]. These patterns may reflect generational differences in training or evolving osteopathic curricula rather than simple divergence from evidence-informed practice. Osteopathic education has been shown to vary widely in content and pedagogical emphasis, with limited consensus on core educational outcomes, highlighting potential historical differences in the balance of relational versus technical training [52]. In contrast, Professional Artistry was highly endorsed across the sample and showed minimal variation by career stage, suggesting that relational and context-sensitive aspects of practice represent stable features of osteopathic identity across the professional life course. These insights may inform the deployment of osteopaths in integrated care pathways, including first-contact roles and community MSK services. The different conceptions of practice observed in our sample align with wider evidence that effective AHP integration depends not only on workforce expansion but on how professional roles are conceptualised and enacted [18]. Recognising variation in conceptions of practice may also inform educational and workforce development strategies, including CPD that balances technical expertise with relational and contextual skills. At group level, stronger endorsement of Professional Artistry may indicate greater emphasis on shared decision-making, patient education and collaborative care, while stronger endorsement of Technical Rationality may indicate greater emphasis on biomechanical reasoning and practitioner-led structural expertise. The Osteo-TAQ may also have potential value as a reflective tool for individual practitioners; however, the present study supports its use primarily as a descriptive instrument for characterising patterns of practice orientation rather than classifying individuals, prescribing training needs, or identifying an ideal profile.

Strengths and limitations

This study has several strengths. It captured complete Osteo-TAQ data from 558 UK osteopaths, representing approximately 10.2% of GOSc registered practising osteopaths, and making it one of the largest cross-sectional surveys of the profession in the UK. Participant age (22–88 years), experience (1–61 years in practice) and gender distribution were descriptively comparable with GOSc register figures (47). Reported weekly clinical hours closely mirrored those observed in recent UK national survey work [4, 5], supporting comparability on key practice characteristics. Geographical distribution was reported descriptively. As expected from GOSc register

data (47), most respondents practised in England; however, comparison with regulator data should be interpreted cautiously because the present survey recorded practice region, respondents could select more than one region, and GOsC data are reported at country level. Qualification institution and qualification type were described, but national comparator data were not sufficiently complete or directly comparable to assess representativeness by education.

A further strength lies in the strong theoretical underpinning of the Osteo-TAQ, which was derived from grounded theory research [10, 11] and developed through a rigorous, multi-stage process [22–24, 53]. The consistency of the two-conception structure with previous Australian [12] and French [13] studies supports the cross-cultural stability of the framework and strengthens confidence in its interpretive validity. That said, the CFA fit indices for the final 27-item model did not meet several conventional thresholds, indicating that the strict two-factor model provides limited support for exact fit. This should be considered when interpreting the structural validity evidence. However, this pattern is consistent with the French Osteo-TAQ study [13], all items loaded significantly on their hypothesised factors, and the EFA results converge in supporting the two-conception structure. Future studies should examine whether model fit can be improved through specification of residual covariances supported by both statistical and theoretical justification. The inclusion of the ABS-mp enabled triangulation with an established belief-based measure, providing additional context for interpreting conceptions of practice.

Several limitations should also be acknowledged. Participation was voluntary, raising the possibility of self-selection bias, and responses were based on self-report, which may not fully reflect observed clinical behaviour. Recruitment through an opt-in research mailing list and professional networks may have favoured osteopaths with greater research interest, stronger professional engagement, or greater motivation to participate in profession-specific research. Direct comparison between respondents and non-respondents was not possible because individual-level demographic or professional data for those who did not participate were unavailable. Furthermore, this study did not directly capture practice setting or clinical case-mix. Therefore, the framing of UK osteopathy as predominantly community-based and musculoskeletal is based on existing UK workforce and practice data [4, 54] rather than direct measurement within the present sample. As such, the extent to which every respondent practised in community-based MSK care cannot be confirmed. These factors mean that generalisability to the whole UK osteopathic profession should be interpreted cautiously, although the large sample size and broad comparability with regulator data support the relevance of the findings to the UK workforce.

The cross-sectional design precludes causal inference and limits conclusions about how conceptions of practice may change over time or in response to training or policy initiatives. This study did not assess test–retest reliability, responsiveness, predictive validity, or associations between Osteo-TAQ scores and observed clinical behaviour or patient outcomes. While the ABS-mp provided a clinically relevant comparator, it measures domain-specific back-pain beliefs rather than broader conceptions of practice, and findings relating to belief-based measures should therefore be interpreted cautiously.

Conclusion

This national study provides the first large-scale description of UK osteopaths' conceptions of practice using the Osteopaths' Therapeutic Approaches Questionnaire. The two-factor model was theoretically interpretable, although its structural validity remains uncertain. At a group level, the findings indicate endorsement of both relational, context-sensitive approaches and biomechanical, practitioner-led approaches, rather than polarised adherence to a single model of care. This pattern may reflect the adaptive nature of contemporary osteopathic practice within primary care musculoskeletal services. Conception of practice was meaningfully related to clinicians' beliefs about back pain, while remaining conceptually distinct from belief-based measures. This suggests that understanding how clinicians conceptualise and enact practice offers additional insight beyond attitudes and beliefs alone. By capturing these conceptions, the Osteo-TAQ provides a theoretically grounded framework for describing practice variation within the osteopathy profession. These findings have implications for

UK workforce development, professional education, and service planning, particularly as osteopaths continue to function predominantly as primary care AHPs managing high-burden musculoskeletal conditions. However, given the voluntary sampling strategy and potential for selection and non-response bias, generalisability to the whole UK osteopathic profession should be interpreted cautiously. Future research should examine the test–retest reliability of the Osteo-TAQ, how conceptions of practice evolve over time, and whether Osteo-TAQ scores are associated with observed clinical behaviour, patient outcomes and interprofessional care delivery.

Abbreviations

ABS	mp–Attitudes to Back Pain Scale for Musculoskeletal Practitioners
BPS	Biopsychosocial
BM	Biomedical
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CHERRIES	Checklist for Reporting Results of Internet E–Surveys
CHS	Connection to Healthcare System
COSMIN	Cnsensus–based Standards for the selection of health Measurement INstruments
DWLS	Diagonally Weighted Least Squares
EFA	Exploratory Factor Analysis
GOsC	General Osteopathic Council
KMO	Kaiser–Meyer–Olkin
LBP	Low Back Pain
LS	Limitations on Sessions
MSK	Musculoskeletal
NCOR	National Council for Osteopathic Research
Osteo	TAQ–Osteopaths’ Therapeutic Approaches Questionnaire
PABS	PT–Pain Attitudes and Beliefs Scale for Physiotherapists
PA	Professional Artistry
PI	Personal Interaction
PS	Psychological
RA	Re–activation
RMSEA	Root Mean Square Error of Approximation
SRMR	Standardized Root Mean Square Residual
STROBE	Strengthening the Reporting of Observational Studies in Epidemiology
TLI	Tucker–Lewis Index
TR	Technical Rationality
UK	United Kingdom

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Declarations

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References

1. Workforce AHP. AHP workforce. 2023 [cited 2024 Dec 14]. Osteopathy - The a to z of allied health. Available from: <https://ahpworkforce.com/a-z-of-allied-health/osteopathy/>.
2. General osteopathic council. Standards [Internet]. [cited 2026 Feb 10]. Available from: <https://www.osteopathy.org.uk/standards/>.
3. General osteopathic council. annual report and accounts for 2024-25 published [Internet]. [cited 2026 Feb 10]. Available from: <https://www.osteopathy.org.uk/news-and-resources/news/>.

4. Draper-Rodi J, Fawkes C, Bailey D. Development of a national osteopathic practice-based research network (PBRN): the NCOR research network. *Sci Rep* [Internet]. 2025;15(1):26396. Available from: <https://doi.org/10.1038/s41598-025-11527-4>.
5. Plunkett A, Fawkes C, Carnes D. Osteopathic practice in the united kingdom: a retrospective analysis of practice data. *PLoS One* [Internet]. 2022;17(7):e0270806. Available from: <https://doi.org/10.1371/journal.pone.0270806>.
6. Lam MT, Banihashem M, Lam HR, Wan AB, Chow E. Patient experience, satisfaction, perception and expectation of osteopathic manipulative treatment: a systematic review. *Int J Osteopath Med* [Internet]. 2019;32:28–43. Available from: <https://doi.org/10.1016/j.ijosm.2019.04.003>.
7. Bagagiolo D, Rosa D, Borrelli F. Efficacy and safety of osteopathic manipulative treatment: an overview of systematic reviews. *BMJ Open* [Internet]. 2022;12(4):e053468. Available from: <https://doi.org/10.1136/bmjopen-2021-053468>.
8. Degenhardt BF, Johnson JC, Brooks WJ, Norman L. Characterizing adverse events reported immediately after osteopathic manipulative treatment. *J Am Osteopath Assoc* [Internet]. 2018;118(3):141–9. Available from: <https://doi.org/10.7556/jaoa.2018.033>.
9. Bailey D, Fawkes C, Draper-Rodi J. Differences in practice among osteopaths in the UK with more than or less than 10 years of experience: a cross-sectional study. *BMJ Open* [Internet]. 2025;15(9):e095191. Available from: <https://doi.org/10.1136/bmjopen-2024-095191>.
10. Thomson OP, Petty NJ, Moore AP. A qualitative grounded theory study of the conceptions of clinical practice in osteopathy - a continuum from technical rationality to professional artistry. *Man Ther* [Internet]. 2014;19(1):37–43. Available from: [https://linkinghub.elsevier.com/retrieve/pii/S1356-689X\(13\)00119-7](https://linkinghub.elsevier.com/retrieve/pii/S1356-689X(13)00119-7).
11. Thomson OP, Petty NJ, Moore AP. Clinical decision-making and therapeutic approaches in osteopathy - a qualitative grounded theory study. *Man Ther* [Internet]. 2014;19(1):44–51. Available from: <https://doi.org/10.1016/j.math.2013.07.008>.
12. Thomson OP, McLeod GA, Fleischmann M, Vaughan B. Therapeutic approaches and conceptions of practice of osteopaths in Australia - a national cross-sectional study and exploratory factor analysis of the Osteo-TAQ. *BMC Health Serv Res* [Internet]. 2024;24(1). Available from: <https://link.springer.com/article/10.1186/s12913-024-11826-y>.
13. Thomson OP, Treffel L, Wagner A, Jacquot E, Draper-Rodi J, Morin C, et al. A national survey of osteopaths' conceptions of practice in France: structural validity of the Osteo-TAQfr and the tendency toward technical rationality. *BMC Health Serv Res* [Internet]. 2025;25(1):451. Available from: <https://doi.org/10.1186/s12913-025-12540-z>.
14. Evans DW, Foster NE, Breen AC, Pincus T, Underwood M, Vogel S. The changing face of acute low back pain management by physiotherapists, osteopaths and chiropractors in the UK: a 20-year comparison from 2003 to 2023. *BMC Musculoskelet Disord* [Internet]. 2025;26(1):887. Available from: <https://doi.org/10.1186/s12891-025-09192-9>.
15. Nhs E. NHS England fit for the future: 10 year health plan for England [Internet]. [cited 2026 Feb 8]. Available from: <https://www.england.nhs.uk/long-term-plan/>.
16. Health Education England [Internet]. 2019 [cited 2024 Apr 16]. Musculoskeletal (MSK) first contact practitioners. Available from: <https://www.hee.nhs.uk/our-work/musculoskeletal-msk-first-contact-practitioners>
17. England NHS. NHS England The allied health professions (AHPs) strategy for England – AHPs Deliver [Internet]. [cited 2026 Feb 12]. Available from: <https://www.england.nhs.uk/publication/the-allied-health-professions-ahps-strategy-for-england/>.
18. Hales P, Achour N, King O, Engward H. Elevating the allied health professions workforce: leadership's role in shaping professional identity. *BMC Health Serv Res* [Internet]. 2026; Available from: <https://doi.org/10.1186/s12913-026-14064-6>.
19. GBD 2021 Low Back Pain Collaborators. Global, regional, and national burden of low back pain, 1990–2020, its attributable risk factors, and projections to 2050: a systematic analysis of the Global Burden of Disease Study 2021. *Lancet Rheumatol* [Internet]. 2023;5(6):e316–29. Available from: [https://doi.org/10.1016/S2665-9913\(23\)00098-X](https://doi.org/10.1016/S2665-9913(23)00098-X).
20. Buck D, The King's F. 2022 [cited 2026 Feb 14]. The Office for health improvement and disparities: one year on. Available from: <https://www.kingsfund.org.uk/insight-and-analysis/blogs/office-health-improvement-disparities-one-year-on>.
21. Vaucher P, Carnes D, Hohenschurz-Schmidt D, Thomson O, Vogel S, Arienti C, et al. European research priorities for osteopathic care (PROCare): a sequential exploratory investigation and survey. *BMJ Open* [Internet]. 2025;15(10):e100757. Available from: <https://doi.org/10.1136/bmjopen-2025-100757>.
22. Thomson OP, McLeod GA, Fleischmann M, Vaughan B. Development and adaptation of the osteopaths' therapeutic approaches questionnaire (Osteo-TAQ) for the Australian osteopathic profession - a cognitive interview study. *Int J Osteopath Med* [Internet]. 2024;53:100723. Available from: <https://www.sciencedirect.com/science/article/pii/S1746068924000166>.
23. Thomson OP, Golder E, McLeod GA, Draper-Rodi J, Vogel S, Vaughan B. Assessing content validity of the Osteo-TAQ(Aus) using cognitive interviews: cross-jurisdictional evidence from UK osteopathic practice. *BMC Res Notes* [Internet]. 2025; Available from: <https://doi.org/10.1186/s13104-025-07582-9>.

24. Thomson OP, Vaughan B, Sampath K, Draper-Rodi J, Fleischmann M, Cerritelli F. The osteopaths' therapeutic approaches questionnaire (Osteo-TAQ) - a content validity study. *Int J Osteopath Med* [Internet]. 2022; Available from: <https://www.sciencedirect.com/science/article/pii/S1746068922000645>.
25. Gardner T, Refshauge K, Smith L, McAuley J, Hübscher M, Goodall S. Physiotherapists' beliefs and attitudes influence clinical practice in chronic low back pain: a systematic review of quantitative and qualitative studies. *J Physiother* [Internet]. 2017;63(3):132–43. Available from: <https://doi.org/10.1016/j.jphys.2017.05.017>.
26. Alshehri MA, Alzahrani H, Alotaibi M, Alhowimel A, Khoja O. Physiotherapists' pain attitudes and beliefs towards chronic low back pain and their association with treatment selection: a cross-sectional study. *BMJ Open* [Internet]. 2020;10(6):e037159. Available from: <https://doi.org/10.1136/bmjopen-2020-037159>.
27. Schröder K, Öberg B, Enthoven P, Kongsted A, Abbott A. Confidence, attitudes, beliefs and determinants of implementation behaviours among physiotherapists towards clinical management of low back pain before and after implementation of the BetterBack model of care. *BMC Health Serv Res* [Internet]. 2020;20(1):443. Available from: <https://doi.org/10.1186/s12913-020-05197-3>.
28. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP, et al. The Strengthening the reporting of observational studies in epidemiology (STROBE) statement: guidelines for reporting observational studies. *Int J Surg* [Internet]. 2014;12(12):1495–9. Available from: <https://doi.org/10.1016/j.ijsu.2014.07.013>.
29. Eysenbach G. Improving the quality of web surveys: the checklist for reporting results of internet E-surveys (CHERRIES). *J Med Internet Res* [Internet]. 2004;6(3):e34. Available from: <https://doi.org/10.2196/jmir.6.3.e34>.
30. Mokkink LB, Terwee CB, Knol DL, Stratford PW, Alonso J, Patrick DL, et al. The COSMIN checklist for evaluating the methodological quality of studies on measurement properties: a clarification of its content. *BMC Med Res Methodol* [Internet]. 2010;10:22. Available from: <https://doi.org/10.1186/1471-2288-10-22>.
31. Pincus T, Vogel S, Santos R, Breen A, Foster N, Underwood M. The attitudes to back pain scale in musculoskeletal practitioners (ABS-mp): the development and testing of a new questionnaire: The development and testing of a new questionnaire. *Clin J Pain* [Internet]. 2006;22(4):378–86. Available from: <https://doi.org/10.1097/01.ajp.0000178223.85636.49>.
32. Bishop A, Thomas E, Foster NE. Health care practitioners' attitudes and beliefs about low back pain: a systematic search and critical review of available measurement tools. *Pain* [Internet]. 2007;132(1–2):91–101. Available from: <https://doi.org/10.1016/j.pain.2007.01.028>.
33. Darlow B, Fullen BM, Dean S, Hurley DA, Baxter GD, Dowell A. The association between health care professional attitudes and beliefs and the attitudes and beliefs, clinical management, and outcomes of patients with low back pain: a systematic review. *Eur J Pain* [Internet]. 2012;16(1):3–17. Available from: <https://doi.org/10.1016/j.ejpain.2011.06.006>.
34. Pincus T, Foster NE, Vogel S, Santos R, Breen A, Underwood M. Attitudes to back pain amongst musculoskeletal practitioners: a comparison of professional groups and practice settings using the ABS-mp. *Man Ther* [Internet]. 2007;12(2):167–75. Available from: <https://doi.org/10.1016/j.math.2006.06.005>.
35. Valjakka AL, Salanterä S, Laitila A, Julkunen J, Hagelberg NM. The association between physicians' attitudes to psychosocial aspects of low back pain and reported clinical behaviour: a complex issue. *Scand J Pain* [Internet]. 2017;4(1):25–30. Available from: <https://doi.org/10.1016/j.sjpain.2012.08.003>.
36. Derghazarian T, Simmonds MJ. Management of low back pain by physical therapists in quebec: how are we doing? *Physiother Can* [Internet]. 2011;63(4):464–73. Available from: <https://doi.org/10.3138/ptc.2010-04P>.
37. Draper-Rodi J, Vogel S, Bishop A. Effects of an e-learning programme on osteopaths' back pain attitudes: a mixed methods feasibility study. *Pilot Feasibility Stud* [Internet]. 2021;7(1):174. Available from: <https://doi.org/10.1186/s40814-021-00901-4>.
38. Fitzgerald K, Vaughan B, Fleischmann M, Austin P. Pain knowledge, attitudes and beliefs of Australian osteopaths drawn from a nationally representative sample of the profession. *J Bodyw Mov Ther* [Internet]. 2020;24(4):43–50. Available from: <https://doi.org/10.1016/j.jbmt.2020.06.022>.
39. JASP - Free and user-friendly statistical software [Internet]. 2021 [cited 2026 Jul 22]. A Fresh Way to Do Statistics. Available from: <https://jasp-stats.org/>.
40. Hayton JC, Allen DG, Scarpello V. Factor retention decisions in exploratory factor analysis: a tutorial on parallel analysis. *Organ Res Methods* [Internet]. 2004;7(2):191–205. Available from: <https://doi.org/10.1177/1094428104263675>.
41. Holgado-Tello FP, Chacón-Moscó S, Barbero-García I, Vila-Abad E. Polychoric versus Pearson correlations in exploratory and confirmatory factor analysis of ordinal variables. *Qual Quant* [Internet]. 2010;44(1):153–66. Available from: <https://doi.org/10.1007/s11135-008-9190-y>.
42. Williams B, Onsmann A, Brown T. Exploratory factor analysis: A five-step guide for novices. *Australas J Paramed* [Internet]. 2010;8(3):1–13. Available from: <https://doi.org/10.33151/ajp.8.3.93>.
43. Li CH. The performance of ML, DWLS, and ULS estimation with robust corrections in structural equation models with ordinal variables. *Psychol Methods* [Internet]. 2016;21(3):369–87. Available from: <https://doi.org/10.1037/met0000093>.
44. Xia Y, Yang Y, RMSEA, CFI, and TLI in structural equation modeling with ordered categorical data: The story they tell depends on the estimation methods. *Behav Res Methods* [Internet]. 2019;51(1):409–28. Available from: <https://doi.org/10.3758/s13428-018-1055-2>.

45. Kalkbrenner MT. Choosing between cronbach's coefficient alpha, McDonald's coefficient omega, and coefficient *H*: Confidence intervals and the advantages and drawbacks of interpretive guidelines. *Meas Eval Couns Dev* [Internet]. 2024;1–13. Available from: <https://doi.org/10.1080/07481756.2023.2283637>
46. Baglin J. Improving your exploratory factor analysis for ordinal data: a demonstration using FACTOR. *Pract Assess, Res Evaluat* [Internet]. 2014;19(5):1–14. Available from: <https://eric.ed.gov/idEJ1031268>.
47. Annual reports [Internet]. [cited 2026 Feb 12]. Available from: <https://www.osteopathy.org.uk/news-and-resources/publications/annual-reports/>.
48. Adams J, Sibbritt D, Steel A, Peng W. A workforce survey of Australian osteopathy: analysis of a nationally-representative sample of osteopaths from the Osteopathy Research and Innovation Network (ORION) project. *BMC Health Serv Res* [Internet]. 2018;18(1):352. Available from: <https://doi.org/10.1186/s12913-018-3158-y>.
49. Wagner A, Ménard M, Jacquot E, Marangelli G, Merdy O, Clouzeau C, et al. The profile of French osteopaths: a cross-sectional survey. *Int J Osteopath Med* [Internet]. 2023;100672. Available from: <https://www.sciencedirect.com/science/article/pii/S1746068923000160>.
50. Macdonald M, Vaucher P, Esteves JE. The beliefs and attitudes of UK registered osteopaths towards chronic pain and the management of chronic pain sufferers - a cross-sectional questionnaire based survey. *Int J Osteopath Med* [Internet]. 2018;30:3–11. Available from: <https://doi.org/10.1016/j.ijosm.2018.07.003>.
51. Bar-Zaccay A, Bailey D. The attitudes and beliefs of UK osteopaths towards the management of low back pain: a cross-sectional study. *Int J Osteopath Med* [Internet]. 2018;28:42–7. Available from: <https://doi.org/10.1016/j.ijosm.2018.03.006>.
52. MacMillan A, Gauthier P, Alberto L, Gaunt A, Ives R, Williams C, et al. The extent and quality of evidence for osteopathic education: A scoping review. *Int J Osteopath Med* [Internet]. 2023;49(100663):100663. Available from: <https://doi.org/10.1016/j.ijosm.2023.100663>.
53. Thomson OP, Anstiss V. The development and exploratory analysis of the osteopaths' therapeutic approaches questionnaire (Osteo-TAQ). *Int J Osteopath Med* [Internet]. 2020;37:17–24. Available from: <https://www.sciencedirect.com/science/article/pii/S1746068920300286>.
54. Plunkett A, Fawkes C, Carnes D. UK osteopathic practice in 2019: a retrospective analysis of practice data [Internet]. *bioRxiv. medRxiv*; 2021. Available from: <https://www.medrxiv.org/content/>.

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