BMC Medical Education

RESEARCH

Open Access

Learning to become an osteopath in Italy: a qualitative study of first-year students in a newly established university programme

Clizia Cazzarolli[1,2,3*], Andrea Turrina[2,3,4], Laura Furri[5], Alvisa Palese[6], Maria Gabriella Landuzzi[7], Nicola Smania[4,8,9], Francesco Cerritelli[10,11], Jorge Eduardo Esteves[11,12] and Giacomo Rossettini[1,13,14]

Abstract

Objective To explore how first-year undergraduate osteopathy students construct their emerging professional identity during early education within the first Italian university-based osteopathy degree programme, with particular attention to the role of embodied learning, early clinical exposure, and institutional uncertainty.

Design A qualitative study based on semi-structured interviews, analysed using reflexive thematic analysis.

Setting A newly established undergraduate osteopathy degree programme at the University of Verona, Italy.

Participants A total of 17 first-year osteopathy students were involved through purposive sampling to capture variation in age, gender and educational background.

Focus of the study Students' meaning-making of emerging professional identity, with particular attention to embodied learning, early clinical exposure, relational recognition, and institutional uncertainty.

Results Four themes were developed from the analysis. (1) "Entering an undefined profession: between privilege and uncertainty", where students experienced enrolment as meaningful while navigating an evolving institutional context. (2) "Learning through the body: from studying osteopathy to feeling like an osteopath", highlighting the gap between theoretical knowledge and embodied confidence. (3) "The internship: legitimacy, exposure and vulnerability", where clinical encounters were described as simultaneously supporting and challenging students' emerging sense of professional legitimacy. (4) "Being an osteopath-in-training: a provisional, fragile and relational identity", illustrating how participants described negotiating their emerging professional identity through interaction, recognition, and institutional uncertainty.

Conclusion Early professional identity in a newly established osteopathy programme was experienced as provisional, embodied, and relational. Participants reported their early professional identity as closely linked not only to clinical learning, but also to the institutional conditions in which they learned, practised, and began to see themselves as future professionals. Our findings suggest that participants experienced institutional uncertainty not merely as a contextual challenge but as an important dimension of how they made sense of their developing competencies, legitimacy and recognition during early professional education. Recognising and supporting these processes may

*Correspondence:
Clizia Cazzarolli
ricerca@eomitalia.it

Full list of author information is available at the end of the article

© The Author(s) 2026. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by-nc-nd/4.0/.

strengthen educational practice in health professions that are newly integrated into higher education, as well as in other evolving academic contexts.

Keywords Osteopathic Medicine, Education, Social Identification, Allied Health Education, Learning, Qualitative Research

Strengths and limitations of this study

- Reflexive thematic analysis enabled an in-depth exploration of students' early meaning-making within a newly established university osteopathy programme.
- Purposive sampling ensured variation in participants' demographic and educational backgrounds, although the study was not designed to compare experiences across these characteristics.
- Individual semi-structured interviews generated rich experiential data, although online interviews may have influenced interactional depth.
- The single-site design enhances contextual specificity but may limit transferability to other settings.
- Interviewer institutional proximity, despite no teaching or assessment role, may have influenced participants' disclosures.

Introduction

Over recent decades, osteopathy has undergone substantial transformations in many countries, shifting from heterogeneous and predominantly non-university training pathways toward formal academic education and professional regulation [1, 2]. In contexts where this transition has been consolidated, osteopathy has become integrated within higher education systems, supporting curricular standardisation and institutional legitimacy [3–5]. Osteopathy is a person-centred health profession concerned with the assessment, diagnosis, and management of individuals with musculoskeletal and other health conditions through the integration of clinical reasoning, manual approaches, exercise, and health education [1, 2, 6, 7]. Although osteopathy shares some competencies with professions such as physiotherapy and chiropractic, it has developed a distinctive educational and professional identity centred on embodied clinical practice, whole-person care, and person-centred clinical reasoning [8–11]. These developments have also reshaped how students first encounter education and begin to orient themselves toward the profession [12].

The development of professional identity in osteopathy is closely linked to embodied knowledge, manual practice, and relational engagement with patients [13, 14]. Learning to be an osteopath involves not only acquiring theoretical and technical knowledge and competencies, but also developing bodily confidence and learning to participate legitimately in professional relationships and clinical practice [13–15]. Accordingly, professional becoming extends beyond competence acquisition alone, encompassing the gradual development of embodied confidence, emotional attunement, and recognition by patients, peers, and educators— dimensions that formal curricula may acknowledge but cannot fully engineer [13, 14, 16, 17]. More broadly, early professional identity is increasingly understood as provisional, relational, and continually negotiated through participation in practice rather than achieved through competence acquisition alone [13, 14, 16]. During the early stages of education, students commonly experience uncertainty as they navigate evolving expectations, responsibilities, and opportunities for legitimate participation in clinical settings [18–20].

Research in the field of osteopathic education has largely focused on contexts in which university-based programmes and regulatory frameworks have been established for many years. Consequently, students' learning experiences have primarily been examined within stable academic and institutional arrangements [21–23]. By contrast, far less attention has been paid to how students experience early professional identity formation in contexts where osteopathy has only become part of higher education, and where educational structures and professional norms are still taking shape. Italy represents a particularly significant case in this respect [24, 25]. Until recently, osteopathy training in Italy was delivered almost exclusively through private, non-university institutions, characterised by heterogeneous curricula and variable pathways to professional recognition [26, 27]. The subsequent recognition of osteopathy as a regulated health profession and its integration into university degree programmes represent a major institutional transition from apprenticeship-based to academically structured professional education, requiring students to negotiate simultaneous professional and organisational change [28–33].

International and national surveys, such as the Osteopathic Practitioners Estimates and RAtes (OPERA) studies, have provided quantitative data on osteopaths' workforce characteristics, practice patterns, and educational backgrounds across several countries [22, 23, 26]. However, comparatively little is known about the lived experience of osteopathy students, particularly within educational systems undergoing institutional transformation. The first year of training represents a particularly informative period because it captures students' earliest encounters with university education, embodied

learning, and clinical practice, before professional identities and educational routines become more consolidated. Therefore, students enrolled in the first Italian university-based osteopathy programme occupy a unique position: they are not only entering a profession but also participating in the early implementation of a newly established university programme. Within this context, embodied learning, early clinical exposure, and interactions with patients, tutors, and peers occur alongside an educational environment whose academic structures and professional expectations are still evolving [34–36]. In these contexts, uncertainty may arise not only from novice participation, but also from the profession's ongoing integration into higher education. Exploring students' perspectives, therefore, offers an opportunity to better understand how emerging professional identity is constructed at the intersection of embodied practice, relational recognition, and institutional change.

Against this background, this study aimed to explore how first-year undergraduate osteopathy students construct their emerging professional identity within the first Italian university-based osteopathy degree programme, with particular attention to the role of embodied learning, early clinical exposure, and institutional uncertainty in these experiences.

Methods

Study design and ethics

This study adopted a qualitative research design using reflexive thematic analysis (RTA), as proposed by Braun and Clarke [37]. RTA was chosen because it enables an in-depth exploration of how participants make sense of their experiences and construct meaning around emerging professional identity, making it particularly appropriate for examining embodied learning and institutional uncertainty within a newly established university programme [24]. From an ontological perspective, the study assumes a contextualist position, recognising social reality as existing but accessed through situated and relational meanings. Epistemologically, the study adopts an experiential–interpretive stance, recognising that participants' accounts provide insight into their meaning-making, while being interpreted through the interaction between researchers, participants, and context. Accordingly, meanings were understood as situated, relational, and co-constructed rather than fixed or context-independent [38].

The research protocol received approval from the University of Verona Ethics Committee (Prot n. 305827 del 16/07/2025). All procedures were conducted in accordance with the Declaration of Helsinki and the EU General Data Protection Regulation (2016/679). Reporting was guided by the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist (Supplementary File 1) [39].

Setting, participants and recruitment

The project was conducted within the first Italian university-based undergraduate osteopathy degree programme at the University of Verona. The programme is a three-year degree (180 European Credit Transfer and Accumulation System) combining theoretical coursework, laboratory-based practical training and supervised clinical internship, and represents the first academic pathway for osteopathy within the Italian university system [40], following the formal recognition of osteopathy as a regulated health profession in Italy [28, 29].

The first-year cohort was intentionally selected because it represents the earliest stage at which students encounter university education, embodied learning, and initial clinical experiences while beginning to make sense of their professional role. Participants were recruited from this cohort, enrolled during the 2024/2025 academic year through a purposive sampling strategy [41, 42] aimed at capturing variation across age, gender, and prior educational background within this newly established academic context. Recruitment took place in July 2025 via an institutional email invitation sent by the academic office to the entire first-year cohort (n = 34). Seventeen students volunteered to participate. No refusals or withdrawals occurred among those who expressed interest. Consistent with an RTA approach, sample size and data saturation were not predetermined but considered in relation to the analytic adequacy of the dataset [37, 43]. The final sample was considered analytically adequate to generate rich, information-powered accounts and to support the development of coherent themes addressing the research question.

Inclusion criteria were age ≥ 18 years, enrolment in the osteopathy degree programme, sufficient proficiency in Italian to participate in an in-depth interview, and absence of personal or professional relationships with the researchers. Participation was voluntary, and no financial or academic incentives were provided. Students were informed that they could decline participation or withdraw at any time without consequences for their academic pathway.

Data collection

Data were collected through individual semi-structured interviews [44]. The interview guide was developed based on the study aims and relevant literature [5, 22–24, 27], reviewed by the research team and refined following two pilot interviews. The pilot interviews were used to assess question clarity, interview flow, conceptual breadth, and the acceptability of discussing potentially sensitive experiences related to uncertainty, vulnerability and

early clinical exposure. Pilot interviews were excluded from analysis, and no substantive changes were made to the guide thereafter. The interview guide is presented in Table 1. It was designed to elicit narrative accounts and included open-ended questions addressing motivations for enrolment, everyday academic experiences, early clinical exposure, perceptions of the osteopath's professional role, emerging professional identity, and perceived resources and challenges along the training pathway. Although informed by the study aims and relevant literature, the guide was used flexibly to encourage participants to foreground experiences they considered meaningful. It served as a prompt for discussion rather than a framework for analysis and did not predetermine coding or theme development. Participants frequently moved across interview topics, enabling patterns of shared meaning to be developed through analysis across the dataset as a whole rather than remaining confined to individual interview questions or interview domains.

Interviews were conducted in Italian in August 2025 via Microsoft Teams to facilitate participation and accommodate availability [45]. Interviews lasted 30–60 min (approximately 45 min on average), and no other participants were present. All interviews were conducted by one female researcher (LF - MSc) with formal training in qualitative methodology. She held no teaching, assessment, or governance roles within the osteopathy degree programme and had no prior personal or professional relationships with participants. At the time of data collection, she was employed as an academic coordinator in the rehabilitation sciences area at the University of Verona, outside the osteopathy programme. This role was disclosed at the beginning of each interview, and reflexive attention was given to the potential influence of perceived institutional positioning. A facilitative, non-evaluative interviewing stance was adopted throughout.

Written informed consent was obtained prior to data collection, including consent for audio-recording. Participants received information about the study aims, data management procedures, and measures to ensure confidentiality and anonymity. Participants were also informed about the interviewer's professional background, role within the university, and the aims of the study prior to the interview. No additional information about the researchers' personal motivations or assumptions was disclosed. Basic sociodemographic and educational information (age, gender, prior educational background, and concurrent employment) was collected

Table 1 Semi-structured Interview Guide This interview guide was designed to explore the lived experiences of students enrolled in the early stages of the first Italian university-based osteopathy degree programme. Note: Questions were used flexibly to follow participants' narratives, with prompts adapted to explore issues they considered meaningful

Topic explored	Example questions	Purpose
Narrative opening	Tell me about your experience as an osteopathy student at the University of Verona. You can start wherever you like, for example, from the moment you decided to enrol or from an episode that was particularly meaningful to you.	To elicit participant-led narratives and establish an experiential entry point into meaning-making
Experiences of learning	What is it like to experience this degree programme on a day-to-day basis? What have been the most meaningful moments so far? How do you perceive the academic and clinical components of the programme?	To encourage discussion of participants' everyday learning experiences and the meanings they attributed to them
Early clinical exposure	What was it like to experience your first contact with the clinical internship? Can you describe a moment where you felt, even briefly, like an osteopath-in-training? How did you experience the transition from classroom-based learning to the clinical setting?	To encourage reflection on early clinical experiences and their perceived significance during training
Professional role	At this point in your studies, how would you describe your role as an osteopath-in-training? Have there been moments when you felt part of the profession? What makes it difficult to see yourself as a future osteopath?	To explore how participants described and understood their emerging professional role
Programme context	Osteopathy has recently become a university degree in Italy. Has this influenced your experience as a student? How does being part of a programme that is still being structured affect your day-to-day studies? How do you feel when you tell others that you are studying osteopathy at university?	To encourage reflection on the role of the educational and institutional context in students' experiences
Personal reflections	How has your perception of yourself as an osteopath-in-training changed since starting the programme? How would you describe your experience of being an osteopath-in-training so far? Have you experienced moments of doubt, confirmation, or change?	To encourage participants to reflect on how they understood and described themselves in relation to the profession
Resources and challenges	In what situations have you felt supported during your studies? In what situations have you felt challenged or blocked? Who or what has influenced your experience positively or negatively?	To explore perceived resources, challenges, and relational influences within the educational experience
Reflective closure	Looking back on our conversation, what part of your experience feels most significant? Is there anything important that we haven't discussed? What advice would you give to a new student entering this programme?	To allow participants to prioritise meanings and close the narrative on their own terms

to contextualise participants' accounts. All interviews were audio-recorded, transcribed verbatim, checked for accuracy, and anonymised using numerical pseudonyms (e.g., P1). Data were stored securely on a password-protected institutional server accessible only to the research team. No repeat interviews were conducted.

Transcripts were analysed in the original language to preserve semantic and contextual nuance; selected excerpts were translated into English for dissemination. Brief field notes were produced after each interview to document contextual details and reflexive impressions relevant to analysis [37]. Transcripts were returned to participants for optional review. Consistent with an RTA approach, participant feedback was not used to validate analytic interpretations [37]. Participants were also offered a summary of the study findings.

Data analysis

Data were analysed using RTA following the approach described by Braun and Clarke [37]. The six analytic phases were approached as recursive and flexible activities rather than fixed sequential steps. Throughout the analysis, there was continual movement between familiarisation, coding, theme development, and interpretation (Table 2). Analysis was conducted primarily inductively, with coding and theme development grounded in participants' accounts rather than structured around pre-existing theoretical constructs or the domains of the interview guide [37]. Although the interview guide was informed by the study aims and relevant literature, coding and theme development were not constrained by these domains but were driven by participants' narratives and the meanings they attached to their experiences. Consistent with the contextualist and experiential–interpretive orientation

Table 2 Analytic phases and reflexive practices in reflexive thematic analysis based on Braun and Clarke (2022) [37]

Phase	Analytic process	Researchers' involvement	Reflexive analytic actions
(1) Familiarisation with the data	Transcripts were read and re-read to enable deep engagement with participants' accounts and immersion in the dataset. Initial impressions, affective responses, and analytic curiosities were actively noted.	The primary analyst (CC) led this phase, with all authors engaging in familiarisation with a subset of transcripts and contributing reflexive reflections.	Reflexive field notes and analytic memos were written during and after each interview. Early interpretive questions and assumptions were documented. Prolonged engagement with the data supported sensitivity to context and meaning.
(2) Coding	Initial codes were generated inductively across the dataset, focusing primarily on participants' explicit accounts and experiences of training and emerging professional identity. Coding was approached as flexible, reflexive, and evolving rather than fixed, exhaustive, or reliability-oriented.	Coding was primarily conducted by the primary analyst (CC), with ongoing reflexive dialogue with another qualitative researcher from a different disciplinary background.	Coding was approached as a reflexive and interpretive practice rather than a reliability exercise. Codes were revised, merged, or discarded as understanding deepened. Reflexive memos documented how analytic focus shifted over time.
(3) Generating initial themes	Codes were actively explored, compared, and reconfigured to identify broader patterns of shared meaning across participants' accounts and the dataset as a whole. Candidate themes were developed as provisional patterns of shared meaning organised around central organising concepts and treated as interpretive analytic constructions rather than descriptive categories derived directly from the data.	The primary analyst (CC) generated candidate themes, which were discussed reflexively with other members of the research team.	Visual mapping and written theme summaries supported sense-making. Alternative thematic configurations were explored and compared. Attention was paid to internal coherence and analytic distinctiveness of themes.
(4) Developing and reviewing themes	Candidate themes were iteratively reviewed in relation to coded data extracts and the full dataset, exploring their coherence, distinctiveness, and relevance to the research question.	All authors engaged in reflexive discussion of candidate themes, challenging interpretations and considering alternative interpretations.	Themes refined through iterative movement between data, codes, and interpretations. Some candidate themes were collapsed, redefined, or discarded. Reflexive dialogue focused on depth and meaning rather than agreement.
(5) Refining, defining and naming themes	Themes were further refined by articulating their central organising concept and analytic contribution. Theme names were developed to convey both experiential content and interpretive meaning.	All authors contributed to final theme definitions and naming during collaborative analytic discussions.	Written theme definitions clarified scope and boundaries. Theme names were refined to communicate the central organising concept and the "story" each theme told about the data. Sub-themes were used selectively to articulate internal complexity.
(6) Producing the report	The final analytic narrative was developed through close engagement with themes and illustrative data extracts. Writing was treated as an analytical practice and integral part of theme refinements.	The primary analyst (CC) led writing of the Results, with all authors reviewing and contributing to interpretive refinement.	Reflexive justification of analytic and methodological choices included. Quotes extracted were contextualised within the analytic narrative. Emphasis placed on coherence, transparency, and interpretive depth.

underpinning the study, the researchers recognised that analytic decisions were inevitably shaped by their theoretical positioning and reflexive engagement with the data [37, 38].

Coding was undertaken primarily at a semantic level, focusing on participants' explicit accounts of their lived experience. However, themes development involved active interpretive engagement with broader patterns of shared meaning across the dataset. This combination of predominantly semantic coding and interpretive theme development was consistent with a reflexive thematic analysis approach and the epistemological position adopted in this study [37, 38].

Themes were therefore understood as patterns of shared meaning organised around central organising concepts and actively developed through researchers' engagement with the data, rather than as entities that simply emerged from it [37]. Practices such as consensus coding or inter-coder reliability were not pursued, as these are not aligned with an RTA approach [46].

The analytic process involved repeated engagement with the dataset, primarily inductive coding across all interviews, and the iterative development and refinement of candidate themes [37]. Analysis moved recursively between coded data extracts, the dataset as a whole, and developing interpretations. Codes were treated as analytic tools rather than building blocks from which themes were mechanically assembled. Instead, related codes were compared, explored, and reconfigured to identify broader patterns of shared meaning across participants' accounts. Candidate themes were developed as provisional interpretive constructions organised around central organising concepts. They were iteratively reviewed, refined, collapsed, or reconfigured through ongoing engagement with both coded extracts and the dataset as a whole until a coherent and compelling interpretation of the dataset in relation to the research question was achieved [37].

The analysis was led by one primary analyst (CC), who engaged with the full dataset throughout all phases of the analysis. All authors contributed to selected analytic phases, including familiarisation with a subset of transcripts, theme review, refinement, naming, and interpretive discussion, as summarised in Table 2. These discussions served as sites of reflexive engagement rather than coding verification: they encouraged critical reflection on preliminary interpretations, prompted consideration of alternative thematic configurations, and contributed to refining the central organising concept underpinning each theme. Consistent with the epistemological assumptions of reflexive thematic analysis, no attempt was made to establish coding consensus or inter-coder agreement, as such procedures presuppose a codebook-style approach in which coding reliability is meaningful; within a reflexive approach, meaning is understood to be actively generated through the researcher's situated, interpretive engagement with the data [47, 48]. Final analytic decisions therefore rested with the primary analyst, with team discussions functioning to deepen and interrogate—rather than adjudicate—the developing analysis. Writing was also treated as an integral component of the analytic process, contributing the ongoing refinement of themes and interpretations. Coding and theme development were managed using Microsoft Word and Excel manually, without the use of qualitative data analysis software. Analytic rigour was further supported through reflexive memo writing and the iterative development of themes across the dataset.

Researcher reflexivity

The research team comprised nine members with backgrounds in osteopathy (CC - MSc; AT – MSc; FC – PhD; JEE - PhD), physiotherapy (GR - PhD, LF - MSc), nursing (AP - PhD), sociology (MGL - PhD), and medicine (NS - PhD), with roles spanning academia, clinical practice, and qualitative research. These multidisciplinary and professional positions shaped how patterns of shared meaning were identified, refined, and developed into themes.

Reflexivity was treated as an integral and ongoing component of the research process. The team recognised that their positioning within health professions education and clinical practice shaped how students' experiences were understood. Researcher subjectivity was therefore approached as an inherent and valuable aspect of qualitative analysis, requiring ongoing critical engagement rather than minimisation.

The primary analyst maintained reflexive memos throughout analysis to document evolving interpretations, uncertainties, assumptions, and emerging conceptual understandings shaping the analytic process. Regular discussions with at least one additional qualitative researcher from a different disciplinary background were used to challenge interpretations and consider alternative readings of the data. These discussions aimed to deepen analytic engagement rather than to achieve consensus or verification. Disciplinary and professional influences were made explicit and critically reflected upon throughout the analytic process, informing coding decisions, theme development, and the overall analytic narrative.

Results

Seventeen first-year undergraduate students participated in the study. Participants represented a range of ages and educational backgrounds, with some entering the programme directly after secondary education and others having prior university experience or training in health-related fields (Table 3).

Table 3 Participant characteristics ($n = 17$)

Characteristic	*n* (%)
Gender (self-reported)	
Male	11 (64.7)
Female	6 (35.3)
Age	
Median (range), years	22 (20–38)
Highest previous educational qualification	
Secondary school diploma	13 (76.5)
Bachelor's degree	3 (17.6)
Master's degree	1 (5.9)
Timing of enrolment in the osteopathy degree programme	
Immediately after secondary school	5 (29.4)
After 1–3 years	7 (41.2)
After > 3 years	5 (29.4)
Employed status during studies	
Yes (part-time)	12 (70.6)
No	5 (29.4)
Region of residence	
Veneto	13 (76.5)
Other regions[†]	4 (23.5)

Legend:[†]Lombardia, Piemonte, Umbria, Trentino–Alto Adige

Four interrelated themes were developed, constructing patterns of shared meaning in students' accounts of the early stages of osteopathic training within the first Italian university-based osteopathy degree programme. Although presented separately, the themes are closely interconnected and collectively illustrate how students made sense of embodied learning, clinical exposure, institutional uncertainty, and their emerging professional identity as osteopaths-in-training. Consistent with an RTA approach, the themes capture patterned meanings across the dataset while retaining internal variation, moments of tension, and contrasting experiences within and between participants' accounts.

Theme 1. entering an undefined profession: between privilege and uncertainty

This theme captures how participants experienced entry into the profession through a tension between belonging to a pioneering educational initiative and navigating institutional uncertainty. Participants described entering the programme as both a meaningful personal milestone and an encounter with a profession still institutionally in development. Enrolment was frequently framed as confirmation of having found a professional path that "fit", imbuing admission with strong personal and symbolic significance:

> *"I was literally the last one to be admitted. I remember thinking: okay, this must mean something. One year later, I can say I'm really happy with this choice. It feels like I found something that fits me." (P13).*

At the same time, this sense of fulfilment coexisted with an acute awareness of entering an educational and professional space that was still being defined. Being part of the first university cohort was described as both a source of pride and a reminder that institutional structures were still under construction:

> *"Knowing that this is the first university programme makes you feel a bit special, almost privileged. But at the same time you realise that a lot of things are still being built while you're already inside." (P16).*

Uncertainty was experienced in concrete and everyday ways, particularly when organisational changes disrupted expectations. The postponement of internship activities was frequently described as emotionally destabilising, prompting doubts about the solidity of the training pathway:

> *"When the internship that was supposed to happen in February didn't take place, I started to panic a bit. I thought: okay, this course has started, but is it really going forward or is it getting stuck somewhere?" (P13).*

Experiences of institutional uncertainty were not uniform across participants. While several students experienced organisational changes as unsettling, others regarded them as understandable features of joining the first university-based cohort. Rather than undermining their commitment, these challenges were often interpreted as an expected consequence of participating in the development of a new educational pathway.

> *"Some things were organised at the last minute, but honestly we expected that. It is the first year of a brand-new programme, so these kinds of problems were almost inevitable." (P2).*

For some participants, the recent regulation of osteopathy and its integration into the university system also counterbalanced organisational uncertainty by reinforcing confidence in the future of the profession.

> *"When I realised osteopathy had become a university degree and would have its own professional register, I felt much more confident about choosing this profession." (P4).*

Rather than leading to disengagement, however, participants often described this uncertainty as coexisting with a continued commitment to the programme. Students described remaining invested while simultaneously monitoring signs of institutional stability. Although

uncertainty was a recurrent feature across the interviews, participants interpreted it in different ways. For some, it generated concern regarding the organisation and future of the programme, whereas for others it became part of the experience of belonging to a pioneering cohort. Together, these accounts illustrate how feelings of privilege and uncertainty were intertwined in participants' early experiences of becoming osteopaths-in-training (Table 4).

Theme 2. learning through the body: from studying osteopathy to feeling like an osteopath

Participants described embodied learning as a process through which students simultaneously developed bodily

Table 4 Illustrative data extracts supporting each theme

Theme 1: Entering an undefined profession: between privilege and uncertainty	
Illustrative aspects of the theme	Illustrative data extracts
Enrolment as a meaningful life choice	"Choosing this course felt like choosing something that finally made sense for me, even if I didn't know exactly where it would lead." (P5)
Feeling part of a pioneering cohort	"We know we're the first ones, and that gives you a sense of responsibility, like what we do now will matter later." (P14)
Pride associated with being part of a newly established programme	"There's pride in saying you're enrolled here, because it's new and different from the old private schools." (P2)
Awareness of institutional incompleteness	"Sometimes you can tell that things are still being figured out while we're already attending classes." (P8)
Organisational uncertainty	"Schedules change, plans change, and you realise that not everything is set in stone yet." (P11)
Staying committed despite uncertainty	"Even if there are doubts, I never thought of leaving. You kind of accept that uncertainty is part of the package." (P6)
Theme 2: Learning through the body: from studying osteopathy to feeling like an osteopath	
Illustrative aspects of the theme	Illustrative data extracts
Learning extending beyond formal academic boundaries	"Even outside university, I keep thinking about what we did in class, how I moved my hands, what I felt." (P4)
Bodily exposure in early training	"Being touched and touching others so early was uncomfortable at first, but it makes you realise what this profession really is." (P12)
Confronting physical proximity	"You can't hide behind books. You're physically there, with another body in front of you." (P9)
Realising limits of theoretical knowledge	"Knowing anatomy doesn't mean you know how to use your hands yet." (P3)
Developing bodily awareness	"At the beginning everything feels forced. Slowly, your body starts to understand on its own." (P15)
Manual confidence as a gradual process	"Confidence doesn't arrive suddenly. It grows every time you practise." (P7)
Theme 3: The internship as a turning point: legitimacy, exposure, and vulnerability	
Illustrative aspects of the theme	Illustrative data extracts
Internship functioning as a reality check	"Internship is when you realise this is no longer just an exercise." (P10)
Feeling exposed in front of patients	"With real patients you feel much more responsible, and that's scary." (P16)
Fear of making mistakes in conditions of responsibility	"You are constantly afraid of doing something wrong, especially at the beginning." (P3)
Learning through challenge	"Those moments when you struggle are the ones you remember the most." (P9)
Tutor presence as a source of safety and containment	"Knowing the tutor was there made it possible to try, even if I wasn't confident." (P2)
Peer learning during internship	"Watching how classmates handle situations helps you understand how you could do it too." (P14)
Theme 4: Becoming an osteopath-in-training: a provisional, fragile, and relational identity	
Illustrative aspects of the theme	Illustrative data extracts
Feeling professionally undefined	"I don't feel like I can call myself an osteopath, but I also don't feel like a generic student anymore." (P6)
Identity as a work in progress	"It feels like something that's still under construction." (P11)
Recognition through interaction	"When someone trusts you, even a little, it changes how you see yourself." (P4)
Importance of feedback	"Small comments from tutors or patients stay with you longer than exams." (P13)
Identity shaped through relational recognition	"I realised that becoming an osteopath doesn't happen alone. It happens through patients, tutors, and classmates." (P16)
Ongoing becoming	"I don't think there's a moment when you suddenly 'are' an osteopath. It's gradual." (P8)

Legend: P, participant. The entries in the "Illustrative aspects of the theme" column are provided to orient the reader to the accompanying quotations and illustrate aspects of each theme. They do not represent formal codes, sub-themes, or independent analytic units but are presented to help readers understand how each theme was constructed from participants' accounts.

confidence and confronted uncertainty about their readiness and legitimacy as future practitioners. Participants conceptualised learning osteopathy as a deeply embodied process in which theoretical knowledge and bodily confidence did not necessarily develop simultaneously. Early training brought students into direct contact with the bodily and relational dimensions of the profession, challenging conventional expectations of academic learning and foregrounding the role of the body as a central site of professional development:

> *"My day doesn't really end when classes end. Even when it's not exam period, I keep studying, revising, rethinking things. Being a student here is not something you switch off." (P1).*

Early exposure to manual practice was often described as marking an important shift in how students experienced learning. Practical sessions on treatment tables were often recalled as moments of disruption that highlighted the bodily dimension of the profession:

> *"At the beginning, doing lessons on treatment tables was almost shocking. Touching each other, being so close… it was strange. You suddenly realise that this profession goes straight through the body." (P13).*

Students repeatedly described a gap between theoretical understanding and embodied confidence. Knowing anatomy conceptually did not translate automatically into feeling competent when touching another person:

> *"You study anatomy, you think you understand, but then when you put your hands on someone you realise you're not that sure. You don't really trust your hands yet." (P13).*

Participants did not experience embodied learning in the same way. While many described manual practice as an immediate and emotionally significant encounter with the profession, others experienced a more gradual integration of theoretical and practical learning. For some, increasing anatomical and clinical knowledge initially reduced rather than strengthened confidence, as greater awareness of potential risks made them more cautious when touching others.

> *"I still feel very unprepared. I may have passed the exams and completed the first year properly, but I now trust myself less when putting my hands on someone because I know more about the possible risks and situations." (P15).*

Others described the first experiences of manual practice less as a source of uncertainty than as a change in the meaning of touch itself. Physical contact became intentional and clinically informed, transforming an everyday action into a professional skill that required attention, reasoning, and sensitivity.

> *"It was a very simple first contact, but it was guided. You place your hand on another person and suddenly realise that you are paying attention to what lies underneath. That was the emotional part—it became a conscious touch." (P8).*

"Trusting one's hands" became a recurring expression through which students articulated broader concerns about readiness and professional legitimacy. While repeated practice gradually increased familiarity, this process was rarely described as linear. Instead, bodily awareness became a context in which students simultaneously developed confidence, recognised the limits of their competence, and began to imagine themselves as future osteopaths while continuing to negotiate uncertainty and self-doubt (Table 4).

Theme 3. the internship: legitimacy, exposure, and vulnerability

This theme reveals how clinical education functioned as a relational space in which professional legitimacy was enacted, challenged, and negotiated through encounters with patients, tutors, and peers. Participants described clinical education as an important context in which their emerging sense of professional legitimacy began to be enacted and negotiated in practice. Entering clinical spaces was experienced as symbolically significant, marking a transition from simulated learning to real encounters with patients and positioning students within the public and relational dimensions of care:

> *"The first time I went to call the patient from the waiting room, I suddenly thought: wow, I'm actually here for this. In that moment, I really felt like an osteopathy student." (P17).*

At the same time, clinical exposure heightened feelings of vulnerability and responsibility, particularly in encounters with patients perceived as fragile or complex:

> *"With older patients, I was much more scared. You're constantly thinking: am I doing this right? Am I too strong? Am I missing something?" (P17).*

Participants often described moments of difficulty as meaningful learning experiences. Moving beyond

comfort zones was described as necessary for learning to "make sense" of practice:

> *"Going out of my comfort zone was hard, but that's exactly when things started to make sense. The difficulty actually unlocked something." (P9).*

Participants, however, did not describe clinical placement as leading uniformly to greater confidence. For some, applying theoretical knowledge with real patients gradually increased their sense of competence and autonomy.

> *"The placement definitely gave me more confidence because I realised that the things I had studied actually made sense with real patients. Little by little I started feeling more able to manage situations on my own." (P6).*

Others described becoming more aware of the limits of their preparation, particularly when interacting with patients perceived as more knowledgeable or clinically complex, making it difficult to adopt a professional position with confidence.

> *"Sometimes I felt like I was relating to the patient almost as an equal rather than as a future professional. When patients knew more than I did, I found it difficult to stand by what I knew because I was afraid of making mistakes." (P5).*

Relational support played a crucial role in shaping how vulnerability was experienced. Tutors who allowed students to attempt procedures before intervening were described as creating a sense of safety that legitimised experimentation:

> *"The tutors let us try first, even if we weren't perfect. Then they explained everything afterwards. That made me feel safe enough to experiment." (P1).*

Peers were similarly described as protective and normalising presences:

> *"Being with classmates who were more confident than me helped a lot. You don't feel judged, you feel accompanied." (P9).*

Experiences of supervision also varied across participants. While many described tutors as highly supportive and available, others perceived tutor involvement as more limited, highlighting differences in how students experienced guidance during their early clinical encounters.

> *"The relationship with the tutor was actually quite brief, especially in the hospital placement. We only spoke a few times." (P7).*

Participants' accounts suggest that participation in clinical practice involved ongoing negotiation of legitimacy, responsibility, and vulnerability. Supportive relationships with tutors and peers enabled students to engage with uncertainty while gradually developing confidence, although feelings of insecurity frequently persisted alongside increasing clinical experience rather than disappearing completely (Table 4).

Theme 4. being an osteopath-in-training: a provisional, fragile, and relational identity

This theme centres on professional identity as a provisional and relational accomplishment, shaped through participation in practice and recognition from others rather than achieved as a stable individual attribute. Participants described their professional identity as developing gradually through interaction and recognition within clinical and educational contexts. Across interviews, they positioned themselves in an "in-between" space, neither fully osteopaths nor simply students:

> *"If you ask me to describe my role right now... honestly, I don't really know how to say it. I'm not an osteopath yet, but I'm not just a student either." (P1).*

Professional identity was often described as taking shape through small moments of recognition, particularly during clinical encounters. Feedback from patients or tutors could temporarily reinforce participants' emerging sense of themselves as future practitioners:

> *"When a patient told me I was delicate and thanked me, I was honestly surprised. That stayed with me, because it made me think: maybe I'm actually becoming this." (P13).*

Such moments did not resolve uncertainty but were described as briefly strengthening participants' confidence in their evolving role. Identity development was consistently narrated as incomplete and provisional:

> *"There was a moment during internship when I thought: okay, this is taking shape. Not fully, but it's starting." (P1).*

Participants did not locate themselves at the same point in relation to the profession. Some felt that the practical structure of the programme had already placed them within a clear professional trajectory.

"The way the programme is organised makes you feel from the beginning that you are already moving towards becoming that professional figure because you immediately start applying what you learn." (P8).

Whereas others continued to identify primarily as students whose limited knowledge prevented them from claiming an osteopathic identity.

"I still feel like a student, honestly. But compared with the beginning, I now feel much more inside this world than I did before." (P6).

Participants also emphasised the relational nature of this process. Feeling like an osteopath was not described as an individual achievement, but as something negotiated through interactions with patients, tutors, and peers:

"You start to feel like an osteopath when others treat you like one—patients, tutors, even your classmates. It's not something you decide alone." (P16).

Although recognition from others was important for many participants, this was not experienced uniformly. A minority described their commitment to the profession as relatively independent of external validation, suggesting that confidence in their educational choice could also derive from personal conviction rather than interpersonal recognition alone.

"I didn't receive any particular feedback that made me think this was definitely the right path or the wrong one. I trust the choice I made, and other people's opinions don't really change that." (P12).

Overall, participants' accounts suggested that being an osteopath-in-training was experienced as a provisional and relational process rather than as a stable professional identity. Opportunities to participate in practice and receive feedback from patients, tutors, and peers provided moments of affirmation, while uncertainty regarding competence, legitimacy, and professional role frequently remained. Rather than reflecting a linear progression, these accounts illustrate how different participants located themselves at different points within an evolving sense of professional identity during the first year of training (Table 4).

Discussion

This study explored how first-year osteopathy students enrolled in the first Italian university-based osteopathy degree programme made sense of their early training within a context of recent integration into higher education and ongoing institutional development. Our findings are consistent with conceptualisations of professional identity formation as embodied, relational, and non-linear, but extend this work by suggesting that institutional uncertainty constituted a further interpretive lens through which participants made sense of their early professional development [20, 31, 32]. Rather than representing merely a contextual backdrop, participants described negotiating their emerging professional identity while simultaneously making sense of an educational programme and profession whose academic and institutional boundaries were still being established [20, 31]. Importantly, participants did not experience these processes uniformly. Rather than describing a single pathway, the findings highlight multiple ways in which students interpreted uncertainty, embodied learning, and participation during the first year of training.

Figure 1 offers a conceptual representation of the relationships between the themes. Existing studies have emphasised the role of embodied learning, participation in practice, and relational recognition in supporting professional identity development [13, 14, 16]. Our findings complement these perspectives by suggesting that students may simultaneously negotiate their emerging professional identity while making sense of an educational programme and profession undergoing institutional development. For these participants, integration into higher education did not simply formalise training but appeared to reshape how students first encountered the profession and interpreted their place within it.

The findings further suggest that uncertainty may be understood not only as an individual response to learning challenges but also as a feature of the educational environment itself. In this context, students appeared to evaluate not only their own readiness for practice but also the stability of the institutional pathway through which they were training [34, 49–51]. At the same time, learning was experienced as deeply embodied, with participants describing a persistent gap between theoretical knowledge and bodily confidence [13, 15]. Rather than functioning as a straightforward pathway to competence, embodied learning appeared to destabilise as much as it enabled, positioning the body as a central medium through which uncertainty was encountered and negotiated in practice [5]. For many participants, embodied learning was experienced as a threshold experience rather than a simple acquisition of technical competence, requiring students to negotiate uncertainty while progressively developing bodily confidence and professional self-understanding [13, 15, 16]. Clinical exposure further highlighted how feelings of professional legitimacy were negotiated through interactions with patients, tutors, and peers rather than developing through experience alone. Recognition within these relationships often provided



Fig. 1 Conceptual representation of the relationships between the four themes underpinning early professional becoming within a newly established university-based osteopathy programme

temporary affirmation rather than a stable sense of professional identity, supporting conceptualisations of professional becoming as an ongoing, relational, and context-dependent process [3, 5, 52–54]. Participants frequently described feeling like an osteopath as depending less on individual achievement than on being recognised as a legitimate participant in practice. Professional identity, therefore, appeared to be relationally negotiated rather than individually achieved [13, 14, 17, 36].

These findings have implications for osteopathic education in newly established higher education contexts [14, 15, 20]. Educational approaches that assume stable institutional structures or linear progression toward competence may not fully reflect students' lived experiences. If institutional uncertainty constitutes part of the context within which professional identity develops, our findings suggest that educational strategies may benefit from supporting students not only by reducing uncertainty where possible, but also by helping them engage with and make sense of it. Explicitly acknowledging uncertainty as part of the professional learning may help students contextualise their experiences and reduce its individualising effects. Providing structured opportunities for early, supported embodied practice, alongside transparent communication about programme development and institutional change, may facilitate the integration of theoretical and practical learning. Attention to relational conditions, including tutor practices that balance supervision with autonomy and peer environments that normalise vulnerability, appears particularly important in supporting early professional development during periods of institutional transition. These findings suggest that fostering professional identity may require attention not only to curricular content and clinical competence, but also to the broader institutional conditions within which learning takes place.

Further research is needed to examine how these processes evolve across subsequent stages of training and whether similar dynamics are observed in more established educational contexts. Longitudinal qualitative studies may be valuable in exploring how experiences of uncertainty, embodied learning, and relational recognition shape professional identity over time. Comparative studies across different health professions and regulatory environments may help clarify whether the interaction between institutional uncertainty and professional identity formation observed in this study is specific to professions newly integrated into higher education, or reflects a broader feature of professional education during periods of institutional change.

This study has several strengths. It provides an in-depth qualitative account of professional identity formation within a unique institutional context, revealing professional becoming at a critical moment of academic and regulatory transition. The use of RTA enabled an interpretive engagement with participants' accounts, supported by ongoing reflexive practices and multidisciplinary perspectives within the research team [37].

Reporting was guided by the COREQ checklist [39], enhancing transparency and completeness in the description of methods and findings. However, some limitations should be considered. Data were collected within a single undergraduate programme [40], which may limit transferability to other contexts. Interviews were conducted online, potentially shaping interactional dynamics, although this format facilitated participation. Although the dataset captured variation in age, educational background, and personal circumstances, it reflects the experiences of volunteers from a single cohort within one institutional context. While the interviewer held no teaching or assessment role and recruitment was mediated by the academic office, perceived institutional proximity may have influenced what participants chose to share. The specific historical and institutional circumstances of the programme should be considered when assessing the transferability of these findings to other educational and professional contexts. In addition, because interviews were conducted at a single time point during the first year of training, the findings capture participants' accounts at a particular stage of their educational experience rather than documenting how professional identity evolved over time. Despite these limitations, the study offers a novel perspective on how institutional uncertainty, embodied learning, and relational recognition interact in shaping early professional becoming within health professions newly integrated into higher education. Taken together, these findings suggest that professional identity formation within newly established health professions may involve not only learning how to practise a profession, but also learning within educational systems that are themselves still evolving.

Conclusion

Becoming an osteopath within a newly established university programme involved more than the acquisition of clinical knowledge and skills: participants' early professional development was shaped by institutional uncertainty, embodied learning, and relational recognition, dimensions they experienced as closely interwoven while making sense of their emerging professional role during the first year of training. Notably, institutional uncertainty operated not merely as a contextual challenge but as an interpretive frame through which many participants understood their educational experience and their place within a profession undergoing academic and regulatory transition. These findings suggest that curricula which acknowledge uncertainty openly, cultivate embodied learning from the outset, and provide supervised participation in clinical practice may be particularly valuable in health professions newly integrated into higher education, where students are negotiating not only their own professional identities but the identity of the profession itself.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12909-026-10045-9.

Supplementary Material 1.

Acknowledgements
CC is a postgraduate of the affiliated institution which is funding the publishing charge.

AI Disclosure
The authors used Perplexity to improve the English language and readability of the manuscript. In addition, an image was generated using Google NotebookLM. All outputs were reviewed and edited by the authors, who take full responsibility for the content of the manuscript.

Authors' contributions
CC: Conceptualization, Investigation, Resources, Formal analysis, Writing- Original Draft, Review and Editing, Visualization, Supervision, Project administrationAT: Writing- Reviewing and Editing, Funding acquisitionLF: Investigation, Formal analysis, Writing- Reviewing and Editing AP: Methodology, Writing- Reviewing and Editing MGL: Conceptualization, Writing- Reviewing and Editing NS: Conceptualization, Writing- Reviewing and Editing FC: Writing- Reviewing and EditingJEE: Writing- Reviewing and Editing GR: Conceptualization, Methodology, Formal analysis, Writing- Original Draft, Review and Editing, Visualization, Supervision, Project administration.

Funding
This work was supported by Escuela de Osteopatia de Madrid (Italy), which covered the publishing charge.

Data availability
The datasets used during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
The research protocol received approval from the University of Verona Ethics Committee (Prot n. 305827 del 16/07/2025). All procedures were conducted in accordance with the Declaration of Helsinki and the EU General Data Protection Regulation (2016/679). Furthermore, all data collection and processing complied with applicable data protection regulations. Informed consent was obtained from all individual participants included in the study.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

Author details
[1]School of Physiotherapy, University of Verona, Verona, Italy
[2]Escuela de Osteopatia de Madrid, Verona, Italy
[3]Healthcademia, Verona, Italy
[4]School of Osteopathy, University of Verona, Verona, Italy
[5]School of Medicine and Surgery, University of Verona, Verona, Italy
[6]Department of Medicine, University of Udine, Udine, Italy
[7]Department of Human Sciences, University of Verona, Verona, Italy
[8]Section of Physical and Rehabilitation Medicine, Department of Neurosciences, Biomedicine and Movement Sciences, University of Verona, Verona, Italy
[9]Neurorehabilitation Unit, Department of Neurosciences, University Hospital of Verona, Verona, Italy
[10]NYIT College of Osteopathic Medicine, Old Westbury, NY, USA

[11]Clinical-based Human Research department, Foundation COME Collaboration, Pescara, Italy
[12]Escola Superior de Saúde Atlântica, Barcarena, Portugal
[13]Department of Physiotherapy, Faculty of Medicine, Health and Sports, Universidad Europea de Madrid, Villaviciosa de Odón, Spain
[14]Health Sciences University Centre for PAIn Research, Bournemouth, UK

Received: 4 May 2026 / Accepted: 24 July 2026
Published online: 29 July 2026

References

1. Osteopathic International Alliance. The OIA Global Report: Global Review of Osteopathic Medicine and Osteopathy. 2020. Available from: http://oialliance.org/resources/oia-status-report/.
2. European Committee for Standardization (CEN). EN 16686:2015 – Osteopathic healthcare provision. Brussels: CEN; 2015. https://standards.iteh.ai/catalog/standards/cen/a1530489-1e4a-4bd6-a733-d70769add45c/en-16686-2015.
3. Abrey C, De Silva N, Godwin J, Jacotine T, Raab D, Urquhart K, et al. Does the student-led osteopathy clinical learning environment prepare students for practice? BMC Med Educ. 2022;22(1):603. https://doi.org/10.1186/s12909-022-03658-3.
4. Luciani E, Van Dun PLS, Esteves JE, Lunghi C, Petracca M, Papa L et al. Learning Environment, Preparedness and Satisfaction in Osteopathy in Europe: The PreSS Study. Ciccozzi M, editor. PLoS ONE. 2015;10(6):e0129904. https://doi.org/10.1371/journal.pone.0129904.
5. Luciani E, Consorti G, Van Dun PLS, Merdy O, Lunghi C, Petracca M, et al. An overview of osteopathy graduates' perceived preparedness at transition from educational environment to clinic environment one year after graduation: a cross sectional study. BMC Med Educ. 2018;18(1):319. https://doi.org/10.1186/s12909-018-1429-2.
6. World Health Organization. Benchmarks for training in traditional / complementary and alternative medicine: benchmarks for training in osteopathy [Internet]. 2010. Available from: https://www.who.int/publications/i/item/9789241599665.
7. General Osteopathic Council. Osteopathic practice standards. 2019. Available from: https://www.osteopathy.org.uk/standards/osteopathic-practice/.
8. Esteves JE, Zegarra-Parodi R, Van Dun P, Cerritelli F, Vaucher P. Models and theoretical frameworks for osteopathic care – A critical view and call for updates and research. Int J Osteopath Med. 2020;35:1–4. https://doi.org/10.1016/j.ijosm.2020.01.003.
9. Fryer G. Integrating osteopathic approaches based on biopsychosocial therapeutic mechanisms. Part 1: The mechanisms. Int J Osteopath Med. 2017;25:30–41. https://doi.org/10.1016/j.ijosm.2017.05.002.
10. Thomson OP, Petty NJ, Moore AP. Clinical decision-making and therapeutic approaches in osteopathy – A qualitative grounded theory study. Man Therap. 2014;19(1):44–51. https://doi.org/10.1016/j.math.2013.07.008.
11. Tyreman S. Re-evaluating 'osteopathic principles'. Int J Osteopath Med. 2013;16(1):38–45. https://doi.org/10.1016/j.ijosm.2012.08.005.
12. Ellwood J, Carnes D. An international profile of the practice of osteopaths: A systematic review of surveys. Int J Osteopath Med. 2021;40:14–21. https://doi.org/10.1016/j.ijosm.2021.03.007.
13. Gale NK. From body-talk to body-stories: body work in complementary and alternative medicine. Sociol Health Illn. 2011;33(2):237–51. https://doi.org/10.1111/j.1467-9566.2010.01291.x.
14. Lunghi C, Baroni F, D'Alessandro G, Consorti G, Tramontano M, Stubbe L, et al. Patient–Practitioner–Environment Synchronization: Four-Step Process for Integrating Interprofessional and Distinctive Competencies in Osteopathic Practice—A Scoping Review with Integrative Hypothesis. Healthcare. 2025;13(7):820. https://doi.org/10.3390/healthcare13070820.
15. Kovanur Sampath K, McIntyre C, Arumugam A, Thomson OP, Andersen P. Beyond YouTube clips: a qualitative study of manual therapy educators' perceptions of 3D technology in MT education. J Man Manipulative Therapy. 2026;1–13. https://doi.org/10.1080/10669817.2026.2629292.
16. Chrisman-Khawam LM, Manzi JA. Empathy in Medicine Cultivating an Empathetic Professional Identity in Osteopathic Medical Students Through Service Learning: A Qualitative Analysis of Reflective Essays. J Osteopath Med. 2020;120(4):263–72. https://doi.org/10.7556/jaoa.2020.043.
17. Martinez ES, Redding D. An osteopathic orientation to interprofessional education. J Osteopath Med. 2024;124(9):379–85. https://doi.org/10.1515/jom-2022-0237.
18. Draper-Rodi J, Abbey H, Hammond J, Thomson OP, Brownhill K, MacMillan A, et al. Overcoming barriers to equality, diversity, inclusivity, and sense of belonging in healthcare education: the Underrepresented Groups' Experiences in Osteopathic Training (UrGEnT) mixed methods study. BMC Med Educ. 2024;24(1):468. https://doi.org/10.1186/s12909-024-05404-3.
19. Christensen L, Hilde G, Eik H. Becoming a physiotherapist - a qualitative study exploring students' perspectives on peer assisted learning in physiotherapy education. Physiother Theory Pract. 2024;40(11):2604–16. https://doi.org/10.1080/09593985.2023.2284169.
20. Dubois J, Rodondi PY, Akre C. There is a way to work together: A qualitative study on complementary medicine therapists' perceptions of their role in the Swiss healthcare system. Complement Ther Clin Pract. 2025;58:101919. https://doi.org/10.1016/j.ctcp.2024.101919.
21. 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. 2018;18(1):352. https://doi.org/10.1186/s12913-018-3158-y . PubMed PMID: 29747647; PubMed Central PMCID: PMC5946419.
22. Alvarez G, Roura S, Cerritelli F, Esteves JE, Verbeeck J, Van Dun PLS. The Spanish Osteopathic Practitioners Estimates and RAtes (OPERA) study: A cross-sectional survey. Wilkinson J, editor. PLoS ONE. 2020;15(6):e0234713. https://doi.org/10.1371/journal.pone.0234713.
23. Van Dun PLS, Arcuri L, Verbeeck J, Esteves JE, Cerritelli F. The Austrian Osteopathic Practitioners Estimates and RAtes (OPERA): A cross-sectional survey. Dey A, editor. PLoS ONE. 2022;17(11):e0278041. https://doi.org/10.1371/journal.pone.0278041.
24. Consorti G, Bagagiolo D, Buscemi A, Cicchitti L, Persiani M, Bergna A et al. J <>Wilkinson editor 2021 Osteopathy students profile in Italy: A cross sectional census. PLoS ONE 16 2 e0247405 https://doi.org/10.1371/journal.pone.0247405.
25. D'Antonio G. The legislative position of the Osteopath in Italy after the Decree of the Ministry of Universities and Research of 29 November 2023, in agreement with the Minister of Health: implications in terms of professional responsibility and current. Clin Ter. 2024;175(4):36–9. https://doi.org/10.7417/CT.2024.5081.
26. Cerritelli F, Van Dun PLS, Esteves JE, Consorti G, Sciomachen P, Lacorte E et al. The Italian Osteopathic Practitioners Estimates and RAtes (OPERA) study: A cross sectional survey. Patman S, editor. PLoS ONE. 2019;14(1):e0211353. https://doi.org/10.1371/journal.pone.0211353.
27. Cerritelli F, Consorti G, Van Dun PLS, Esteves JE, Sciomachen P, Valente M et al. The Italian Osteopathic Practitioners Estimates and RAtes (OPERA) study: How osteopaths work. Alameddine M, editor. PLoS ONE. 2020;15(7):e0235539. https://doi.org/10.1371/journal.pone.0235539.
28. Individuazione e istituzione delle professioni sanitarie dell'osteopata e del chiropratico. Italy, Gazzetta Ufficiale, Serie Generale. 2018;25. https://www.gazzettaufficiale.it/eli/id/2018/01/31/18G00019/sg.
29. Italy, Decreto del Presidente della Repubblica 7 luglio 2021, n. 131. Recepimento dell'accordo tra il Governo, le regioni e le Province autonome di Trento e di Bolzano concernente l'istituzione della professione sanitaria di osteopata, sancito il 5 novembre 2020 e rettificato il 23 novembre 2020. Gazzetta Ufficiale, Serie Generale, n. 233, 29 settembre 2021. https://www.gazzettaufficiale.it/eli/id/2021/09/29/21G00140/sg.
30. Italy, Decreto Interministeriale 1 dicembre 2023, n. 1563. Definizione dell'ordinamento. didattico del Corso di Laurea in Osteopatia, ai sensi dell'articolo 7 della legge 11 gennaio 2018, n. 3. Gazzetta Ufficiale, Serie Generale, n. 39, 16 febbraio 2024.
31. Lunghi C, Baroni F, D'Alessandro G, Longobardi M, Consorti G, Vanacore N, et al. Untangling the Osteopathic Gordian Knot: Reconceptualized Principles for Sustainable and Contemporary Clinical Practice—A Conceptual Perspective. Healthcare. 2026;14(9):1221. https://doi.org/10.3390/healthcare14091221.
32. Maier R, Weaver J, Ginoza JA, Meyer D, Gothard D. Perceived Value of Osteopathic Recognition. Fam Med. 2023;55(2):107–10. https://doi.org/10.22454/FamMed.2023.853908.
33. Rue K, Stutzman K, Chadek M. THE VALUE OF OSTEOPATHIC RECOGNITION. Ann Fam Med. 2021;19(1):86–7. https://doi.org/10.1370/afm.2663.
34. Jones D, McCalla M, Beverly EA. Measuring grit, self-efficacy, curiosity, and intolerance of uncertainty in first-generation college and first-generation osteopathic medical students. BMC Med Educ. 2023;23(1):190. https://doi.org/10.1186/s12909-023-04181-9.
35. Havemann C, Mason HRC, Russell RG, Casillas A, Nguyen M, Boatright D, et al. Challenges Facing First-Generation College Graduates in Medical School: A Qualitative Analysis. JAMA Netw Open. 2023;6(12):e2347528. https://doi.org/10.1001/jamanetworkopen.2023.47528.

36. Nygren-Bonnier M, Högstedt K, Laurell A, Boström C. First and final year physiotherapy students' expectations of their future profession. Physiother Theory Pract. 2023;39(11):2366–76. https://doi.org/10.1080/09593985.2022.2075295.
37. Braun V, Clarke V. Thematic analysis: a practical guide. London; Thousand Oaks, California: SAGE; 2022. p. 338.
38. Braun V, Clarke V. Can I use TA? Should I use TA? Should I *not* use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytic approaches. Couns Psychother Res. 2021;21(1):37–47. https://doi.org/10.1002/capr.12360.
39. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int J Qual Health Care. 2007;19(6):349–57. https://doi.org/10.1093/intqhc/mzm042.
40. Laurea in Osteopatia - Università di Verona. Available from: https://www.corsi.univr.it/?ent=cs&aa=2025%2F2026&codiceCs=MM40&codins=4S013196&discr=&discrCd=&id=1206&menu=studiare&tab=insegnamenti(=it.
41. Campbell S, Greenwood M, Prior S, Shearer T, Walkem K, Young S, et al. Purposive sampling: complex or simple? Research case examples. J Res Nurs. 2020;25(8):652–61. doi:10.1177/1744987120927206 PubMed PMID: 34394687; PubMed Central PMCID: PMC7932468.
42. Moser A, Korstjens I, Series. Practical guidance to qualitative research. Part 3: Sampling, data collection and analysis. Eur J Gen Pract. 2018;24(1):9–18. https://doi.org/10.1080/13814788.2017.1375091 . PubMed PMID: 29199486; PubMed Central PMCID: PMC5774281.
43. Braun V, Clarke V. To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size rationales. Qualitative Res Sport Exerc Health. 2021;13(2):201–16. https://doi.org/10.1080/2159676X.2019.1704846.
44. Magnusson E, Marecek J. Doing interview-based qualitative research: a learner's guide. Cambridge: Cambridge University Press; 2015. p. 1. https://doi.org/10.1017/CBO9781107449893.
45. Olawade DB, Omeni D, Gore MN, Hadi M. Enhancing qualitative research through virtual focus groups and artificial intelligence: A review. Int J Med Inf. 2025;203:106004. https://doi.org/10.1016/j.ijmedinf.2025.106004 . PubMed PMID: 40482393.
46. Byrne D. A worked example of Braun and Clarke's approach to reflexive thematic analysis. Qual Quant. 2022;56(3):1391–412. https://doi.org/10.1007/s11135-021-01182-y.
47. Braun V, Clarke V. One size fits all? What counts as quality practice in (reflexive) thematic analysis? Qualitative Res Psychol. 2021;18(3):328–52. https://doi.org/10.1080/14780887.2020.1769238.
48. Braun V, Clarke V. Reflecting on reflexive thematic analysis. Qualitative Res Sport Exerc Health. 2019;11(4):589–97. https://doi.org/10.1080/2159676X.2019.1628806.
49. Mukhalalati B, Yakti O, Elshami S. A scoping review of the questionnaires used for the assessment of the perception of undergraduate students of the learning environment in healthcare professions education programs. Adv Health Sci Educ Theory Pract. 2024;29(4):1501–38. https://doi.org/10.1007/s10459-024-10319-1 . PubMed PMID: 38683300; PubMed Central PMCID: PMC11369005.
50. Matthews J, Bialocerkowski A, Molineux M. Professional identity measures for student health professionals - a systematic review of psychometric properties. BMC Med Educ. 2019;19(1):308. https://doi.org/10.1186/s12909-019-1660-5 . PubMed PMID: 31409410; PubMed Central PMCID: PMC6693256.
51. Mgobozi A, McNamee L, Couper I. Clinical associate students' perceptions of factors that influence their developing professional identity: a qualitative study. BMC Med Educ. 2023;23(1):125. https://doi.org/10.1186/s12909-023-04109-3 . PubMed PMID: 36810007; PubMed Central PMCID: PMC9945349.
52. Esteves JE, Cerritelli F, Kim J, Friston KJ. Osteopathic Care as (En)active Inference: A Theoretical Framework for Developing an Integrative Hypothesis in Osteopathy. Front Psychol. 2022;13:812926. https://doi.org/10.3389/fpsyg.2022.812926 . PubMed PMID: 35250743; PubMed Central PMCID: PMC8894811.
53. McParlin Z, Cerritelli F, Friston KJ, Esteves JE. Therapeutic Alliance as Active Inference: The Role of Therapeutic Touch and Synchrony. Front Psychol. 2022;13:783694. https://doi.org/10.3389/fpsyg.2022.783694 . PubMed PMID: 35250723; PubMed Central PMCID: PMC8892201.
54. Shaw R, Abbey H, Casals-Gutiérrez S, Maretic S. Reconceptualizing the therapeutic alliance in osteopathic practice: Integrating insights from phenomenology, psychology and enactive inference. Int J Osteopath Med. 2022;46:36–44. https://doi.org/10.1016/j.ijosm.2022.06.003.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.