

Attitudes, Skills and Use of Evidence-Based Practice Amongst Spanish Osteopaths: A Cross-Sectional Survey

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Abstract

Background: Although evidence-based practice (EBP) is largely supported across healthcare professions, its implementation in manual therapy professions such as osteopathy remains limited and debated. There is currently little knowledge of how EBP relates to osteopathy in Spain, and the attitudes, skills and utilisation of osteopaths.

Objectives: The main aim of this study was to investigate the attitudes, skills and use of EBP among Spanish osteopaths. A secondary aim was to identify barriers and facilitators for the adoption of EBP in the Spanish osteopathic context.

Methods: National cross-sectional survey of Spanish osteopaths registered and non-registered to an osteopathic association in Spain. Eligible participants were invited by a range of recruitment strategies including email and social media campaigns to complete the Spanish-translated Evidence-Based practice Attitude and utilization Survey (EBASE) anonymously online.

Results: A total of 567 osteopaths completed the survey which represents an estimated response rate of approximately 9%. Participant's attitudes toward EBP were largely positive. Most respondents agreed or strongly agreed that EBP was necessary in the practice of osteopathy (89.6%) and professional literature and research findings were useful to their day-to-day practice (88.9%). Levels of perceived skill in EBP were reported as low to moderate with lowest levels for items related to 'research conduct'. Except reading/reviewing professional literature and using online search engines to find practice-related literature, participant engagement in all other EBP-related activities was generally infrequent. The perceived proportion of clinical practice that was based on clinical research evidence was reported to be very small. Main barriers to EBP uptake included a lack of clinical evidence in osteopathy and insufficient skills for applying research findings. Main facilitators of EBP uptake included access to full-text articles, internet at the workplace and online databases.

Conclusions: Spanish osteopaths were largely supportive of evidence-based practice, had low to moderate skills in EBP and engaged in EBP activities infrequently. Formal regulation of the profession in Spain and the inclusion of osteopathic programs into the university sector would potentially improve EBP adherence.

Background

Evidence-Based Practice (EBP) has been defined as the integration of knowledge provided by the best available evidence, with a practitioner's clinical experience and judgement, and combined with an individual patient's values and preferences [1]. Although there is broad support for EBP across most healthcare professions, its implementation by practitioners of the manual therapy professions remains limited and contested [2–6]. One explanation for the limited uptake of EBP in this professional group is the difficulty in transferring research-based evidence into practice due to the complexity of clinical settings, including the high level of interaction between patients and practitioners [7, 8]. In fact, several healthcare disciplines [9–14] report similar issues in the implementation of EBP, including medicine [14], physical therapy [11] and more recently, osteopathy [15, 16].

Osteopathy is considered a manual therapy discipline in which its therapeutic base has been traditionally embedded within a specific conceptual framework and principles [17–19]. However, several authors have questioned the validity, plausibility and utility of these traditional osteopathic models in the context of

contemporary evidence-based healthcare [20–23]. Despite the passing of time, most of these osteopathic models have not been updated in response to the evidence, yielding to an uncritical development of the profession [23]. The lack of integration of EBP in osteopathic professional development has been explored across the world, with the subject receiving significant attention in the UK [24–27].

Osteopathy is defined by The World Health Organisation (WHO) as a first-contact patient-centred health discipline [28]. As osteopathy develops its knowledge base, the profession will need to respond and be critically reflective and move away from the prioritizing of traditional theories and anecdotes as reliable sources of evidence, and instead, pursue the generation of new knowledge through research, and ensure that clinicians and educators are able to integrate evidence into practice. Although it appears that the integration of EBP into osteopathy is largely perceived as a favourable endeavour across the osteopathy community [26, 29, 30], recent findings suggest that osteopathy practitioner engagement with EBP activities seems to be infrequent [26, 31]. Previous research has shown that the perceived barriers to EBP implementation among UK osteopaths are lack of time, lack of evidence in the osteopathic field and lack of access to studies and databases [26]. These results are consistent with a similar previous study conducted in Australia [31].

In Spain, osteopathy is not a regulated healthcare profession [32, 33]. Consequently, osteopaths with different professional, academic and clinical profiles (e.g. qualifications, training standards and competencies) operate across Spain. At the same time, despite the existence of European standards for osteopathic education [34], there is considerable heterogeneity across training programs [32, 33]. In this regard, the attitudes and utilisation of EBP among Spanish osteopaths remains uncertain. Therefore, the main aim of this study was to investigate the attitudes, skills and use of EBP among Spanish osteopaths. We also aimed to identify the barriers and facilitators for the adoption of EBP in the Spanish osteopathic context.

Methods

Design

National, online, cross-sectional survey.

Sample and setting

The survey was open to all practising osteopaths in Spain, regardless of qualification or training institution. No exclusion criteria were applied. Although there is no reliable data on the number of osteopaths practising in Spain, numbers of graduates from osteopathic educational institutions (OElS) in Spain estimate the Spanish osteopathic workforce to be in the vicinity of 5000-6000 [33]. Based on a target population of 6000, at least 362 osteopaths were required to be surveyed in order to achieve a 5% margin of error and a 95% confidence interval for any individual item on the survey.

Description of survey and variables

The Evidence-Based practice Attitude and utilization Survey (EBASE) [35] is an 81-item instrument designed to assess attitudes, skills and use of evidence-based practice among health professionals. The survey is divided into seven constructs, including attitude, skills, education and training, use, barriers, enablers, and demographics. The original English EBASE instrument has demonstrated acceptable test-retest reliability (ICC = 0.578–0.986), good internal consistency (Cronbach's alpha = 0.84), and good construct and content validity (CVI = 0.899) [35, 36]

Items from three of the survey constructs are able to be generated into subscores, as follows:

- Attitude subscore: Sum of the first 7 items, with scores ranging from 8 (predominantly strongly disagree) to 40 (predominantly strongly agree).
- Skill subscore: Sum of all 13 items, with scores ranging from 13 (low level skill) to 65 (high level skill).
- Use subscore: Sum of the first 6 items, with scores ranging between 0 (mostly infrequent use) and 24 (mainly frequent use).

Translation and adaptation of survey

The questionnaire was translated from English to Spanish and adapted cross-culturally according to the forward and backward translation method recommended by the WHO [37]. Once translated, a pilot test was carried out on 20 purposely-selected Spanish osteopaths. Suggestions for improvement (e.g., provision of additional response options to some questions) were integrated into the final version of the survey.

Recruitment and data collection

Participation in the study was advertised between April 2020 and June 2020 using a range of recruitment strategies. First, the main osteopathic associations (n=9) and OEIs (n=7) in Spain informed their associates (academic/clinical staff and alumni) of the survey and encouraged participation. Second, the study was advertised via social media (Twitter, Facebook and Instagram) inviting osteopaths to complete the EBASE survey. All recruitment media directed participants to a dedicated project website, where participants were invited to read the study information before being redirected to the survey.

Data collection was undertaken online using SurveyMonkey™ (SurveyMonkey Inc., San Mateo, California, USA). All survey items were made compulsory to mitigate the risk of missing data.

Data analysis

Data from the online survey were imported into IBM SPSS version 25 (Armonk, New York, IBM Corp) for data cleaning, coding and statistical analyses. Excluded from the analyses were incomplete surveys (i.e. surveys containing >20% missing data due to participant dropout) and duplicate responses (i.e. as identified using the Konstan et al. de-duplication procedure for online surveys [38]). Categorical data were described using frequencies and percentages. Means and standard deviations were used to describe normally distributed data, and medians and the interquartile range used for non-normally distributed data. Associations between ordinal-level variables were examined using the Kendall's Tau correlation coefficient (τ), whereas relationships between nominal-level variables were assessed using Cramer's V. Coefficients were interpreted as follows: 0.10-0.29 (weak association), 0.30-0.49 (moderate association) and 0.50-1.00 (strong association) [39]. The level of significance was set at $p < 0.05$.

Ethics

The study was approved by the Ethical Committee of Sagrado Corazón Hospital, Barcelona (2019/81-CMF-HUSC). Study participation was anonymous and voluntary, and participants were able to withdraw from the survey at any time without repercussion. Informed consent was obtained from all subjects and all methods were carried out in accordance with relevant guidelines and regulations.

Results

The survey was commenced by 714 Spanish osteopaths. After removing duplicate entries (n=4) and incomplete responses (n=143), the adjusted sample size was 567. The reasons for participant dropout could not be examined due to the anonymous nature of the survey. It also was not possible to calculate a survey response rate as the actual reach of the survey could not be determined. However, considering a potential target population of 6000 Spanish osteopaths [33] the estimated response rate would be approximately 9% (564/6000).

Characteristics of sample

Participating osteopaths were predominantly male (47.1%), and aged between 30 and 49 years (62.6%); 40.7% were members of an osteopathy professional association (**Table 1**). The largest proportion of participants held a Master's degree as their highest qualification (37.9%), with 50.5% receiving this qualification within the past ten years. Two-thirds (66.0%) of participants also held a degree in physiotherapy. Most (59.5%) participants had been in osteopathic practice for six or more years, with 57.7% spending 16-45 hours/week in clinical practice, 72.3% spending up to 15 hours/week participating in research, and 50.4% working up to 15 hours/week teaching in the higher education sector. Participating osteopaths largely worked in solo practice (41.4%) in the central business district (43.4%), with most located in Cataluña (23.8%), Comunidad de Madrid (13.1%) or Comunidad Valenciana (7.6%) (**Fig 1**).

Table 1: Demographic characteristics of sample (n=567)

| Characteristic | Frequency |
|---|------------------|
| Age, n (%) | |
| <i><20 years</i> | 3 (0.5) |
| <i>20-29 years</i> | 23 (4.1) |
| <i>30-39 years</i> | 187 (33.0) |
| <i>40-49 years</i> | 168 (29.6) |
| <i>50-59 years</i> | 30 (5.3) |
| <i>60-69 years</i> | 10 (1.8) |
| <i>70+ years</i> | 1 (0.2) |
| <i>Missing</i> | 145 (25.6) |
| Sex, n (%) | |
| <i>Male</i> | 267 (47.1) |
| <i>Female</i> | 155 (27.3) |
| <i>Missing</i> | 145 (25.6) |
| Osteopathy professional association membership, n (%) | |
| <i>Not a member of an Osteopathy professional association</i> | 185 (32.6) |
| <i>Registry of Osteopaths of Spain</i> | 103 (18.2) |
| <i>Registry of Osteopathic Physiotherapists of Spain</i> | 85 (15.0) |
| <i>Other Osteopathy professional association</i> | 43 (7.6) |
| <i>Missing</i> | 151 (26.6) |
| Highest qualification, n (%) | |
| <i>Diploma</i> | 82 (14.5) |
| <i>Bachelor degree</i> | 27 (4.8) |
| <i>Master's degree</i> | 215 (37.9) |
| <i>PhD</i> | 46 (8.1) |
| <i>Other</i> | 52 (9.2) |
| <i>Missing</i> | 145 (25.6) |
| Years since receiving highest qualification, n (%) | |
| <i>< 1 year</i> | 42 (7.4) |
| <i>1-5 years</i> | 150 (26.5) |
| <i>6-10 years</i> | 94 (16.6) |
| <i>11-15 years</i> | 59 (10.4) |

| | |
|---|------------|
| <i>16+ years</i> | 76 (13.4) |
| <i>Missing</i> | 146 (25.7) |
| Other non-osteopathic qualifications, n (%) | |
| <i>Degree in Physiotherapy</i> | 374 (66.0) |
| <i>Diploma/Degree in other health-related field</i> | 31 (5.5) |
| <i>Degree in Medicine</i> | 5 (0.9) |
| <i>Degree in Nursing or Podiatry</i> | 5 (0.9) |
| <i>Missing</i> | 152 (26.8) |
| Years practiced in the field of osteopathy, n (%) | |
| <i><1 year</i> | 6 (1.1) |
| <i>1-5 years</i> | 78 (13.8) |
| <i>6-10 years</i> | 136 (24.0) |
| <i>11-15 years</i> | 95 (16.8) |
| <i>16+ years</i> | 16 (18.7) |
| <i>Missing</i> | 146 (25.7) |
| Hours per week in clinical (osteopathic) practice, n (%) | |
| <i>0 hours</i> | 5 (0.9) |
| <i>1-15 hours</i> | 47 (8.3) |
| <i>16-30 hours</i> | 150 (26.5) |
| <i>31-45 hours</i> | 177 (31.2) |
| <i>46+ hours</i> | 42 (7.4) |
| <i>Missing</i> | 146 (25.7) |
| Hours per week participating in research, n (%) | |
| <i>0 hours</i> | 162 (28.6) |
| <i>1-15 hours</i> | 248 (43.7) |
| <i>16-30 hours</i> | 9 (1.6) |
| <i>31-45 hours</i> | 2 (0.4) |
| <i>46+ hours</i> | 0 (0.0) |
| <i>Missing</i> | 146 (25.7) |
| Hours per week working in the higher education sector, n (%) | |
| <i>0 hours</i> | 189 (33.3) |

| | |
|---|------------|
| <i>1-15 hours</i> | 97 (17.1) |
| <i>16-30 hours</i> | 59 (10.4) |
| <i>31-45 hours</i> | 29 (5.1) |
| <i>46+ hours</i> | 47 (8.3) |
| <i>Missing</i> | 146 (25.7) |
| Clinical setting in which osteopathy was predominantly practiced, <i>n</i> (%) | |
| <i>Solo practice</i> | 235 (41.4) |
| <i>With a group of allied health providers</i> | 87 (15.3) |
| <i>With a group of complementary and allied health providers</i> | 41 (7.2) |
| <i>With conventional and allied health providers</i> | 37 (6.5) |
| <i>Within a clinical institution (e.g. hospital)</i> | 12 (2.1) |
| <i>Within an educational institution (e.g. university)</i> | 6 (1.1) |
| <i>Missing</i> | 149 (26.3) |
| Geographical location of practice, <i>n</i> (%) | |
| <i>Cataluña</i> | 135 (23.8) |
| <i>Comunidad de Madrid</i> | 74 (13.1) |
| <i>Comunidad Valenciana</i> | 43 (7.6) |
| <i>Andalucía</i> | 36 (6.3) |
| <i>Galicia</i> | 25 (4.4) |
| <i>Islas Baleares</i> | 17 (3.0) |
| <i>País Vasco</i> | 17 (3.0) |
| <i>Canarias</i> | 14 (2.5) |
| <i>Castilla-La Mancha</i> | 12 (2.1) |
| <i>Región de Murcia</i> | 11 (1.9) |
| <i>Castilla y León</i> | 8 (1.4) |
| <i>Extremadura</i> | 7 (1.2) |
| <i>Aragón</i> | 6 (1.1) |
| <i>Cantabria</i> | 6 (1.1) |
| <i>Principado de Asturias</i> | 5 (0.9) |
| <i>Comunidad Foral de Navarra</i> | 1 (0.2) |
| <i>La Rioja</i> | 1 (0.2) |
| <i>Missing</i> | 149 (26.3) |

| Geographical region of practice, <i>n</i> (%) | |
|---|------------|
| <i>City (Central business district)</i> | 246 (43.4) |
| <i>Inner city location</i> | 88 (15.5) |
| <i>Rural location</i> | 43 (7.6) |
| <i>Outer city location</i> | 39 (6.9) |
| <i>Missing</i> | 151 (26.6) |

CAM – Complementary and alternative medicine; HVLA – high-velocity low amplitude;

Use of EBP

Participants reported a moderate-low level of engagement in EBP activities (median use subscore 8; IQR 5,14; range 0-24; scores ranging between 6.1 and 12.0 are indicative of a moderately-low level of use).

Reading/reviewing professional literature and using online search engines to find practice-related literature were among the most frequently reported activities, with 44.6%-48.0% of participating osteopaths engaging in these activities between 1 and 10 times in the month preceding the survey (**Table 2**). Participant engagement in all other EBP-related activities was generally infrequent, with 49.6%-67.2% of participating osteopaths engaging in these activities no more than 5 times in the previous month.

A weak positive association was found between use subscore (categorised by quartiles) and age ($r = .113$, $p = .007$), sex ($V = .155$, $p = .018$; with higher subscores reported among male participants), highest qualification ($r = .165$, $p < .001$), years in osteopathy practice ($r = .142$, $p < .001$), number of hours in clinical practice ($r = .082$, $p = .037$), and number of hours teaching in the higher education sector ($r = .225$, $p < .001$). A moderate positive association was observed between use subscore and number of hours engaged in research work ($r = .345$, $p < .001$).

Table 2. Participant engagement in evidence-based practice activities within the last month (n=567)

| | <i>0</i> | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | | |
|---|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------|
| | 0 | 1-5 | 6-10 | 11-15 | 16+ | Missing | Median |
| | times | times | times | times | times | | (IQR) |
| | <i>n</i> (%) | |
| I have used an online search engine to search for practice related literature or research | 65 (11.5) | 157 (27.7) | 96 (16.9) | 51 (9.0) | 117 (20.6) | 81 (14.3) | 3 (2,4) |
| I have read/reviewed professional literature (i.e. professional journals & textbooks) related to my practice | 65 (11.5) | 184 (32.5) | 88 (15.5) | 46 (8.1) | 107 (18.9) | 77 (13.6) | 2 (2,4) |
| I have used an online database to search for practice related literature or research | 107 (18.9) | 174 (30.7) | 66 (11.6) | 36 (6.3) | 103 (18.2) | 81 (14.3) | 2 (2,4) |
| I have used professional literature or research findings to assist my clinical decision-making | 101 (17.8) | 215 (37.9) | 71 (12.5) | 40 (7.1) | 63 (11.1) | 77 (13.6) | 2 (2,3) |
| I have used professional literature or research findings to change my clinical practice | 110 (19.4) | 235 (41.4) | 58 (10.2) | 29 (5.1) | 58 (10.2) | 77 (13.6) | 2 (2,3) |
| I have read/reviewed clinical research findings related to my practice | 125 (22.0) | 193 (34.0) | 62 (10.9) | 35 (6.2) | 75 (13.2) | 77 (13.6) | 2 (1,3) |
| I have consulted a colleague or industry expert to assist my clinical decision-making | 113 (19.9) | 220 (38.8) | 67 (11.8) | 33 (5.8) | 53 (9.3) | 81 (14.3) | 2 (2,3) |
| I have referred to magazines, layperson / self-help books, or non-government/non-education institution websites to assist my clinical decision-making | 236 (41.6) | 145 (25.6) | 39 (6.9) | 25 (4.4) | 41 (7.2) | 81 (14.3) | 2 (1,2) |

IQR – Interquartile range

The perceived proportion of clinical practice that was based on clinical research evidence was reported to be very small (comprising 1-25% of practice) by 21.5% of participants, small (26-50% of practice) by 21.7% of participants, moderate (51-75% of practice) by 26.8% of participants and large (76-99% of practice) by 12.0% of participants. Few participants reported that none (1.9% of participants) or all (1.2% of participants) of their practice was underpinned by clinical research evidence.

The information sources used most frequently by participating osteopaths to inform their clinical decision-making were traditional knowledge (median rank 4; IQR 2,7) and published clinical evidence (median rank 4; IQR 2,7) (**Table 3**). Published experimental/laboratory evidence was used by participants the least (median rank 8; IQR 3,10).

Table 3. Sources of information used by participants to inform their clinical decision-making (in descending order of frequency)* (n=567)

| Information source | Median (IQR) |
|--|--------------|
| Traditional knowledge | 4 (2,7) |
| Published clinical evidence (i.e. clinical trials) | 4 (2,7) |
| Consulting fellow practitioners or experts | 4 (3,6) |
| Textbooks | 5 (2,7) |
| Personal intuition | 5 (3,7) |
| Clinical practice guidelines | 6 (3,8) |
| Personal preference | 7 (4,9) |
| Trial and error | 7 (4,9) |
| Patient preference | 7 (5,9) |
| Published experimental/laboratory evidence | 8 (3,10) |

*Sources were ranked from 1=most frequently used, to 10=least frequently used.

IQR – Interquartile range

Skills and training in EBP

Overall, participating osteopaths reported a low-moderate to moderate level of perceived skill in EBP (median skill subscore 39; IQR 31,48; range 13-65; scores ranging between 26.1 and 39.0 are indicative of a low-moderate to moderate skill level). Relatively higher levels of perceived skill were observed for items pertaining to ‘clinical problem identification’ (i.e. identifying answerable clinical questions [73.6% self-reported a moderate to moderate-high skill level for this item], and identifying knowledge gaps in practice [68.5% self-reported a moderate to moderate-high skill level for this item]) (**Table 4**). Participants reported the lowest levels of perceived skill for items related to ‘research conduct’, with more than one-half of participating osteopaths reporting low to low-moderate skill in conducting clinical research (60.4%) and systematic reviews (50.9%).

A weak positive association was found between skill subscore (categorised by quartiles) and age ($r = .140$, $p = .001$), sex ($V = .256$, $p < .001$; with higher subscores reported among male participants), highest qualification ($r = .254$, $p < .001$), years in osteopathy practice ($r = .227$, $p < .001$), number of hours in clinical practice ($r = .086$, $p = .033$), and number of hours teaching in the higher education sector ($r = .265$, $p < .001$). Skill subscore was shown to be moderately positively correlated with number of hours engaged in research work ($r = .437$, $p < .001$).

Table 4. Participant’s perceived skill level in evidence-based practice (n=567)

| | 1 | 2 | 3 | 4 | 5 | | |
|--|--------------|---------------------|-----------------|----------------------|--------------|----------------|---------------------|
| | Low | Low-moderate | Moderate | Moderate-high | High | Missing | Median (IQR) |
| | <i>n (%)</i> | <i>n (%)</i> | <i>n (%)</i> | <i>n (%)</i> | <i>n (%)</i> | <i>n (%)</i> | |
| Identifying answerable clinical questions | 14 (2.5) | 56 (9.9) | 183 (32.3) | 234 (41.3) | 58 (10.2) | 22 (3.9) | 4 (3,4) |
| Identifying knowledge gaps in practice | 25 (4.4) | 84 (14.8) | 222 (39.2) | 166 (29.3) | 48 (8.5) | 22 (3.9) | 3 (3,4) |
| Locating professional literature | 38 (6.7) | 102 (18.0) | 148 (26.1) | 174 (30.7) | 83 (14.6) | 22 (3.9) | 3 (2,4) |
| Online database searching | 44 (7.8) | 101 (17.8) | 143 (25.2) | 155 (27.3) | 102 (18.0) | 22 (3.9) | 3 (2,4) |
| Retrieving evidence | 46 (8.1) | 112 (19.8) | 158 (27.9) | 145 (25.6) | 84 (14.8) | 22 (3.9) | 3 (2,4) |
| Critical appraisal of evidence | 33 (5.8) | 122 (21.5) | 190 (33.5) | 143 (25.2) | 43 (7.6) | 36 (6.3) | 3 (2,4) |
| Synthesis of research evidence | 28 (4.9) | 121 (21.3) | 185 (32.6) | 150 (26.5) | 47 (8.3) | 22 (3.9) | 3 (2,4) |
| Applying research evidence to patient cases | 25 (4.4) | 74 (13.1) | 185 (32.6) | 197 (34.7) | 50 (8.8) | 36 (6.3) | 3 (3,4) |
| Sharing evidence with colleagues | 53 (9.3) | 100 (17.6) | 139 (24.5) | 159 (28.0) | 80 (14.1) | 36 (6.3) | 3 (2,4) |
| Using findings from clinical research | 73 (12.9) | 119 (21.0) | 169 (29.8) | 127 (22.4) | 39 (6.9) | 40 (7.1) | 3 (2,4) |
| Using findings from systematic reviews | 89 (15.7) | 131 (23.1) | 127 (22.4) | 136 (24.0) | 44 (7.8) | 40 (7.1) | 3 (2,4) |
| Conducting systematic reviews | 147 (25.9) | 142 (25.0) | 122 (21.5) | 82 (14.5) | 34 (6.0) | 40 (7.1) | 2 (1,3) |
| Conducting clinical research | 218 (38.4) | 125 (22.0) | 102 (18.0) | 53 (9.3) | 33 (5.8) | 36 (6.3) | 2 (1,3) |

IQR – Interquartile range

The majority (>62%) of participating osteopaths had completed training in EBP, evidence application, conducting clinical research, conducting systematic reviews and critical thinking. Across all five areas, training was mostly undertaken as a minor or major component of a university course (i.e. by 24.3% to 37.7% of participants), or as a short course (i.e. by 9.2% to 17.8% of participants).

Attitudes toward EBP

Participants' attitudes toward EBP were largely positive (median attitude subscore 32; IQR 28,35; range 11-40; scores ranging between 32.0 and 40.0 are indicative of a predominantly agree to strongly agree response). At least 4 out of 5 participating osteopaths agreed or strongly agreed that EBP was necessary in the practice of

osteopathy (89.6%) and professional literature and research findings were useful to their day-to-day practice (88.9%), with a similar proportion expressing an interest in learning or improving the skills necessary to incorporate EBP into their practice (88.9%) (Table 5). On the other hand, a large proportion (43.5%) of participants disagreed or strongly disagreed that EBP placed an unreasonable demand on their practice.

The attitude subscore (categorised by quartiles) was found to be weakly positively associated with participant sex ($V = .162, p = .011$; with more favourable attitudes reported among male participants), number of hours teaching in the higher education sector ($r = .104, p = .013$), and number of hours engaged in research work ($r = .133, p = .003$).

Table 5. Participant attitudes toward evidence-based practice (n=567)

| | 1 | 2 | 3 | 4 | 5 | Median (IQR) |
|---|--------------------------|-----------------|----------------|--------------|-----------------------|---------------------|
| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | |
| | n (%) | n (%) | n (%) | n (%) | n (%) | |
| I am interested in learning or improving the skills necessary to incorporate EBP into my practice | 12 (2.1) | 16 (2.8) | 35 (6.2) | 202 (35.6) | 302 (53.3) | 5 (4,5) |
| EBP is necessary in the practice of osteopathy | 14 (2.5) | 17 (3.0) | 28 (4.9) | 225 (39.7) | 283 (49.9) | 4 (4,5) |
| Professional literature (i.e. journals & textbooks) and research findings are useful in my day-to-day practice | 10 (1.8) | 13 (2.3) | 40 (7.1) | 288 (50.8) | 216 (38.1) | 4 (4,5) |
| EBP improves the quality of my patient's care | 17 (3.0) | 27 (4.8) | 56 (9.9) | 234 (41.3) | 233 (41.1) | 4 (4,5) |
| EBP assists me in making decisions about patient care | 12 (2.1) | 30 (5.3) | 63 (11.1) | 260 (45.9) | 202 (35.6) | 4 (4,5) |
| Prioritizing EBP within osteopathic practice is fundamental to the advancement of the profession | 21 (3.7) | 48 (8.5) | 63 (11.1) | 211 (37.2) | 224 (39.5) | 4 (4,5) |
| EBP takes into account my clinical experience when making clinical decisions | 21 (3.7) | 73 (12.9) | 98 (17.3) | 214 (37.7) | 161 (28.4) | 4 (3,5) |
| EBP takes into account a patient's preference for treatment | 36 (6.3) | 143 (25.2) | 116 (20.5) | 173 (30.5) | 99 (17.5) | 3 (2,4) |
| There is a lack of evidence from clinical trials to support most of the treatments I use in my practice | 41 (7.2) | 138 (24.3) | 151 (26.6) | 178 (31.4) | 59 (10.4) | 3 (2,4) |
| The adoption of EBP places an unreasonable demand on my practice | 50 (8.8) | 197 (34.7) | 148 (26.1) | 141 (24.9) | 31 (5.5) | 3 (2,4) |

EBP – Evidence-based practice; IQR – Interquartile range

A secondary analysis was performed to assess the relationship between membership of a professional association and attitude, skill and use subscores. Our results showed a weak positive association between professional association membership and skill subscore ($V = .130$, $p = .031$; i.e. higher perceived skill subscore among those reporting membership of a professional association) and use subscore ($V = .170$, $p = .003$; i.e. higher use subscore among those reporting membership of a professional association). In a further analysis between associations, we found a weak positive association between professional association affiliation and skill subscore ($V = .213$, $p < .001$; i.e. higher perceived skill subscore among those reporting membership of ROFE) and use subscore ($V = .168$, $p = .002$; i.e. higher use subscore among those reporting membership of ROFE).

Barriers and enablers of EBP use

Of the 13 listed barriers to EBP uptake, participants identified 8 as being minor to moderate barriers, including lack of clinical evidence in osteopathy (51.3%), insufficient skills for applying research findings (50.8%), lack of time (49.9%), insufficient skills for appraising research (48.8%), insufficient skills for interpreting research (47.1%), insufficient skills for locating research (46.0%), lack of industry support for EBP (45.1%), and lack of incentive to participate in EBP (44.4%). The remaining 5 barriers (i.e. lack of resources, interest, relevance, colleague support, and patient preference) were considered by many (49.2% to 63.1%) participants as not being a barrier or only a minor barrier to EBP uptake.

Most participating osteopaths indicated that the 10 listed enablers of EBP uptake were either moderately or very useful. These enablers included improving access to: full-text journal articles (63.8% rated this strategy as moderately or very useful), internet in the workplace (63.3%), free online databases (63.0%), online EBP education materials (62.8%), critical reviews of research evidence relating to osteopathy (61.0%), research rating tools (58.2%), online tools that facilitate practitioner appraisal of the evidence (58.0%), databases requiring licence fees (57.3%), critically appraised topics relating to osteopathy (57.3%), and critical appraisal tools (56.3%).

Discussion

This study aimed to assess the attitudes, skills and utilisation of EBP, as well as the barriers and enablers of EBP use, among Spanish osteopaths. Overall, our results showed that Spanish osteopaths hold positive views towards EBP but their utilization/implementation is still poor. Positive responses about EBP training and utilisation were modest and, in general, the perceived level of EBP-related skill was very low. Despite these low levels of skill in relation to the utilization of EBP, several barriers to the use of EBP were perceived as not important by participants. Although it was not possible to calculate the mean response and the number of withdrawals from the survey, the final number of participants that completed the survey was around 9% of the target population, which is similar to the survey response rate reported for osteopaths in a similar UK study [26]

Our study sample had a high proportion of male participants and those aged between 30 and 49 years, which was similar to that reported in another recent survey of Spanish osteopaths [33]. Previous studies in the UK and Australia have also reported comparable gender distributions [26, 31] although in Sweden this distribution was more balanced [40]. In our survey, 73% of osteopaths had a previous degree in a healthcare profession regulated in Spain. This is consistent with other surveys conducted in Spain [33], where the majority of osteopaths have reported a previous degree in physiotherapy and postgraduate training in osteopathy.

EBP attitudes

Most participating Spanish osteopaths agreed that EBP is necessary in the practice of osteopathy, with the majority interested in learning or improving the skills necessary to incorporate EBP into their practice. Overall, attitudes toward EBP were positive. In fact, this favourable view of EBP is in accordance with other healthcare professions, such as nursing [41, 42], physiotherapy [11, 43, 44], dentistry [45] and chiropractic [12], as well as osteopaths in other countries [26, 31, 40].

Although attitudes towards EBP were generally positive, a considerable number of respondents (30%) believed that EBP placed an unreasonable demand on their practice. This item was much less reported by Australian (17%) [31], UK (16%) [26] and Swedish osteopaths (17%) [40]. This suggests that almost one-third of our sample may be experiencing difficulties in integrating EBP into their daily practice. Therefore, further efforts are required to enhance the competence, skills and efficiency of implementing the components of EBP amongst osteopaths in Spain. A possible explanation for these contrasting findings could be the lack of professional regulation in Spain, even compared to osteopathy in Sweden, where like Spain, osteopathy is also an emerging profession. However, in Sweden, there are far fewer OEIs (currently just one), and just a single osteopathic association of which the majority of osteopaths are members of [40]. The relatively higher number of OEIs in Spain and the diversity of educational focus (such as time spent on EBP) may explain the burden that Spanish osteopaths perceive in enacting EBP.

Research from nursing and physical therapy has found the level of professional education to be predictive of the propensity to adopt EBP; although, other factors were also influential, such as desire to learn, practicality (i.e. non-interference with productivity or patient flow) and beliefs about EBP [46, 47]. Indeed, there was some indication in our study that participating osteopaths had a misconstrued understanding of the EBP paradigm, with a large proportion of participants believing that EBP did not take into consideration the patient's perspective. Other studies have also indicated that osteopaths view EBP as a threat to the professional identity of the profession [24, 25, 48]. This suggests that Spanish osteopaths might benefit from revisiting the fundamental purposes of contemporary EBP which seeks to prioritise ethical care, is relationship-based, advocates shared decision-making and relates the evidence to the individual patient's context and situation[7].

EBP skills

Participating Spanish osteopaths perceived their EBP skill level to be low to moderate, which is relatively lower than that reported among osteopaths in other countries [26, 31, 40], chiropractors [12] and physiotherapists [43]. A notable insecurity among participants related to the conduct of clinical studies or systematic reviews. This finding was somewhat expected as these advanced research activities are not typically taught within undergraduate clinical programs.

Another self-reported skill-deficit related to the implementation of research findings, that is, the process of applying research evidence into clinical practice. This coincides with the perceived barriers of EBP uptake reported by participants, of which half of our sample identified insufficient skills in applying research findings as a barrier to EBP utilisation. In fact, this is a problem affecting many healthcare professions, where considerable 'research-practice gaps' exist [49–51]. However, these research-practice gaps can be attributed to more than just insufficient knowledge and skills; organizational factors, and social and attitudinal behaviours are also important contributors [49]. We argue that all of these factors are likely to be responsible for the limited application of research evidence in Spanish osteopathic practice given the historical lack of research culture within the profession in both the clinical and academic domain.

The impact of research culture on EBP use was supported to some extent by the association between EBP use and number of hours engaged in research work and teaching in the higher education sector. When this finding is compared against surveys of Australian [31] or UK [26] osteopaths, there are similarities in the number of hours dedicated to research activities (i.e. 0-15 hours/week; Spain=72%, Australia=84%, UK=72%), though Spanish osteopaths did seem to dedicate more hours to teaching in the higher education sector (i.e. 1-30 hours/week; Spain=28%, Australia=15%, UK=18%). Hence, one might expect Spanish osteopaths to have a higher perceived level of EBP-related skill, although this was not the case. This raises questions about the integration of EBP and research into Spanish osteopathic curricula.

Use EBP

A moderately-low level of engagement in EBP activities was reported in our sample. An interesting finding was that around 1 in 5 participants had not searched an online database or used scientific literature to change their clinical practice in the month preceding the survey. This behaviour can be partially explained by the types of information sources used by our sample. The main source of information used by participants to inform their clinical decision-making was traditional knowledge, followed by published clinical evidence and peer opinion or textbooks. These results highlight the importance of traditional knowledge to Spanish osteopaths; a finding that also can be extended to osteopaths in Australia [31], UK [26] and Sweden [40], who also report traditional knowledge as the primary source of information used to inform clinical decision-making. However, while Australian and UK osteopaths cited clinical guidelines as their second most frequently used information source, in the present study, Spanish osteopaths rated these guidelines as their sixth most frequently used source of information and in comparison, it was reported in ninth position by Swedish osteopaths [40]. Given that clinical guidelines typically represent the best available evidence in a field, a considerable research-practice gap may be evident in Spanish and Swedish osteopathic practice.

Notwithstanding, there appear to be few differences in EBP use between these countries. Similar to our sample, the use of EBP among osteopaths in Australia, UK and Sweden is reported to be generally low [26, 31, 40], as it is among US and Canadian chiropractors [9, 52]. Existing evidence suggests physical therapists have a relatively greater level of engagement with EBP [43, 53]. Interestingly, two-thirds of our sample held a qualification in physiotherapy, which is common among osteopaths in Spain [32, 33]. This result raises the question as to why participating osteopaths engage with EBP to a lesser extent than physiotherapists. One explanation is that to date, we have no data on Spanish physiotherapist engagement in EBP activities, which possibly could be different from other countries. Further, almost half of our sample received their highest qualification at least six years before the survey, and in Spain, EBP has been only recently integrated into physiotherapy curricular [54]. Osteopathy also has been traditionally embedded in clinical models and frameworks conceived by a small number of individuals from when the discipline was attempting to establish itself, leading to an uncritical development of the profession [23]. An examination of the comparative uptake of EBP among different health disciplines in Spain may shed some further light on this issue.

In terms of potential solutions to improving EBP uptake, education about EBP alone may not be sufficient [55]. Findings from a recent scoping review suggest education programs aimed at improving local barriers may be a more effective method of improving EBP engagement [56]. Within osteopathy, these barriers to EBP uptake are not entirely clear. Indeed, in the case of our respondents, most did not perceive there to be any major barriers.

Barriers and enablers for EBP

Previous surveys of osteopaths [26, 31, 40] have reported lack of clinical evidence in osteopathy (Australia=60%; UK=69%; Sweden=53%) and lack of time (Australia=53%; UK=57%) as major barriers to EBP uptake. Although none of the thirteen listed factors in the survey were identified as major barriers to EBP uptake among Spanish participants, lack of clinical evidence in osteopathy and lack of time were still considered the most notable issues of concern, with at least one-half of respondents reporting these as minor to moderate barriers.

Other important barriers related to lack of skills (applying research, research appraisal and interpreting research), showing the necessity to improve these abilities in order to encourage EBP uptake among new osteopaths. While education is important, there also needs to be a change in mindset, triggered by a comprehensive reflection that considers osteopathy as a healthcare profession that embraces science as a way to evolve and self-assess [48].

Exactly how EBP and research culture should be promoted among healthcare practitioners remains controversial. Several recent scoping reviews in the field of physiotherapy suggests some ideas [56, 57]. The first consideration is that any strategy aimed at improving EBP uptake should be tailored to the local scenario to contextualize the training program. The second consideration is that multifaceted strategies (containing at least five elements) are more likely to be associated with significant changes in learning outcomes. Stander et al. (2018) also highlights the need for EBP training programmes to be underpinned by behaviour change models, learning theories and a concrete theoretical framework [56]. A recent systematic review and Delphi survey proposes a set of 68 core competencies as a possible framework to inform the development of EBP curricula for health professionals [58]

Regarding enablers, around 63% of participants considered free access to scientific evidence, access to the internet at work, access to free databases and online EBP education materials to be very useful enablers. This was in line with osteopath's reports in other countries [26, 31, 40]. In the case of Spain, we argue that the national unification of osteopathic curricula and the inclusion of these programmes in universities are also necessary enablers to improving EBP uptake. These actions will potentially improve the consistency of programmes, ensure course content represents best practice, and help nurture a stronger research and EBP culture within the profession. While these actions might be difficult to accomplish in Spain without national professional regulation, results from Sweden (where osteopathy is also an unlicensed health profession) demonstrate that extensive exposure to EBP training (91% of Swedish osteopaths vs. 62% of Spanish osteopaths) correlates with higher perceived skills in EBP [40].

Limitations

Although the survey response rate exceeded the minimum sample size required, we noticed a high percentage of missing responses. As all responses were compulsory, this meant many respondents dropped out of the survey early, possibly due to survey fatigue. This was also an issue reported in a UK study of osteopaths [26]. Nonetheless, as the original English version of EBASE has demonstrated good internal consistency and acceptable test-retest reliability [35, 36], and the fact that survey fatigue was not detected during pilot testing, it was not considered appropriate to modify the number of survey items.

While the process of translating the questionnaire strictly followed standard methods reported by WHO [37], including a pilot study, the psychometric properties of the Spanish version of the questionnaire was not formally assessed, which could have impacted the validity and reliability of findings. As has occurred in other osteopathic surveys conducted in Spain [32, 33], a large proportion of responses came from two geographical regions (Cataluña and Madrid). These results likely reflect the geographical distribution of osteopaths in Spain.

Notwithstanding, there were a number of regions that were not well represented, whose views might potentially differ from the more well-represented regions. Recall bias and selection bias are other intrinsic limitations of the study design.

Conclusions

This study furthers our understanding of Spanish osteopaths' attitudes, skills and use of EBP. Our results showed that participant's attitudes toward EBP were largely positive. At least four out of five participating osteopaths agreed that EBP was necessary in the practice of osteopathy and professional literature and research findings were useful to their day-to-day practice. However, the perceived skills, use and engagement in EBP activities was reported as moderate to low. Fortunately, there was general interest in learning and improving the skills necessary to incorporate EBP into clinical practice. Our findings, therefore, suggest that appropriate educational initiatives and wider inclusion of osteopathic educational programmes into university environments would be helpful in assisting Spanish osteopaths to embrace EBP. Although, as discussed in this paper, the absence of osteopathy regulation in Spain could continue to curtail efforts to improve EBP uptake in this professional group.

List Of Abbreviations

EBP- Evidenced-based practice

WHO - World Health Organization

OEIs - Osteopathic Educational Institutions

EBASE – Evidence-Based practice Attitude and Utilization Survey

Declarations

Ethics approval and consent to participate

The study was approved by the Ethical Committee of Sagrado Corazón Hospital, Barcelona (2019/81-CMF-HUSC). Study participation was anonymous and voluntary, and participants were able to withdraw from the survey at any time without repercussion. Informed consent was obtained from all subjects and all methods were carried out in accordance with relevant guidelines and regulations.

Consent for publication

Not applicable

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests

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Authors' contributions

GA and CJ translated and adapted the questionnaire and established local recruitment strategies. GA and CJ drafted the first manuscript in collaboration with TS and OT. ML conducted the statistical analysis and drafted the results. GA, CJ, TS, OT and ML critically interpreted the data, edited the manuscript and reviewed and approved the final manuscript.

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Figures



Figure 1

Geographical location of practice, n (%) Note: The designations employed and the presentation of the material on this map do not imply the expression of any opinion whatsoever on the part of Research Square concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. This map has been provided by the authors.